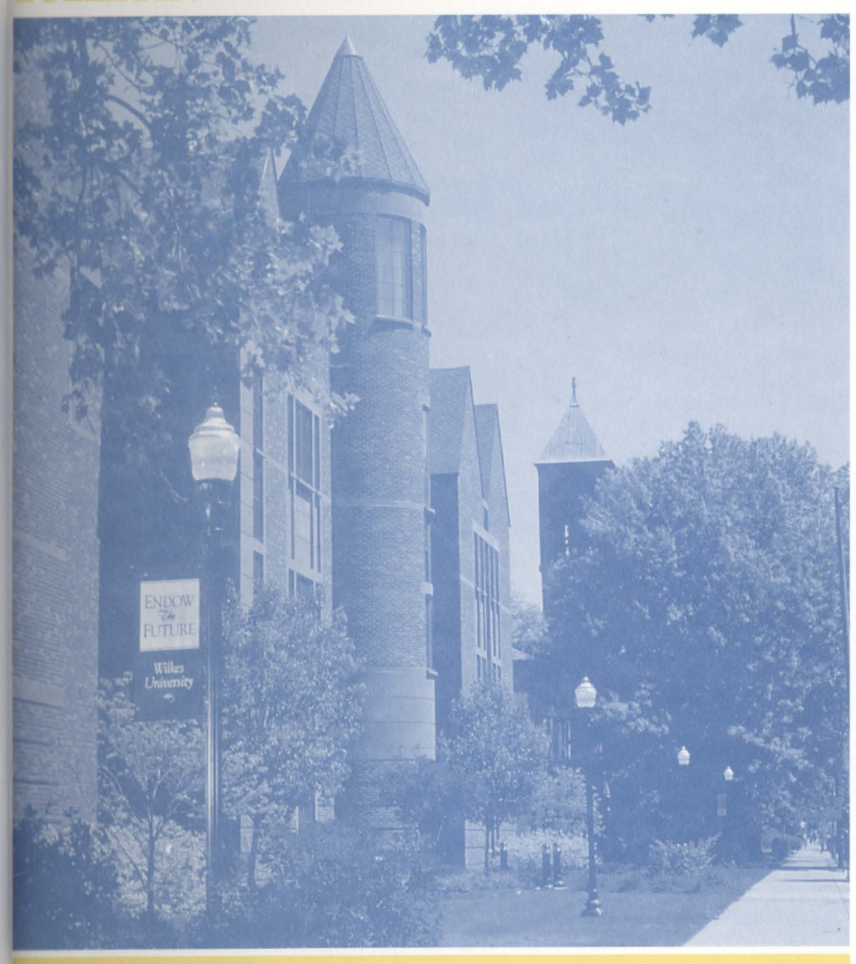
Wilkes University
BULLETIN



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2001–
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WILKES UNIVERSITY

2001–2002 ACADEMIC CALENDAR

Summer 2001 Pre-session		
Classes Commence	Monday, May 21, 2001	8:00 a.m.
Classes End	Friday, June 8, 2001 (Including Final Examinations)	12:00 noon
First Day Session		
Classes Commence	Monday, June 11, 2001	8:00 a.m.
Classes End	Friday, July 13, 2001 (Including Final Examinations)	12:00 noon
Nine-Week Evening Session		
Classes Commence	Monday, June 11, 2001	6:00 p.m.
Classes End	Tuesday, August 14, 2001 (Including Final Examinations)	10:00 p.m.
Second Day Session		
Classes Commence	Monday, July 16, 2001	8:00 a.m.
Classes End	Friday, August 17, 2001 (Including Final Examinations)	12:00 noon
Fall Semester – 2001		
Classes Commence	Monday, August 27, 2001	8:00 a.m.
Summer Commencement	Thursday, August 30, 2001	7:30 p.m.
Labor Day Recess	Friday, August 31, 2001	5:00 p.m.
Classes Resume	Tuesday, September 4, 2001	8:00 a.m.
Fall Recess	Thursday, October 11, 2001	10:00 p.m.
Classes Resume	Monday, October 15, 2001	8:00 a.m.
Thanksgiving Recess	Tuesday, November 20, 2001	5:00 p.m.
Special Note	Tuesday, November 20, 2001 *(Follow Friday Class Schedule)*	
Classes Resume	Monday, November 26, 2001	8:00 a.m.
Classes End	Friday, December 7, 2001	5:00 p.m.
Final Examinations Begin	Monday, December 10, 2001	8:00 a.m.
Final Examination End	Tuesday, December 18, 2001	4:30 p.m.
Intersession – 2002	Wednesday, January 2, 2002 to Friday, January 11, 2002	
Spring Semester – 2002		
Classes Commence	Monday, January 14, 2002	8:00 a.m.
Winter Commencement	Sunday, January 20, 2002	2:00 p.m.
Spring Recess	Friday, March 1, 2002	5:00 p.m.
Classes Resume	Monday, March 11, 2002	8:00 a.m.
Easter Recess	Wednesday, March 27, 2002	10:00 p.m.
Classes Resume	Tuesday, April 2, 2002	8:00 a.m.
Special Note	Tuesday, April 30, 2002 *(Follow Thursday Class Schedule)*	
Classes End	Wednesday, May 1, 2002 *(Follow Friday Class Schedule)*	5:00 p.m.
Final Examinations Begin	Friday, May 3, 2002	8:00 a.m.
Final Examinations End	Saturday, May 11, 2002	4:30 p.m.
Commencement	Saturday, May 18, 2002	11:00 a.m.

Wilkes University

2001–2002

Bulletin

Baccalaureate Studies

WILKES UNIVERSITY
Wilkes-Barre, Pennsylvania 18766
Telephone (570) 408-5000

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Statement of Nondiscrimination

Wilkes University does not discriminate on the grounds of race, color, national origin, sex, age or disability in the administration of or admission to any of its educational programs, activities, or with respect to employment, in compliance with Title VI, Title VII, Title IX, Section 504, ADA, and the Age Discrimination Act. It is the policy of Wilkes University that no person, on the basis of race, color, religion, national origin or ancestry, age, sex, marital status, disability, sexual or affectional preference, or Vietnam-era veteran status, shall be discriminated against in employment, educational programs and activities, or admissions. Inquiries may be directed to the Dean of Student Affairs or the Affirmative Action Officer (ext. 4500).

The University complies with the Ethnic Intimidation Act of 1982 of the Commonwealth of Pennsylvania which provides additional penalties for the commission of illegal acts of intimidation when such actions are motivated by hatred of the victim's race, color, religious or national origin.

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An Educated Man or Woman

seeks truth, for without truth there can be no understanding;

possesses vision, for we know that vision precedes all great attainments;

is aware of the diversity of ideas and beliefs that exists among all people;

has faith in the power of ideals to shape the lives of each of us;

knows that mankind's progress requires intellectual vigor, moral courage, and physical endurance;

cultivates inner resources and spiritual strength, for they enrich our daily living and sustain us in times of crisis;

has ethical standards by which to live;

respects the religious convictions of all people;

participates constructively in the social, economic, cultural, and political life of the community;

communicates ideas in a manner that assures understanding, for understanding unites us all in our search for truth.

— Formulated and adopted by the Wilkes University faculty as a guide to learning.

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Wilkes University

Vision

Wilkes University, an independent university, will be recognized for excellence in undergraduate and graduate education throughout the mid-Atlantic region by helping students discover the "Power of Independent Thinking" through development of essential intellectual skills. Wilkes will enable student success in the global community by emphasizing the traditional liberal arts and sciences in collaboration with professional programs, the utilization of technology, the principled application of knowledge, and an entrepreneurial spirit.

Mission

Wilkes University is an independent institution of higher education dedicated to academic and intellectual excellence in the liberal arts, sciences, and professional programs. The University provides its students with the experience and education necessary for career and intellectual development as well as personal growth, engenders a sense of values and civic responsibility, and encourages its students to welcome the opportunities and challenges of a diverse and continuously changing world. The University enhances the tradition of strong student-faculty interactions in all its programs, attracts and retains outstanding people in every segment of the University, and fosters a spirit of cooperation, community involvement, and individual respect within the entire University.

Values

— Wilkes is committed to the values articulated by Dr. Eugene Farley and adopted by the Wilkes faculty as marks of an educated person. (See page 2 above.)

— Wilkes is committed to the liberal arts and sciences as the core of undergraduate education in all disciplines.

— Wilkes is committed to attracting and retaining outstanding students, faculty, and staff and to providing for their continual development.

— Wilkes is committed to promoting supportive and effective interaction between students and faculty.

— Wilkes is committed to the economic and social well being of its neighborhood, the city of Wilkes-Barre and northeastern Pennsylvania.

— Wilkes is committed to promoting a climate of respect for all peoples and to cultivating an appreciation of diversity. To create this climate Wilkes commits itself to the recruitment of faculty, staff and students from underrepresented populations.

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Accreditation

Wilkes University offers degrees and programs approved by th Department of Education of the Commonwealth of Pennsylvania an accredited by the Commission on Higher Education of the Middle State Association of Colleges and Secondary Schools (3624 Market Stree Philadelphia, PA 19104-2680). Certain academic programs are also ind vidually accredited by appropriate professional organizations. The Che istry curriculum is approved by the American Chemical Society. Th baccalaureate program in Nursing is approved by the Pennsylvania Stat Board of Nurse Examiners and is accredited by The National League fo Nursing. (National League for Nursing Accrediting Commission/350 Hud son Street/New York, New York 10014). The nursing program is als accredited by the Commission on Collegiate Nursing Education (Commi sion on Collegiate Nursing Education/One Dupont Circle, N.W., Suit 530/Washington, DC 20036-1120). The Electrical Engineering, Enviro mental Engineering and Mechanical Engineering programs are accredite by the Engineering Accreditation Commission (EAC) of the Accredita tion Board of Engineering and Technology (ABET). The Bachelor of Sc ence degree in Accounting and the Bachelor of Business Administratio degree programs are accredited by the Association of Collegiate Busine Schools and Programs. The Nesbitt School of Pharmacy was fully accre ited to grant the Doctor of Pharmacy Degree (Pharm.D.) by the Americ Council on Pharmaceutical Education in January, 2001. For further info mation on the Nesbitt School of Pharmacy, please see the discussion und School of Pharmacy elsewhere in this bulletin.

Buildings and Facilities

The **E. S. Farley Library**, named for Wilkes' first president, exists to pr vide its users with effective access to recorded information, whether printed or electronic format. The Library has acquired a substantial colle tion of carefully selected materials in a variety of formats and medi including more than 220,000 volumes, 1,100 current journal and newspap subscriptions, and over 800,000 microforms. Particular subject strengt include English literature, American cultural history, and the history of sc ence. The Farley Library's automated catalog system enables users search the various collections at Wilkes (books, journals, and audiovisu materials) by author, title, subject and keyword on public access termina Online database searching is available to students and faculty via Interne WWWeb networked CD-ROM indexing and abstracting services, an remote searching of hundreds of data bases through the Reference Depar ment of the Library. Special facilities include an internet lab, special colle tions rooms, audio/visual resources and microform equipment. Librar collections are supplemented by cooperative arrangements with oth

libraries. Through a variety of printed and online sources, the Library is able to identify and locate virtually any published materials needed by library users.

The **Dorothy Dickson Darte Center for the Performing Arts** features a fully-equipped, 500-seat theater on a site donated by the Wyoming Valley Society of Arts and Sciences. The Center's facilities include a scene shop, dressing rooms, rehearsal areas, costume rooms, hydraulic lift forestage, patch panel with 246 circuits, and a 10-scene preset with 60 dimmers. The facility is well-equipped for instructional use and regularly used for university and community presentations. Major renovations were completed in 1995, which included new seating, lighting equipment, stage curtains, carpeting and painting.

The **Dorothy Dickson Darte Music Building** opened in the summer of 1969 as the second phase of the Center for the Performing Arts. It houses faculty offices, studios, classrooms, practice and rehearsal rooms, and it is the centerpiece for the University's highly regarded music programs. Concerts and recitals are regularly presented in Gies Recital Hall and are open to the public.

The **Sordoni Art Gallery**, given to Wilkes in 1973 by The Andrew J. Sordoni Foundation, Inc., is located in Stark Learning Center. This modern facility presents exhibitions that enrich campus and community life. Exhibitions are supplemented by lectures, tours, demonstrations, and related art programs. A growing permanent collection embraces all media but is particularly strong in nineteenth and twentieth century American paintings. The print collection includes works of the Old Masters as well as contemporary artists. The Gallery is a particularly valuable study facility for students.

Stark Learning Center, named in honor of the late Admiral Harold R. Stark, Honorary Chairman of the Board of Trustees, opened in 1958 and was expanded in 1973. Stark Learning Center is one of the major instructional facilities on campus, and it provides approximately 85,000 square feet of modern classroom, laboratory, studio and office space. The School of Pharmacy occupies the first and third floors of the Stark Learning Center. The first floor houses the Pharmacy Information Center and Computer Lab, Model Pharmacy, and offices. The remodeled third floor includes the Anatomy and Physiology Lab, Pharmaceutics Lab, Three Research Labs, conference rooms, offices, and accessory rooms.

The **Allan P. Kirby Center for Free Enterprise and Entrepreneurship** was established in 1993 through a generous gift from Mr. Allan P. Kirby, Jr., a member of the Wilkes Board of Trustees, in honor of his father. Housed at 65 West South Street on the Wilkes campus, the Center is the residence of the Allan P. Kirby, Jr., Professor of Free Enterprise and Entrepreneurship. The Kirby Professor directs the Center's activities, develops and teaches

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courses in entrepreneurship, and fosters and promotes economic freedo and independence through a variety of programs including the camp chapter of Students in Free Enterprise (SIFE). In addition to the form academic courses in the various aspects of entrepreneurship, the cent offers opportunities for experiential learning through internships and rea world-based projects and sponsors special seminars and programs.

Academic Computing Facilities include a campus-wide data netwo which connects computers in classrooms, labs, offices, and dormito rooms to numerous servers and the Internet. There are five microco puter classrooms and a 60-computer open-access lab. Departmenta facilities includes the Geographics Information Systems Center in th Department of Geoenvironmental Sciences and Engineering, the En lish Department's Technology Classroom, the Hypermedia Laborato in the Department of Mathematics and Computer Science, and th Computer-Aided Engineering Laboratory and Computer-Aided Desig Laboratories in the Department of Engineering and Physics.

Conyngham Hall, refurbished by the Conyngham family and friend houses the Offices of the Deans of Student Affairs and University Co lege, the Office of Part-time Programs, the Learning Center/Act 101 an the Office of Multicultural Affairs

The **Arnaud C. Marts Sports and Conference Center**, named in hon of the person most responsible for the founding and nurturing of Wilk University, opened in 1989. The three-story, 75,000-square-foot buildi on South Franklin Street features the new 3,500-seat Henry gymnasiu as well as dedicated space for health facilities,faculty offices, intramu and intercollegiate sports, and the offices of the Athletic Director a the Associate Director of Athletics. The Henry gymnasium is the indo site for the three annual Commencement exercises held in Augu January and May. In addition, the Marts Center provides pleasa conference facilities and classrooms. Dr. Marts, while serving as pre dent of Bucknell University, made the decision to establish a bran campus of Bucknell in Wilkes-Barre.

The University's **Residence Halls** house over 600 students in a varie of living arrangements in facilities ranging from stately Victorian a Tudor mansions to the ultra-modern accommodations of Evans Ha Each residence hall is staffed by graduate or undergraduate Reside Assistants, who provide guidance and supervision and assist in the dev opment of a constructive learning environment. Residence hall space available to all full-time undergraduate students. All full-time und graduates of freshman or sophomore standing who do not commute fro the home of a parent or legal guardian must reside on campus. Exce tions to this policy may be granted only by the Residence Life Office the Office of the Dean of Student Affairs. Any student who is not

years of age and does not reside at the home of a parent or guardian must live on campus. Detailed information regarding residence halls and residence life can be obtained from the Office of Admissions or the Residence Life Office.

Christopher N. Breiseth Hall, named in May, 2001, to honor the University's fourth president, houses the Dean's Suite, and many faculty from the College of Arts, Sciences and Professional Studies have offices there. The three story, 55,000 square foot facility opened in 1995. It contains thirteen classrooms equipped with audiovisual equipment, state-of-the-art computer labs, a foreign language laboratory, writing laboratory, tutoring laboratory, psychology research laboratories and observation rooms. The building also houses the Jane M. Breiseth Gallery, named in honor of the president's wife and closest advisor.

The **Thomas P. Shelburne Telecommunications Center**, a 5500 square foot state-of-the-art television facility, opened in 1995. It includes two full-size production studios and three full-service editing booths.

Pearsall Hall is named for Marion K. and Richard L. Pearsall, a member of the University Board of Trustees, in honor of their daughters. The 9,000 square foot building was purchased and renovated in 1996. It houses the Nursing Department on three floors. The facility includes three simulated hospital rooms, a computer lab, conference room, media room and faculty/staff offices.

The $7.7 million **Student Center/Dining Commons** opened in the Fall of 1999. The 48,000 square foot building features 48 rooms, including a food court/dining commons with a seating capacity for 400 students. In addition, students have a cafe, bookstore, student government offices, meeting rooms, a large dance/entertainment/movie area, information office, TV lounge, game rooms, mail facility, and a student activities club all under one roof. A full-service branch of a financial institution is located in a mall-like space on the first floor. Other amenities include a three-story atrium with skylight, and a patio with a balcony looking out over the Susquehanna River.

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Admissions

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Admission

Recommended High School Preparation

A student's seconday school preparation should include a college preparatory curriculum. Such a curriculum generally includes four years of progressive courses in English, mathematics, science (including at least one laboratory component) and social science. While four years of each are not required, they are recommended for college preparation and admission. Elective courses should be chosen in academic subject areas pertaining to individual interest. Examples of quality electives include computer science, foreign language and communications; and may include the fine arts and technical courses as they relate to desired college majors. Depending on the academic discipline desired, different emphases might be placed on the high school curriculum completed by the applicant. Students whose preparation does not follow the pattern described above may still qualify for admissions but such students must provide other strong evidence that they are prepared for the rigors of the academic requirements of college.

Application for Admission

Applications for admission and instructions regarding secondary school transcripts and records, letters of recommendation, standardized test reports and entrance examinations may be obtained by contacting the Admissions Office. Completed applications should be given or sent directly to the Admissions Office.

Standardized Tests

The Scholastic Aptitude Test (SAT) of the College Entrance Examination Board or the Achievement College Test (ACT) is required of all applicants entering Wilkes University directly from high school. Students should take this examination before the second semester of their senior year in high school. Wilkes is a member of the College Entrance Examination Board.

Students communicating with the Educational Testing Center in Princeton, New Jersey, or in Los Angeles, California, should refer to the Wilkes University code number (CEEB): 2977.

Acceptance for Admission and Advanced Deposit

A complete application file includes a completed and signed application for admission, an official copy of the most recent high school and/or college transcript, SAT and/or ACT scores (either official copies or transcripted onto the official high school transcript), and the $30 application fee.

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After the application file is complete the Admissions Office will provide a decision. Notification is done on a rolling basis and is generally completed within two weeks from the date the file is complete.

Resident students guarantee their place in the entering class by forwarding a $300 tuition and housing deposit to the Admissions Office. May 1st is the priority deadline for receipt of deposits. Commuter students guarantee their place in the entering class by forwarding a $200 tuition deposit to the Admissions Office.

Prepharmacy applicants must complete an additional application, submit three letters of recommendation and interview with the School of Pharmacy's Admissions Committee to gain early admission. Applicants for the Pre-Medical Scholars program must note their interest on the application for admission and complete an interview with the selection committee to qualify for acceptance into the Pre-Medical Scholars Program. Applicants for the degree programs in music, musical theatre and theatre must audition for and interview with the department faculty to gain admission into those disciplines.

Wilkes University also accepts applications for the spring semester and summer session. Procedures are similar to those followed by students entering in the fall semester.

Admission of Transfer Students

Wilkes University welcomes transfer students from other accredited colleges and universities for both the fall and spring semesters. In fact, new transfer students usually account for one-third of all new students each year. Transfer students must submit an application for admission and a transcript from every post-secondary institution attended (whether credits were earned or not). In some instances, SAT or ACT scores will be required. Some transfer students may be asked to complete assessment tests prior to admission.

Admission of transfer students is done on a rolling basis. In addition to an admissions decision, transfer students will receive a free transcript evaluation.

Applicants must be in good academic standing with a minimum cumulative grade point average of 2.00 (C) at the beginning of the semester they first enroll at Wilkes. All courses with a grade of 2.00 (C) or better that are comparable to the curriculum at Wilkes will be accepted for transfer. Students transferring into the nursing program may only register for courses after consultation with the Chairperson of the Department of Nursing.

Transfer students also applying directly to the School of Pharmacy for entry into the professional school must additionally complete a School of Pharmacy application and forward three letters of recommendation. The student must also sit for the PCAT examination and submit official scores

from the examination. After the file is complete, the School of Pharmacy will schedule a personal interview as the School deems appropriate.

Transfer students from two-year institutions must complete a minimum of 60 credits at a baccalaureate degree-granting institution.

To graduate, all transfer students must complete a minimum of 30 credits (exclusive of advanced placement credit awarded by Wilkes) and a minimum of 50% of their major field credits at Wilkes University.

All transfer students must satisfy the University's General Education Requirements. (See pages 40–43 of this Bulletin for an explanation of these requirements.) However, to accommodate the large number of incoming transfer students, the University makes every effort to use courses and credits that are transferred into the institution in satisfaction of these General Education Requirements or to make other accommodations to ease the transition from one institution to another. For example, transfer students who enter Wilkes with 60 or more credits will satisfy the Writing Intensive Requirement of the General Education Requirements by completing two courses designated as Writing Intensive. Similarly, students who transfer certain science courses or sequences of science courses into Wilkes may be permitted to substitute these courses or sequences for the particular courses listed in Area II of the General Education Requirements. Transfer students and potential transfer students are urged to consult with the Admissions Office on these matters.

Grades earned in courses accepted for transfer are not included in the computation of the cumulative grade point average earned at Wilkes University.

Transfer students should consult the Graduation Requirements on page 52 of this Bulletin for institution-wide graduation requirements.

University policy prohibits the Admissions Office from knowingly admitting any student who has been dismissed from any other college or university for any reason until a period of one year has elapsed from the time of dismissal. Students who have been placed on probation by another college or university will be considered for admission on a case by case basis.

Campus Visits

A campus visit and interview are strongly recommended for all students interested in Wilkes University. Students and family members may schedule an interview by calling or writing the Admissions Office. Campus visits may include an interview with an admissions professional, appointments with faculty members, sessions with coaches and cocurricular leaders, campus and residence hall tours, attendance in selected classes, and financial aid counseling.

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In addition to individualized campus visits, the Admissions Offic hosts a number of Open Houses during the academic year. These visita tion days usually include a general meeting with the admissions staf panel discussions with current students and administrators, academi department meetings, campus tours, financial aid sessions and a comp mentary meal. Specific information about the agenda and dates for thes days is available from the Admissions Office.

Admission of International Students

International students are defined as those who do not hold U.S. citi zenship or who are not permanent residents of the U.S. or who do no hold resident alien status in the U.S.

International students must submit the following to be considered fo admission to Wilkes University: a completed application; official result of the Test of English as a Foreign Language (TOEFL) or evidence of th successful completion of an accredited, intensive English language pro gram, or English must have been the language of instruction for the stu dent; Declaration of Finances Form (available upon request from th Admissions Office); official transcripts of all secondary and/or post-sec ondary work completed to date (all transcripts should also be accompa nied with a translation if in any language other than English); and a cop of the secondary and/or post-secondary diploma or leaving certificate.

Students should apply by June 15 for the fall semester and Novembe 15 for the spring semester.

An I-20 form will only be issued after the application process is com plete and the student has been admitted to the institution.

Early Admission of High School Students

Wilkes University will consider admission for high-ability studen who wish to enter the University without completing the requiremen for a high school diploma. To be considered, such students must provid all the materials listed under the Acceptance of Admission and Depos section and at least one letter from a high school official grantin approval for early admission, and they must attend an interview with th Admissions Office.

Readmission to the University

Students who have been enrolled full-time at Wilkes University an have terminated their studies for one semester or more, and who wish t return as full-time students, must contact the Student Affairs Office an arrange an interview with one of the deans as the first step in the rea mission process.

Admission of Part-time Students

Those who wish to enroll as part-time students must contact the Office of Part-time Programs to discuss their plans and to obtain an Application for Admission. Students who have completed college-level work at another institution must submit an official transcript of their work as part of the admission process. Those who have completed no college work must submit an official high school transcript as part of the admission process. All documentation should be sent to the Office of Part-time Programs.

From Part-time to Full-time Admission

Part-time students who wish to enroll as full-time students must consult with the Director of Part-time Programs as the first step in this process. Students who have completed 30 or more credits and have maintained a cumulative grade point average of 2.00 (C) or higher will be accepted as full-time students. Students who have completed fewer than 30 credits will be required to provide high school transcripts and appropriate test scores in support of their petition to enroll full-time before a decision will be made.

Advanced Placement Credit

Wilkes University encourages students to work to their full capacity and to advance as rapidly as appropriate in their academic work. A number of opportunities are open to qualified high school juniors and seniors, as well as to adults returning to school after an interval of work or military experience, to demonstrate competencies beyond those normally associated with graduation from high school. Academic credit may be granted for such demonstrated competencies through a variety of channels as described below.

Advanced Placement Program

Students who have successfully passed one or more of the Advanced Placement Tests administered by the College Entrance Examination Board may request advanced placement and/or academic credits. Advanced Placement means that the student may be scheduled for a course at a more advanced level; a decision on advanced placement is made after review of the examination by the academic department concerned. Credit means that the student receives credit toward the hours required for graduation. Generally, credit will be granted for scores of 3, 4, or 5 on the Advanced Placement examination. Occasionally, a personal interview may be required before placement and/or credit is awarded. No grades are assigned to the courses for which the student receives advanced placement credit. Information on

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specific course examinations and credit may be obtained from th Admissions Office.

Credit for Military Experience

Students who have completed the special educational progra offered by branches of the American armed services may be grante academic credit for this coursework. Such students should submit a official transcript of their work as part of the admissions process. Tra scripts will be evaluated according to the guidelines provided by th American Council on Education, and credits granted will be applied t the degree program as appropriate. For more information on this pro gram, contact the Admissions Office.

Challenge Examinations

After admission to Wilkes University, a student may wish to take a examination demonstrating competence in a particular course. Th interested student should apply to the appropriate department chairpe son for permission to take a challenge examination. The chairperson wi determine approval of the student's application in writing only on th basis of a judgement that the student has adequate background in th field. If denied a challenge examination, the student may appeal to th appropriate academic dean. The student may not challenge a course th he/she previously failed.

A $65 per credit fee will be assessed by the Financial Manageme Office for each approved challenge examination. The student must prese a receipt from the Financial Management Office to the department cha person at least thirty days prior to the examination date. Credit for th course is given and transcripted if the student passes the examination. N grade or credit is recorded if the student does not pass the examination.

College-Level Examination Program (CLEP)

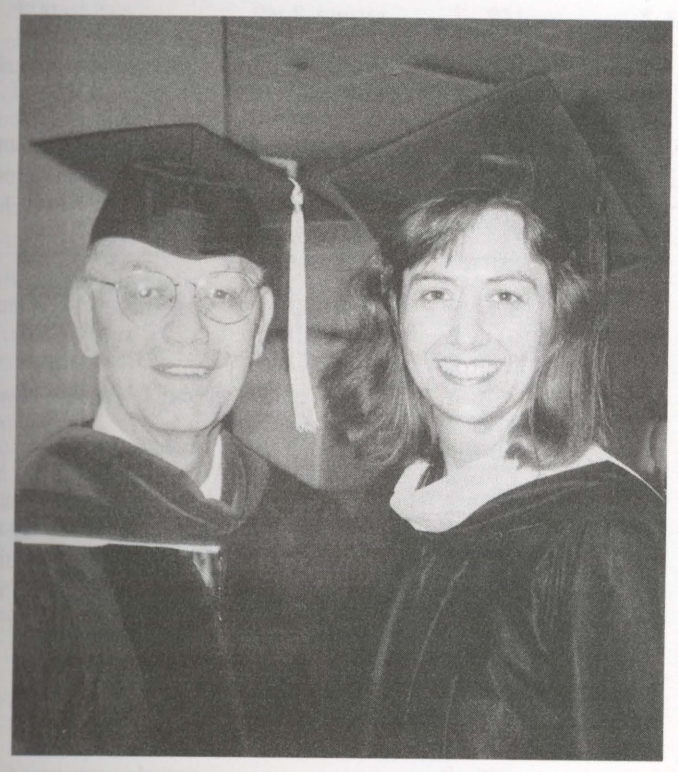
Wilkes University grants credit on the basis of satisfactory perfor ance on the Subject Examinations, not the General Examinations, of th College-Level Examination Program (CLEP) administered by the Co lege Entrance Examination Board. Although the program is designe primarily for adults, exceptionally well qualified high school seniors ma find it advantageous to seek academic credit through CLEP. Inquiri about CLEP should be addressed to the Admissions Office. Offici scores on CLEP Subject Examinations should be forwarded directly t the Admissions Office.

Experiential Learning

Credit for life experience may be granted for documented college-level learning that a student acquired through non-collegiate experiences. This credit is awarded for the learning derived from life experiences, **not** for the experiences themselves.

Students who plan to petition for experiential learning credit must inform their academic advisor of their intent within the first semester of enrollment at the University. All other means of securing credit for demonstrated competencies must have been exhausted before applying for experiential learning credit.

Credit awarded for experiential learning is based exclusively on Wilkes' evaluation of the demonstrated knowledge which is presented in the student's petition for experiential learning credit. Specific guidelines and procedures for the petitioning and awarding of experiential learning credits are available to interested students at the Registrar's Office. The Academic Standards Committee of the faculty maintains the guidelines and procedures of the Policy on Experiential Learning and makes the final decision on the awarding of credit.



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Expenses and Financial Assistance

Tuition and Fees

Payment Options

Financial Aid

Application Procedures

Types of Financial Assistance

Student Expenses

The following chart summarizes student expenses for the 2001–02 academic year which officially begins with the Summer Session, 2001. Students are referred to the course descriptions in this Bulletin for laboratory and other fees associated with particular courses. Inquiries about particular charges should be addressed to the Financial Management Office.

Student Expenses for 2001–02

Full-time Undergraduate and Pharmacy:	Assessment	Each Semester	Total for Year
* Tuition (12-18 Credits)	Per Semester	$ 8,571	$17,142
Room:			
in Rifkin , McClintock 17, & Fortinsky Halls	Per Semester	$ 2,592	$ 5,184
in Other Residence Halls	Per Semester	$ 2,347	$ 4,694
Board			
19 Meal Plan	Per Semester	$ 1,543	$ 3,086
14 Meal Plan	Per Semester	$ 1,435	$ 2,870
Commuters Only			
10 Meal Plan	Per Semester	$ 931	$ 1,862
Room Damage Deposit	One Time	—	$ 50
General University Fee	Per Semester	$ 257	$ 514
Activity Fee	Per Semester	$ 100	$ 200
Technology Fee	Per Semester	$ 50	$ 100
Student Union Fee	Per Semester	$ 20	$ 40
Recreation Fee	Per Semester	$ 12	$ 24

*Credits above 18 will be assessed at the rate of $476 per credit hour.

Part-time Undergraduate:			
Tuition (1-11 1/2 credits)	Per Credit	$ 476	—
General University Fee	Per Credit	$ 10	—
Technology Fee	Per Credit	$ 3	—
Summer Sessions — Undergraduate:			
Tuition	Per Credit	$ 476	—
General University Fee	Per Credit	$ 10	—
Technology Fee	Per Credit	$ 3	—
Summer Board	Per Week	$ 131	—
Summer Room	Per Week	$ 131	—
Room Damage Deposit	One Time	$ 50	—
Other Fees:			
Acceptance Deposit:			
Residence Hall	One Time	$ 100	—
Tuition	One Time	$ 200	—
Application Fee	One Time	$ 30	—
Applied Music Fee:			
1/2 hour private lesson		$ 395	—
1 hour private lesson		$ 790	—

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Audit Fee (Undergraduate Courses):			
Full-time Undergraduate and Pharmacy Students	No Tuition Charge	—	–
Graduate and Part-time Undergraduate Students	Per Credit	$ 238	–

Other Fees and Charges:	**Assessment**	**Each Semester**	**Total for Yea**
Challenge Exam	Per Credit	$ 65	–
Clerkship Fee (Pharmacy)	Per Semester	$ 60	$ 120
Graduation Fee	One Time	$ 135	–
Late Registration Fee	Per Semester	$ 25	–
Medical Technology Fee (During Clinical Training)	Per Semester	$1,023	$ 2,046
Music Major Fee	Per Semester	$ 30	$ 60
New Student Matriculation	One Time	$ 110	–
Replacement of Lost ID Cards	Each	$ 10	–
Returned Check Charge	Each	$ 25	–
Televideo Fee	Per Course	$ 40	–

Students are advised to request a refund of credit balances in the accounts should they desire a refund.

Payment of Charges

Prior to the beginning of each semester, invoices listing all current semester charges and approved financial aid are mailed to all registered students. All payments are made directly to Wilkes University, P.O. Box 111, Wilkes-Barre, PA 18766. Questions concerning charges or payments should be directed to the Coordinator of Student Accounts in the Financial Management Office.

Students who fail to pay all indebtedness to the University shall not be permitted to receive any degree, certificate, or transcript of grades. Nor shall they participate in Commencement activities.

Fall and Spring Full-time Tuition

The unfunded cost of full-time tuition and fees will be paid or satisfactory arrangements made with the Director, Financial Management, or his designee two weeks before the day on which classes begin. Unfunded costs are defined as the total of all appropriate charges for tuition, fees, room and board, etc., less the total of all approved financial aid awarded or credited to the student account for each semester or other instructional period. Satisfactory arrangements are defined as:

a. Enrollment in the Monthly Payment Option plan (discussed below);

b. Participation in the deferred employer reimbursement plan;

c. Enrollment in one of the third-party, sponsored tuition coverage plans (ROTC Scholarship, Bureau of Vocational Rehabilitation, Office of the Blind, etc.).

If the payment in full or satisfactory arrangements are not made two weeks before the first day of class each semester, the registration for that semester will be cancelled and the student will not be allowed to attend classes. In order to be reenrolled and reregistered, the student will be required to pay a late registration fee of $25 in cash before registering. Students whose accounts are three payments late will be cancelled from the monthly payment option plan and the full unpaid amount will immediately become due and payable. All students who fall into this category and those students who have been written off as bad debts or have been turned over to a collection agency will not be eligible for consideration of any other alternative financial arrangements.

Students who have applied for a Stafford Loan (Guaranteed Student Loan) where approval has not been granted by the bank will be required to pay the lesser of $300 or 25% of the loan requested two weeks before the first day on which classes begin. If the Stafford Loan (Guaranteed Student Loan) is subsequently approved, refunds of overpayments will then be made after the loan check is posted to the student's account.

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All financial arrangements are to be processed by the Direc Financial Management, or his designee and approved by the Vice Presid Business Affairs/Auxiliary Enterprises or his designee. **No other U versity officer or employee will be permitted to negotiate finan arrangements for the settlement of student accounts.**

Summer, Fall and Spring Part-time Tuition

Charges for summer and/or part-time tuition and fees must be pai full two weeks before the first day of classes unless covered by deferred employer reimbursement policy. The deferred payment po is described below.

Intersession Tuition

Tuition charges for intersession semesters must be paid in full weeks before the first day of class. The deferred payment option d **not** apply to intersession charges.

Deferred Payment Policy (Employer Reimbursed)

Deferred payments for employer reimbursement and third p payor arrangements will be permitted, provided the student m application and receives approval and delivers the completed d ments two full weeks before classes begin. Graduating seniors are eligible for the deferred payment option.

Monthly Payments

Wilkes has developed an interest-free, ten-month, installment ment plan (IPP) to help ease the burden of financing an educa Arrangements may be made to finance any amount between $300 the total unfunded cost of tuition and fees. Payments begin in June end in March of each academic year. IPP applications for the upco academic year are available in April of each year. There is a $45 a application fee. For more information write to Academic Manage Services, 1 AMS Place, P.O. Box 991, Swansea, MA 02777 or call 1- 635-0120.

The following financial institutions provide educational loans fo ents and students:

Key Education Resource Group
for information, call 1-800-key-lend

PNC Bank Resource Loan
for information, call 1-800-762-1001

First Union Bank of Delaware
for information, call 1-800-504-4097

VISA/MasterCard

Wilkes University accepts VISA and MasterCard for tuition and fee payments.

Tuition Exchange

Wilkes University is a member of the Tuition Exchange Plan which provides limited opportunities for faculty children from one college or university to enjoy tuition remission benefits at another institution. Students who are dependents of faculty and administration should consult the Tuition Exchange Liaison Officer at their home institutions to determine if they qualify for this program.

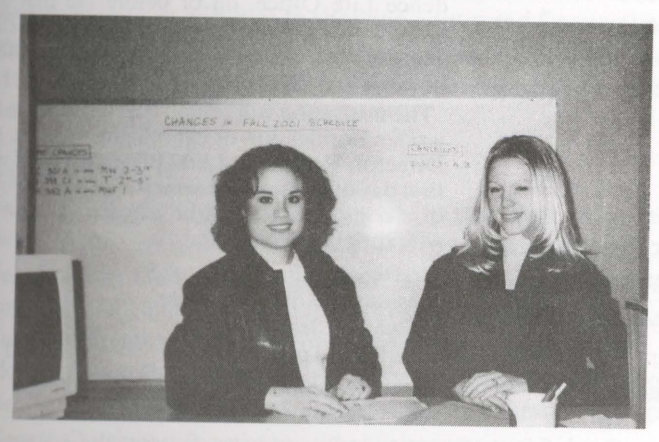
Refunds

Students who officially withdraw (see section in this **Bulletin** on Official Withdrawal) from courses may be eligible for a partial refund of tuition charges. Resident students who withdraw from the University may also qualify for a refund of room and board charges. Refunds are based on the official date of withdrawal as noted by the Registrar.

Financial aid received by students who withdraw may also be adjusted. See the section in this **Bulletin** on Financial Aid regarding adjustment to financial aid based on withdrawals.

Student suspended from the University for disciplinary reasons will forfeit all refunds.

Students who withdraw from the University or from specific classes during the semester will be entitled to an adjustment of tuition, fees, and room and board charges according to the following refund schedule.



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Refund Schedule*

Circumstance	Time of Withdrawal	Refund
Academic Year:		
Tuition:	The University will cancel 100 percent of tuition charges, less a deposit of $200, if *written* notice of cancellation is received by the Registrar or before the first day of classes. Failure to submit proper written notification will result in the assessment of full charges. Policy guidelines for refunds processed after the first day of classes are as follows:	
Total Withdrawal	Beginning with the 2001–2001 academic year, students who withdraw from Wilkes will be entitled to an adjustment of tuition, fee, room and board charges according to the following refund schedule:	
	First week	95%
	Second week	85%
	Third week	80%
	Fourth week	75%
	Fifth week	70%
	Sixth week	60%
	Seventh week	55%
	Eighth week	50%
	Ninth week	40%
	After ninth week	no adjustment
Full-time to Part-time and Reduction of Part-time Load	Above time-schedule applies for courses dropped	Charges based on the number of credits after the withdrawal
Room and Board:		
Room	The institution will refund housing rental charges less a deposit of $100.00, so long as *written* notification of cancellation is made to the Director, Residence Life Office, on or before the first day of classes each semester. After the first day of classes, charges will be adjusted in accordance with the above schedule.	
Board	The institution will refund board charges in full if *written* notification of cancellation is made to the Director, Residence Life Office, on or before the first day of classes each semester. After the first day of classes, charges will be adjusted in accordance with the above schedule.	
Summer Sessions	First week of First or Second Sessions and first two weeks of Evening Session	50%
	After stated period	No refund
Weekend College	Through second weekend	50%
	After second weekend	No refund

* Deposits are non-refundable. Refunds for special sessions (i.e. sessions which do not correspond to the calendar outlined above) will be calculated by the Financial Management Office upon student request.

Financial Aid

Wilkes University maintains an extensive program of financial assistance for its students in the form of scholarships, grants, loans, and part-time employment. To assist qualified students, the University receives substantial gifts each year from friends and alumni. These funds, combined with those furnished by the federal and state governments, are offered to students in financial aid packages. All students are encouraged to apply for financial assistance, both need-based and achievement-based.

Students with questions about financial aid or students seeking applications for financial aid should contact the Financial Aid Office. More detailed information regarding the financial aid programs and requirements is included in the **Consumer's Guide to Financial Aid, Costs, and Charges at Wilkes University**, which is also available at the Financial Aid Office and on the Wilkes University Web Site (www.wilkes.edu).

Application Procedures

1. Submit the Wilkes University Application for Financial Aid to the Wilkes University Financial Aid Office.
2. Complete the Free Application for Federal Student Aid.
3. Complete the appropriate state application for financial aid.
4. Students who desire to participate in the Stafford Loan and/or the PLUS Program must also complete the appropriate promissory note application.

Renewal of Financial Aid

Financial aid is awarded on an annual basis; therefore, students must reapply each year. In addition to showing continued financial need, students must also meet specific academic progress requirements to qualify for renewal. These requirements are explained in detail in the Consumer's Guide.

Types of Financial Aid

Financial aid packages are developed for students on an individual basis and usually consist of one or more of the following types of aid.

Scholarships: Outright gift assistance that is not repayable by the recipient and is usually based on factors other than demonstrated financial need, although some are a combination of need and merit. Several academic areas at the University have scholarships available to qualified students. These include Biology, English, Music, Nursing and Sociology.

Grants: Outright gift assistance that is not repayable by the recipient but is based on demonstrated financial need of the applicant and the

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family. Many states in addition to Pennsylvania provide financial assis tance in the form of grants for residents of their states. Residents o states other than Pennsylvania should contact their high school guidanc office for information pertaining to that particular state's aid progra These states include Connecticut, Delaware, Maryland, Massachusett Ohio, Rhode Island, Vermont, and West Virginia.

Loans: Financial assistance for which the recipient assumes the ob gation to repay the amount of the funds received. Most education loans provide for payment of principal and interest to begin sometim after the student graduates or stops attending an approved institution o at least a half-time basis. Repayment of the PLUS Loan begins within short time after funds are disbursed. Two emergency loan funds hav been established at the University to help students meet small financi emergencies. The Florence and Joseph A. Goldman Loan Fund and th Robert W. and Carol R. Hall Student Loan Fund provide small, interes free loans which are to be repaid at the earliest practical time, usually days, so that other students may receive needed assistance from the revolving loan funds.

Employment: Financial assistance that a student may earn by wor ing on campus in part-time or full-time positions and for which the st dent is paid in the form of a monthly check. Students should inqui about these opportunities at the On-Campus Employment Office. T Office of Career Services also operates a Job Location Developme Program (JLD) to help students obtain employment opportunities o campus. Students are paid by the employer for whom they work.

Withdrawal – Return of Financial Aid Funds

In accordance with federal regulations, those students who recei federal financial aid and who withdraw from the University during t first 60% of a semester will have their federal financial aid (Pell Gran Supplemental Educational Opportunity Grants, Perkins Loans, Nursi Loans, Stafford Loans and PLUS Loans) adjusted based on the perce of the semester completed prior to the withdrawal. That is, students w be entitled to retain the same percent of the federal financial a received as the percent of the semester completed. This percent is calc lated by dividing the number of days in the semester (excluding brea of five days or longer) into the number of days completed prior to t withdrawal (excluding breaks of five days or longer). The date of wit drawal will be the date the student begins the withdrawal process at t Registrar's Office unless attendance in class is documented after th date; in that case, the last date of documented attendance will be t official date of withdrawal. (See section on Withdrawals in this Bulleti

Students who do not follow the official withdrawal procedure but wh

stop attending classes for all of their courses will be considered to have withdrawn at the 50% point of the semster unless attendance is documented after that time. There will be no adjustment to federal financial aid after the completion of at least 60% of the semester.

Once the amount of the federal fund to be returned has been calculated, the funds will be returned in the following order:

Unsubsidized Stafford Loans
Subsidized Stafford Loans
PLUS Loans
Perkins Loans
Pell Grant
Supplemental Educational Opportunity Grants
Nursing Loans

Pennsylvania and other state grants will be adjusted in accordance with the agency's stated guidelines. It is expected that PHEAA Grant funds will be reduced by the same percent reduction in tuition received by a student when withdrawing from a course or courses.

Wilkes University grant and scholarship funds will be adjusted based on the percentage of reduction of tuition received by a student when withdrawing from the University.

Please note that students who receive a refund of financial aid prior to withdrawing from the University may owe a repayment of federal financial aid funds received. Students will be contacted by the Financial Aid Office in such situations and will be given 30 days to repay the funds to the University. Students who fail to return the unearned portion of federal financial aid funds given to them will become ineligible for continued receipt of financial aid until such time as the repayment is made.

Veterans' Assistance Programs (VA)

This special program provides a wide range of benefits to those who have served in the Armed Forces and in some cases to the dependent children of veterans. Interested persons should contact their local VA Office to obtain information concerning GI Education Assistance, Veterans Education Programs, Veterans Rehabilitation, Veteran Educational Loans, the Veteran Work-Study Program, and other sources of Veterans Assistance. The University also has a Veterans Affairs Office, located in Passan Hall to assist students in obtaining benefits.

Financial Aid for Part-time Students

The Pell Grant, S.E.O.G., PHEAA Grant, College Work-Study, Perkins Loan, Nursing Loan, Stafford Loan, and the PLUS Loan are available to part-time students. Interested students must complete the Free Application for Federal Student Aid, the Wilkes Financial Aid

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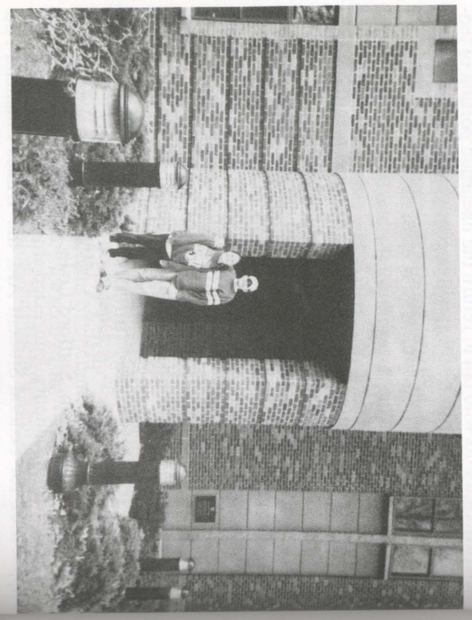
Application, and the appropriate loan applications in order to apply
these programs. In addition to financial need, eligibility is based
enrollment status. Limited funds from the Supplemental Educationa
Opportunity Grant (S.E.O.G.) and the Perkins Loan Programs a
available to part-time students who demonstrate exceptional financ
need. Except for the Pell Grant program, students must be enrolled
least half-time to qualify for financial aid.

Financial Aid for Students Seeking a Second Degree

Only the federal Stafford Loan and the PLUS Loan are available
students seeking a second degree. The Free Application for Federal St
dent Aid, the Wilkes Financial Aid Application, and the appropria
loan applications must be completed to determine eligibility for the
programs.

Financial Aid for Pharmacy Students in Years Five and Si

Since years five and six of the pharmacy program contain cours
work which is considered post-baccalaurete level, these years a
considered professional/graduate level for financial aid purpos
Therefore, students enrolled at this level are considered independe
for financial aid purposes and qualify only for financial aid available
graduate/professional students. This financial aid includes the sub
dized and unsubsidized Stafford Loans with an annual loan maximu
of $18,500. Students will not qualify for any federal, state or institu
tional grants or scholarships.



Summary of Financial Assistance Programs*

Program	Average Annual Award	Application(s) Required	Filing Deadline
		SCHOLARSHIPS	
University Scholarship	$ 8,200	Free Application for Federal Student Aid (FAFSA)	Upperclass student deadline — May 1, 2001
Presidential Scholarship	$ 6,250	and Wilkes Financial Aid Application	Incoming student priority date — March 1, 2001
Achievement Scholarship	$ 5,100		Contact Wilkes Admissions Office
Multicultural Service Scholarship	$ 1,300		
Leadership Scholarship	$ 3,000		
Room & Board Scholarship	$ 7,300		
Wilkes Named Scholarships	$ 2,000		
Transfer Student Scholarship	$ 1,750		
ROTC Scholarship	$ 13,100	Contact the Wilkes ROTC Office	Contact ROTC Office
		GRANTS	
Federal Pell Grant	$ 2,100	Free Application for Federal Student Aid (FAFSA)	June 30, 2002
PHEAA Grant	$ 3,000	and Wilkes Financial Aid Application	May 1, 2001
Federal SEOG Grant	$ 1,500		Upperclass student deadline — May 1, 2001
Wilkes Need-Based Grant	$ 3,200		Incoming student priority date — March 1, 2001
Office of Vocational Rehabilitation Grant	$ 3,500	Contact the Office of Vocational Rehabilitation	Contact Office of Vocational Rehabilitation
		LOANS	
Federal Carl Perkins Loan	$ 1,700	Free Application for Federal Student Aid (FAFSA)	Upperclass student deadline — May 1, 2001
Federal Nursing Student Loan	$ 2,500	and Wilkes Financial Aid Application	Incoming student priority date — March 1, 2001
Gulf Oil Loan	$ 2,000		
Rulison Evans Loan	$ 2,000		
Federal Stafford Loan	$ 3,950	Stafford Student Loan Application and Free	Six to eight weeks prior to need for loan proceeds
Federal Unsub Stafford Loan	$ 4,400	Application for Federal Student Aid (FAFSA)	
Federal PLUS Loan	$ 8,300	PLUS Loan Application	Six to eight weeks prior to need for loan proceeds
		EMPLOYMENT	
Federal College Work-Study Program	$ 800	Free Application for Federal Student Aid (FAFSA), Wilkes Financial Aid Application, and Wilkes Application for Student Employment	Prior to beginning work on campus
State Work-Study Program	$ 900	Free Application for Federal Student Aid (FAFSA), Wilkes Financial Aid Application, and SWSP Work-Study Application	Prior to beginning work on campus
Institutional Employment	$ 450	Wilkes Application for Student Employment and Free Application for Federal Student Aid (FAFSA)	Prior to beginning work on campus

*Detailed information on all financial assistance programs is available in the Consumer's Guide to Financial Aid, Costs, and Charges at Wilkes University.

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		Wilkes Financial Aid Application, and	
		SWSP Work-Study Application	
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		Free Application for Federal Student Aid (FAFSA)	

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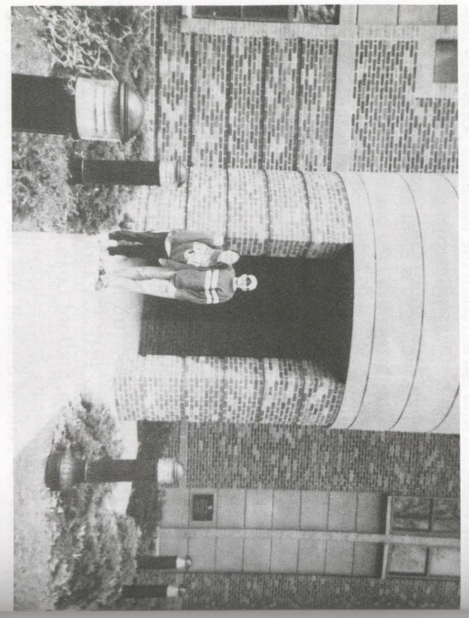

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Student Affairs and Athletics

Student Activities and Athletics

Student Services

Counseling

University College

Student Affairs

Wilkes University is a community of learning in which extra-curricular activities complement academic life. Students, faculty and staff work together to promote individual development through a variety of activities, programs, organizations and cultural opportunities. All campus organizations are open to all students, and all of them work in close cooperation with faculty advisors and the student affairs staff.

The information which follows gives a brief sketch of some of these activities and organizations. All new students receive a **Student Handbook** which explains governance, outlines University regulations, and provides a directory of student activities.

Residence Life

The Residence Life Program at Wilkes is committed to providing a living environment that is supportive of academic pursuits as well as contributing to personal growth.

The residence hall staff serves to help students enjoy and benefit from their on-campus living experience. Each residence hall is staffed by one or more Resident Assistants who have been selected on the basis of character, leadership and their ability to interact with students. Throughout the year the residence hall staff sponsors various educational and social programs for their residents. The Resident Assistants are also responsible for crisis management, discipline, maintenance requests and insuring that University policies are upheld.

The Residence Life Program offers students a wide variety of living situations. Each residence hall has its own unique style, whether it is a traditional residence hall such as Evans, or one of the older mansions such as Weiss. Each residence hall has lounge areas, as well as full kitchens and laundry facilities. University residence halls are either coed or single sex facilities. Rooms are equipped with cable television access, data ports, telephones, single beds, dressers, desks, desk chairs and closet space.

All resident students take part in the University Meal Plan. Meals are served in the dining hall in the Student Union. Residents have the option of choosing either a nineteen or a fourteen meal per week plan. Students who live in Rifkin, Fortinsky and the South River Street Apartments have the option of selecting the nine-meal-per-week plan.

Student Activities

An active Student Government and numerous campus clubs and special-interest organizations provide a structure of activities for student life outside of the classroom. More than 60 clubs and organizations are recognized by Student Government and the University. The University

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requires that all campus organizations be open to all students; cons
quently, groups that are exclusive do not exist. Volunteer Action a
Community Service are a cornerstone of Wilkes' mission and traditi
Eligibility for Student Government funding requires that clubs and orga
izations be actively involved in community service. An Inter-Residen
Hall Council, a Commuter Council, and an Off-Campus Students Coun
organize activities for undergraduate students, and the Student Progra
ming Board oversees a full schedule of social events at the University.

Student publications include the **Beacon**, a weekly newspaper pu
lished during the academic year; the **Manuscript**, an annual journal
art, poetry and fiction; and the **Amnicola**, the University yearbook. T
University also maintains WCLH, an FM radio station which is operat
by students and broadcasts daily at 90.7 MHz. Co-curricular activiti
depend on the interests and energies of students.

Honor Societies

Several chapters of national and international honor societies ha
been established on the Wilkes campus. They include:

ALPHA CHI (Upper Division Students)
ALPHA KAPPA DELTA (Sociology)
ALPHA SIGMA LAMBDA (Part-time Students)
BETA BETA BETA (Biology)
CHI ALPHA EPSILON (Act 101 Students)
DELTA MU DELTA (Business and Accounting)
ETA KAPPA NU (Electrical Engineering)
LAMBDA PI ETA (Communications)
OMICRON DELTA EPSILON (Economics)
PI KAPPA DELTA (Forensics)
PI SIGMA ALPHA (Political Scien
PHI ALPHA THETA (History)
PSI CHI (Psychology)
SIGMA PI SIGMA (Physics)
SIGMA TAU DELTA (English)
SIGMA THETA TAU (Nursing)
SIGMA XI (Scientific Research)

Intramural and Intercollegiate Athletics

Wilkes sponsors an active intramural sports program as well as int
collegiate competition in 14 varsity sports. Varsity programs for wom
include basketball, field hockey, lacrosse, soccer, softball, tennis and v
leyball; men compete at the varsity level in baseball, basketball, footb
golf, soccer, tennis and wrestling. Varsity teams compete at the Divis
III level. The University is a member of the Middle Atlantic Conferen
(MAC), the Eastern Collegiate Athletic Conference (ECAC), and t
National Collegiate Athletic Association (NCAA).

The goal of the intramural program is to provide a comprehensive
of recreational and fitness activities throughout the academic year
the University community. Students, faculty and staff participate in in
vidual, dual and team competitions in traditional sports as well as
innovative activities like Plyometrics, Free Throw Competition and A
obics. Events are organized in structured tournament competition a

one-day special events, using the indoor facilities of the Marts Center as well as the spacious grounds of the Ralston Field Complex.

Wilkes places the highest priority on the overall quality of the educational experience and on the successful completion of the student's academic programs. The University seeks to establish and maintain an environment in which a student-athlete's athletic activities are conducted as an integral part of the educational experience. The athletic and intramural programs function, then, in an environment that provides for the health and welfare of the student-athletes and values cultural diversity, gender equity, principles of fair play and amateur athletics competition throughout the University community.

Continuing Education and Cultural Affairs

A variety of non-credit courses, exhibits, workshops, and performances are provided to enhance community life and to help individuals attain career goals. The Sordoni Art Gallery brings programming in the fine arts to both the campus and the Wilkes-Barre area. Throughout the year, music and theater programs offer concerts and dramatic productions at the Dorothy Dickson Darte Center for the Performing Arts. Continuing education courses are offered for personal educational enrichment as well as for the preparation of new entrants to the job market and the in-service training of established professionals.

University Activities

In addition to the curricular and co-curricular activities of particular organizations, a number of all-campus and campus-community events are held each year. Family Visitation Day, Homecoming, Winter Weekend, and the Annual Block Party are typical of the social and cultural events which help to promote an active and involved student body. The University joins area cultural groups each year for the annual Cherry Blossom Festival and for the Fine Arts Fiesta, a four-day festival of music, drama, and the arts presented each spring. A carefully selected Concert and Lecture series is presented throughout the academic year at Dorothy Dickson Darte Center for the Performing Arts and is open to the campus and to the community without charge, as are regular concerts and recitals.

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Student Services

Wilkes takes seriously its commitment to encourage students to dis cover their own abilities and potential and to assist them in making sound independent decisions. Students are expected to consult regularly wi classroom instructors, faculty advisors, the student affairs deans, depar ment chairpersons, or academic deans regarding academic matters. Re ognizing that students sometimes need additional guidance in resolvi personal, social or academic problems, the University has also institutio alized a variety of programs to assist students, individually and in group

The Student Affairs Office

The Student Affairs Staff works with students in a holistic manne providing guidance and support in students' pursuit of their educationa goals and in their development as persons preparing to assume th responsibilities of maturely educated persons. Staff members seek t help students resolve personal and academic problems, coordina emergency situations involving students, and handle referrals fro members of the University community. The Dean of Student Affair having familiarity with University resources, serves as an ombudsman a well as a sounding board for student concerns. The Offices of Residenc Life, Career Services, Student Activities, Health Services, Campu Counseling, Cooperative Education, Part-time Programs, Continuin Education, Upward Bound, Learning Center/Act 101, Multicultura Affairs and Volunteer Services report to the Dean of Student Affairs.

New-Student Orientation Program

The transition from the directed work of the high school to the ind pendent and more intensive work of the university is eased by introdu ing new students to the University and its services before class formally begin. Two orientation periods during the summer and the da preceding the start of the term are set aside to assist new students planning their academic programs and learning about the campus, th curriculum, and student activities. At this time, students are also intr duced to their academic advisors and briefed on the advising system.

Health Service

The University Health Service maintains regular hours while the Un versity is in session for the fall and spring semesters. Registered nurs are available while the Health Service is open, and a physician is ava able at specified hours during the week. Appropriate referrals are ma as necessary to community physicians and hospitals. The Universi Health Service does not provide clinic hours during the summer month

In times of escalating health care costs it is essential for students to have health insurance coverage.

Counseling and Testing Service

The Office of Campus Counseling assists students in resolving personal concerns or problems. Appointments are available throughout the day and on evenings and weekends if necessary. Referrals to community agencies and other professionals are made as necessary. The Director of Counseling also works closely with student groups and the professional staff of the University to provide workshops and group sessions on areas of interest or concern. Testing services are also available, at no charge, to Wilkes students.

Special Advising and Counseling Services

Due to the intricacies of certain programs or requirements imposed by professional and graduate schools or external accrediting agencies, the University has named advisors in special areas of interest. Specially trained pre-medical advisors function as special advisors to all students interested in professional or graduate school opportunities in medical or health-related fields. The Pre-Law Advisors work with students from any discipline who wish to go on to law school. The International Studies Advisors counsel students in matters relating to studying abroad and career and professional opportunities in this field. The Coordinator of Cooperative Education counsels and advises students interested in this program or a variety of other internship possibilities. Information on any of these special services is available at the Registrar's Office and the Office of Student Affairs.

Career Services

The Office of Career Services is the liaison between the University and potential employers in business, industry, government, and educational institutions. Various services are offered to assist students at all stages of their career development. No appointment is usually necessary and students are encouraged to participate in this service program by registering at the Max Roth Center at 215 South Franklin Street.

Typical services of the Office include career counseling, workshops on resume preparation, interviewing skills, and job search strategies. In addition, the Career Services Office provides a credentials service for all registered candidates, maintains contact with professional and educational organizations through an on-campus recruiting program, and shares job information on various full-time and part-time opportunities of interest to students and alumni.

Flexibility and planning are essential for choosing a major and determining career goals. A Career Resource Library is available to identify a variety of career options for students in any major, and the Career Services Office exists to help the student effectively negotiate these and other career planning tasks.

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Each year Wilkes participates in CAREER DAY, a program spo sored jointly by area colleges during the fall semester. At this eve approximately sixty organizations send employer representatives meet with students about available career opportunities. In additi CAREER EXCHANGE, a program sponsored every other year, allo students to meet with Wilkes Alumni and conduct information inte views to facilitate career planning.

Registrants are urged to update their credentials file regularly and maintain contact with the Office regarding their career activities.

Writing Center

The Writing Center, located in the Classroom/Office Building, is ava able to all Wilkes students who seek personal assistance with writing pro lems or writing assignments. Students who experience writing difficult in courses may be referred to the Center to hone their writing skills.

Day Care Service

Since 1982, the University has provided partially subsidized day care ser ice to full-time students with a certain goup of approved local providers. T service offers regular day care services at a reduced fee to students. Childr must attend on a regular, scheduled basis to be eligible for the reduced f Day care services are coordinated through the Learning Center.

Bookstore

The Bookstore sells new and used books, stationery and supplies, a memorabilia during normal class hours, and it is open for additio hours at the beginning of each term. The bookstore accepts cash, p sonal checks (with appropriate identification) and Visa or MasterCa

University College

University College, housed in the Conyngham Student Center, pr vides enrollment and advising services for all part-time undergraduat is the point of entry and home for all undeclared students until they sel their major field of study; provides academic support services and su plemental instruction for all enrolled and prospective students; admin ters Summer School, Intersession and the Weekend undergradu programs; administers the University's precollege enrichment progra coordinates with the academic departments to provide an effective pr gram of academic advisement; and offers special advising and supp services for the University's adult and international student populatio

Student Advisement

Specially selected faculty members and administrators have be designated freshman advisors on the basis of their knowledge of cur ular matters and, more generally, the University and its services. Ea freshman is assigned to a freshman advisor during the orientation per

nd will meet with this advisor regularly to arrange schedules, discuss academic and career plans, and deal with problems or questions as they arise. These faculty advisors add the special expertise of their disciplines to the advising process. If the student has indicated a major at admission, he or she will be advised by a freshman advisor from the relevant department or program, from the start of his or her studies. Students who have not identified a major work with advisors from University College who have a special expertise in advising undeclared students. University College advisors work with undeclared students until a major field has been chosen; these students then are assigned to a departmental advisor.

Learning Center

The Learning Center, third floor of Conyngham Hall, provides free tutorial services in most courses to Wilkes students. Services include individual tutoring, disability support services, group study sessions, small group supplemental instruction seminars, and assistance in basic skills.

International Students

The Associate Dean of Student Affairs provides immigration and visa information and assistance as well as advice on personal issues. The Associate Dean also provides orientation to life in the United States and the American educational system; assists students in dealings with U.S. and foreign government agencies, other campus offices and departments, and the community; and serves as advisor to the International Student Organization. These services are available to all international students, non-immigrants and immigrants alike.

Act 101 Program

A program for students from Pennsylvania who need academic and financial support, the Act 101 Program allows educationally underprepared students to improve their skills in verbal and written communication, reading comprehension, mathematics and problem solving in an effort to acquaint students with and help them adjust to the many new experiences provided by a college education. The program provides for tutoring and counseling to enhance the students' potential for success in college. Inquiries about this program may be directed to the Admissions Office or the Act 101 Office, third floor, Conyngham Hall.

Upward Bound Program

A federal program at Wilkes since 1967, the Upward Bound Program provides disadvantaged high school students with a college preparatory program of curricular and extracurricular activities designed to improve academic skills and self-confidence and to deepen curiosity and human understanding. Students attend weekly classes and tutoring and counseling sessions on campus. In the summer, the six-week residential program prepares students for fall classes and provides intensive career guidance.

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Academic Information

The Curriculum
The Degrees
Adult, Graduate and Continuing Education
Academic Policies and Procedures
Academic Requirements
Grades
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Academic Information

Calendar

The academic year consists of two semesters. The fall semester normally begins in late August and concludes with final examinations in December. The spring semester begins in mid-January and closes with a final examination period in May. An optional Intersession is offered in January. Commencement exercises are held at the close of the fall and spring semesters as well as at the close of the Summer Sessions.

The University also provides a broad range of courses in three different summer sessions. The first summer session begins in early June and concludes in mid-July; the second session begins in mid-July and ends in late August.

A nine-week evening session complements these two day-school summer sessions; the evening session begins in early June and ends in early August.

Course Numbering

Courses are designated by three-digit numbers. The first digit denotes the level of the course as follows:

100-199 Introductory courses
200-299 Intermediate courses
300-399 Advanced undergraduate courses
400-499 Courses for graduate students and advanced undergraduates
500-599 Courses for graduate students only (except with special permission)

The second digit indicates subfield within a discipline, as defined by each department. The third digit may designate, when appropriate, either sequencing or time of year, at the discretion of the department.

Degree Programs

Wilkes offers undergraduate programs leading to the Bachelor of Arts, Bachelor of Business Administration, Bachelor of Science, and Bachelor of Music degrees. Degree programs have been carefully designed so that students may meet the entrance requirements of graduate and professional schools, but they also are structured to ensure that all Wilkes undergraduate degrees represent the broad and solid base of general education that is central to responsible participation in human affairs. Each degree program is designed to achieve particular educational objectives; however, all baccalaureate programs share a set of distinctive goals, which define the Wilkes approach to baccalaureate education.

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The Curriculum

The Wilkes Curriculum has three components. The first is a set o General Education Requirements, which provides a common founda tion in the arts and sciences for all bachelor's degrees awarded by th University.

The second component is the major. This component provides for in depth study of a field of specialization. The requirements for each majo offered are found under the departmental listings.

The third component, elective courses, enables students to pursu personal interests, to explore new areas of learning, or to complete minor or a second major.

General Education: The First Curricular Component

The General Education Requirements are an affirmation of th strong belief of the Wilkes Faculty in the value of study in the arts an sciences for all students. They are intended to serve as a foundation o which all degree programs are based and include a broad spectrum o courses designed to stimulate the student's intellectual, personal, an social development.

The General Education Requirements for all programs follow. Stu dents are urged to use this outline of these Requirements as an explana tion of the **Recommended Course Sequence** provided for each major i this Bulletin. With the exception of English 101 and Freshman Founda tions 101, which are specifically designated, the designation "Distributio Requirements" in the **Recommended Course Sequence** for each major is reference back to this statement of the General Education Requirement

It is the student's responsibility to insure that all degree requirement including the General Education Requirements, are satisfied.

General Education Requirements

The faculty has approved the following set of General Educatio Requirements which a student must satisfy in order to be eligible fo graduation.

Skills Requirements . . . . . .0–13 hours

I. Computer Literacy

Completion of CS 115 or higher

OR

2 Computer Intensive courses . . . . . .minimum 3 credit hour

Students who do not complete CS 115 or test out of this skill area can satis the computer literacy requirement by completing courses that appear on th Computer Intensive (CI) List. The list of computer-literacy skills, as well the list of available CI courses, is available through the Registrar's Office.

II. Written Communication

A. English Composition . . . . . .4 credit hour

B. Writing-Intensive Courses

Each student must complete three courses that appear on the Writing Intensive List, which is available in the Registrar's Office. At least one of these courses must be a three hundred (300) level course within the student's major field of study. Satisfaction of this requirement will not add credits to most students' programs.

III. Oral Communication

Completion of COM 101

OR

Two Oral Presentation Option (OPO) courses . . . .minimum 3 credit hours

The Registrar's Office maintains a list of OPO courses. OPO courses enable a specified number of students (or all students) in the course in a semester to complete the requirements for an OPO course. Satisfaction of the OPO requirement will not add credits to most students' programs.

IV. Quantitative Reasoning

Completion of MTH 101 or higher . . . . . .minimum 3 credit hours

**All students will be tested in skills areas and placed at the appropriate proficiency level. Students may opt or test out of each skill requirement by demonstrating competency through means designated by the department responsible for each skill area. Departments also will offer diagnostic test(s) for each skill area as well as offer guidelines for practice courses for each skill area. Please see your academic advisor for more information on program designated courses that will satisfy these requirements.*

Freshman Foundations . . . . . .0/3 credit hours

Completion of a Freshman Foundations (FF) course . . . . .3 credit hours

Each Freshman Foundations course will provide techniques that assist first-year students in achieving long term academic success at Wilkes University. Specifically, each of these courses will help develop the student's critical thinking skills, provide techniques for the effective evaluation and utilization of information resources, and aid the student in making the necessary academic transition from high school to the collegiate level.

NOTE: Students who have completed twenty-three (23) or fewer credit hours when they matriculate at the University are required to complete an FF course during their first semester. All students who have completed more than twenty-three (23) credit hours when they matriculate at the University are not eligible to take a FF course. A student may obtain academic credit towards graduation for only one (1) FF course.

Distribution Requirements . . . . . .24 credit hours

Area I. The Humanities . . . . . .minimum 9 credit hours

ENG 120 – Introduction to Literature . . . . . .3 credit hours

HST 101 – The Historical Foundations of the Modern World .3 credit hours

FOREIGN LANGUAGE at level of competence . . . . . .3 credit hours

OR

PHL 101 – Introduction to Philosophy . . . . . .3 credit hours

Students may request, through their academic advisors, a course substitution within this Area. For more details on course substitution policies, contact the Office of the Dean of the College of Arts, Sciences and Professional Studies. Forms for course substitution can be obtained from the Registrar's Office and must be returned to the Registrar's Office when completed.

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Area II. The Scientific World . . . . . .minimum 6 credit hou

Students must complete two (2) of the courses listed below. These course must be within two (2) different sub-areas listed below. At least one (1) of th two (2) courses must contain a laboratory component.

Sub-Areas	Course Options
Biology	BIO 105 or BIO 121
Chemistry	CHM 105 or CHM 115
GeoEnvironmental Sciences	GES 105, GES 211, GES 230, GES 24 or GES 251
Physics	PHY 105, PHY 174, or PHY 201

A number of degree programs satisfy the core requirements in this Area o the basis of successful completion of the science requirements within the ind vidual program. The following programs meet the aforementioned criteria:

Applied and Engineering Sciences, Biochemistry, Biology, Chemistry, Com puter Science (B.S. degree program only), Earth and Environmenta Sciences, Engineering (Electrical, Environmental, and Mechanical), Eng neering Management, Health Sciences, Mathematics (B.S. degree progra only), Nursing, Prepharmacy, Physics.

Students not enrolled in any of the programs listed above may reques through their academic advisors, a course substitution within this Area. Fo more details on course substitution policies, contact the Office of the Dean the College of Arts, Sciences and Professional Studies. Forms for course sub stitution can be obtained from the Registrar's Office and must be returned t the Registrar's Office when completed.

Area III. The Social Sciences . . . . . .minimum 6 credit hou

Each of the following courses is three (3) credit hours. Students must com plete two (2) of the five courses listed below.

ANT 101 – Introduction to Anthropology

EC 102 – Principles of Economics II

PS 111 – Introduction to American Politics

PSY 101 – General Psychology

SOC 101 – Introduction to Sociology

Students may request, through their academic advisors, a course substitutio within this Area. For more details on course substitution policies, contact t Office of the Dean of the College of Arts, Sciences and Professional Studie Forms for course substitution can be obtained from the Registrar's Office a must be returned to the Registrar's Office when completed.

Area IV. The Visual and Performing Arts . . . . . .minimum 3 credit hou

Each of the following courses is three (3) credit hours. Students must com plete one (1) of the four courses listed below.

ART 101 – Experiencing Art

DAN 100 – Dance Appreciation – Comprehensive Dance Forms

MUS 101 – Introduction to Music I

THE 100 – Approach to Theatre

Through successful audition and written permission of the Chairperson of t Department of Visual and Performing Arts, students may substitute three (hours of performance/studio experience for the above requirement. A cop of the written permission must be on file in the Registrar's Office.

Senior Capstone

All students will be required to complete a senior capstone course that is determined by their academic program. For more details, see the bulletin listing for your academic program. Satisfaction of this requirement will not add credit hours to most students' programs.

Honors in General Education

The Honors Program in General Education is designed for exceptionally talented and strongly motivated students. Successful applicants (for qualifications and application procedures, contact the Admissions Office), who are designated University Scholars, participate in enriched academic and extra-curricular programs which foster creativity, independence, and responsibility.

To earn a General Education honors designation upon graduation, University Scholars need to complete four General Education courses on an honor basis. They can fulfill this requirement by enrolling either in courses designated honors options sections or in special honors seminar sections of the General Education Requirements. University Scholars supplement their enriched academic experience by participating in the meetings and cultural excursions of the University Honors Society.

Selection of a Major: The Second Curricular Component

Each student must complete a major in a discipline or area of concentration in order to graduate. Specific requirements for each major are described in detail in the departmental listing in this Bulletin. The major must be declared prior to the first semester of the student's junior year.

Bachelor of Arts Degree — Majors

Majors in the Bachelor of Arts degree program may be selected from the following subject areas:

Applied and Engineering Sciences	Earth and Environmental Sciences	Mathematics
Biochemistry	Elementary Education	Musical Theatre
Biology	English	Philosophy
Chemistry	French	Political Science
Communications	History	Psychology
Computer Science	Individualized Studies	Sociology
Criminology	International Studies	Spanish
		Theatre Arts

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Bachelor of Science Degrees — Majors

Majors in the Bachelor of Science degree program may be selected from the following subject areas:

Accounting	Earth and Environmental Sciences	Mathematics
Biochemistry	Electrical Engineering	Mechanical Engineering
Biology	Engineering Management	Medical Technology
Chemistry	Environmental Engineering	Nursing
Computer Information Systems	Individualized Studies	
Computer Science		

Bachelor of Business Administration Degree — Business Major

Bachelor of Music Degree — Majors in Performance and Music Education

Teacher Education

Students who wish to prepare for a teaching career in secondary schools select an appropriate disciplinary major and use their elective credits to meet teacher-certification requirements. Music Education majors must complete all components of the program and secure the approval of the faculty of the Department of Visual and Performing Arts. Students who wish to prepare for a teaching career in elementary education select an appropriate disciplinary major and major in elementary education. A list of the courses needed for certification is provided in the departmental description of the Education Department in this Bulletin. Students planning a teaching career must seek counseling in the Education Department early in their first semester.

Elective Credits: The Third Curricular Component

The third component of the Wilkes Curriculum, after the General Education Requirements and the Major Requirements, is composed of elective courses. Students choose elective courses for a variety of reasons: to pursue an interest or to meet requirements for admission to graduate or professional schools or to hone particular skills.

Selection of a Minor

One of the common reasons students select elective courses is to complete a minor in a field other than the student's major field. Although not required for graduation, minors are formally recognized on the student's transcript and may enhance a student's credentials. (Students majoring in a discipline are ineligible for formal recognition of a minor in the same discipline.) Students should consult the departmental listing in this Bulletin to review the specific requirements for formal recognition of a minor field in particular disciplines. They must complete the appropriate form in the Registrar's Office, should they decide

to complete a minor. Students must complete a minimum of one-half of their minor field credits in Wilkes University courses for the minor to be formally recognized on the Wilkes transcript.

Cooperative Education

Cooperative Education, another possible use of elective credits, is a program that formally integrates a student's studies with work experiences in employing organizations. Students may alternate semesters of full-time study and full-time professional work experience or they may combine work and study in the same term; in either case, students earn academic credit and, in many cases, a salary while gaining valuable experience in a work environment. Internships are available throughout the United States in the summer, spring and/or fall, and internship placements are readily available to eligible students. Students are urged to explore the various possibilities with the Coordinator of Cooperative Education as soon as possible after their arrival on campus.

Study Abroad

Study Abroad is an elective option to all students in good academic standing who wish to study at overseas institutions. Earned academic credit may be applied toward the requirements for a bachelor's degree at Wilkes. Overseas study may be for a period of a year, a semester, or a summer. A wide variety of curricular offerings, international internships, and living situations are available in over 50 countries throughout the world. Students interested in this option should contact the Study Abroad Advisor in the Department of Humanities.

Double Major

Students may choose to use their elective credits to complete a second major. The student must declare intent to graduate with a double major by completing the appropriate form at the Registrar's Office. It is the student's responsibility to secure the approval of the chairpersons of both departments to ensure that all requirements of the two majors are fulfilled.

Second Baccalaureate Degree

Students who hold a bachelor's degree with a major in one discipline from this or another accredited institution may earn a second baccalaureate degree at Wilkes by completing a major in another discipline, provided the following conditions are met. **All** candidates for the second degree must earn at least thirty credits at Wilkes beyond those earned for the first degree and they must meet all of the Wilkes requirements for a degree. Wilkes students may be graduated with two bachelor's degrees simultaneously, but they must complete 30 credits beyond the requirements for the first degree to be eligible for the second degree.

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Adult, Graduate and Continuing Education

Part-time Studies

The University welcomes part-time undergraduate students into all of its regular sessions. It has also established the Evening and Weekend Programs to maximize scheduling possibilities for students who cannot attend day classes. Majors in several disciplines are offered in the evening and on weekends, and students may utilize both options, in addition to day-classes, as their commitments and interests change. Many students complete their degree requirements in one or the other of these special formats.

Non-degree students may be admitted to classes which they are qualified to take by reason of their maturity, previous education, and work experience. Secondary school training is desirable, but not necessary provided the student is qualified to follow such special courses of instruction. Inquiries about all of these programs should be directed to the Office of Part-time Programs.

Evening Program

The Evening Program is designed to meet the needs of those students who cannot attend daytime classes but wish to pursue a degree. Courses generally meet one or two nights per week during the academic year and two nights per week during the nine-week evening summer session. Majors in the following fields are provided in the evening: Accounting, Business Administration, Computer Information Systems, Electrical Engineering, Engineering Management, and History. Students interested in evening courses should contact the Office of Part-time Programs to plan their courses of study.

Weekend Program

Wilkes' Weekend Program provides upper-division courses on campus, enabling graduates of accredited two-year institutions to complete bachelor's degrees in certain majors by taking courses only on weekends. Majors available in the Weekend Program include Accounting, Business Administration, Psychology, and Sociology. The courses meet every third weekend. Students may carry as many as 9 credits in each of three different sessions arranged over the calendar year. Inquiries about the Weekend program should be directed to the Office of Part-time Programs.

Summer Programs

Wilkes offers a variety of summer courses, workshops, mini-courses and programs with outdoor activities during the summer months. The summer schedule includes two five-week daytime sessions and a nine-week evening session, plus special sessions. Students interested in the

Summer Programs should contact the Office of Part-time Programs for specific information.

Graduate Studies

Programs leading to the master's degree are available in the fields of Business Administration (MBA), Education (M.S. Ed, with a variety of concentrations), Electrical Engineering (MSEE), Mathematics and Nursing. Wilkes envisions an expanding role in graduate eduation; however, the primary focus of the institution will remain on exellence in undergraduate studies.

A separate Graduate Bulletin, which describes graduate programs in detail, is available upon request from the Office of Graduate Studies.

Continuing Education

In addition to courses for credit, Wilkes provides a non-credit Continuing Education program to respond to the needs and interests of the community. This program includes training for business, industry, government, associations, social service agencies, and individuals , through the use of public seminars, in-house presentations and conferences. Inquiries about offerings of the Continuing Education Office should be addressed to the Director of Continuing Education.

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Academic Policies and Procedures

Registration

Incoming freshman and transfer students register during the orient tion sessions that precede each semester. All students are expected preregister with their advisors and to register on the dates specified the University Calendar. Additional information on registration proc dures and the exact dates of the orientation sessions can be obtain from the Office of Admissions or the Registrar's Office.

Attendance

Attendance at all classes is expected and required. Repeat absences are a sufficient cause for failure.

Student Load

Students may register for as many as 18 credits in a semester. No st dent shall be allowed to carry more than 18 credits without the writt approval of his or her advisor. An overload will be permitted only f students with a grade point average of 3.00 or higher.

Wilkes/College Misericordia/King's Cross-Registration

Wilkes University, College Misericordia and King's College off their students an opportunity to cross-register for courses at the oth institutions. Students register through the Registrar at the institution which they are enrolled as degree candidates. Interested students shou confer with the Registrar for further details.

Auditing Courses

Auditing courses is a practice designed primarily to allow students expand their educational opportunities. Courses may be taken on an Au basis only if formal registration is completed prior to the end of the fi week of the semester. Permission of the course instructor will be requir Students withdrawing from a course who wish to attend additional clas in that course may do so with the permission of the instructor. Howev these students will receive a grade of "W" (withdrawal) in all cases.

Students auditing courses will maintain all standards, including atte dance, required by the instructor. Students who do not maintain the standards will not be awarded Audit recognition. All relevant fees w be charged.

Change of Major

Students who wish to change their majors must obtain the approval the advisor and the department chairperson. The student shall satis

the curricular requirements of the Bulletin in force at the time of the change. Change-of-major forms are available in the Registrar's Office.

Transfer of Credits

Wilkes students who wish to take courses at another accredited institution (except College Misericordia and King's College) must have completed the Transfer of Credit form, available at the Registrar's Office. The student must earn a grade of 2.00 or higher for the work to be credited toward graduation. All students must complete at least 30 credits in residence at Wilkes. Students should consult the section of this Bulletin called **Admission of Transfer Students** for policies and rules governing transfer credits and transfer students.

Grades earned for transfer credits are not included in the calculation of grade point averages.

Withdrawals

A student may withdraw from a course during the first three weeks of the semester by informing the instructor, completing a withdrawal form which is co-signed by the student and the student's advisor, and returning the signed form to the Registrar's Office within the first three weeks of the semester. A student may withdraw from a course from the end of the third week through the eighth week of the semester only with the approval of both the instructor and the student's advisor. Thereafter, a student may withdraw from a course only for medical reasons, supported by a written excuse from a physician, or other extremely serious circumstances, as determined by the dean of the college/school in which the course is being taught, in consultation with the instructor and the Dean of Student Affairs.

It is the student's responsibility to initiate withdrawal from a course by obtaining the withdrawal form from the Registrar's Office, having it signed by the appropriate personnel, and returning it to the Registrar's Office within the three- or eight-week periods described above. **A grade of "0" is assigned by the instructor and recorded for all courses in which no official withdrawal has been completed by the student.**

For a thorough discussion of this policy, refer to the **Wilkes University Student Handbook.**

The Family Educational Rights and Privacy Act of 1974

In accordance with the provisions of "The Family Educational Rights and Privacy Act of 1974," students, upon request, will be given access to all of their evaluative records which have been established by Wilkes University, with at least one day's advance notice to the office responsible for the records to which the student seeks access.

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Academic Requirements

Grades

The primary purpose of any grading system is to inform the student of his or her academic progress. Grade reports are sent to students at the end of each term. Mid-term reports are sent if the work completed is unsatisfactory.

Eight numerical grades are given for academic work:

Grade	Interpretation
4.00	Academic achievement of outstanding quality.
3.50	Academic achievement above high quality.
3.00	Academic achievement of high quality.
2.50	Academic achievement above acceptable quality meeting requirements for graduation.
2.00	Academic achievement of acceptable quality in meeting requirements for graduation.
1.50	Academic achievement above the minimum quality required for credit.
1.00	Academic achievement of minimum quality required for credit.
0.00	Academic achievement below the minimum required for course credit.
P	Passing, no credit.
W	Withdrawal.
N	Audit, no credit.

A grade of "X" means that the student received an incomplete grade. Incompletes will be granted to students who, because of illness or reasons beyond their control, have been unable to satisfy all course requirements including the final examination. When such a grade is given, the incomplete work must be made up by or before the end of the fourth week following the last day of the examination period or the grade becomes zero unless a special extension has been approved by the Registrar.

Course Credits and Grade Point Averages

Each course at the University is assigned a specific number of credits. For example, History 101 is a 3-credit course and Chemistry 115 is a 4-credit course. Usually, credits assigned to the course are determined by the number of hours that the class meets per week. Credits may also be defined by the total number of hours a class meets per semester. Over the length of a semester, a credit hour is equivalent to 15 hours of classroom contact plus appropriate outside preparation; or 30 hours of supervised laboratory plus appropriate outside preparation; or 45 hours of internship/clinical experience; or a combination of the foregoing.

Below is an example illustrating the method used to compute grade point averages.

Course	Credit Hrs. Attempted		Grade		Quality Points	Credit Hrs. Passed
Art 101	3	x	4.00	=	12	3
Psy 101	3	x	0.00	=	0	0
Fr 101	3	x	2.50	=	7.5	3
Hst 101	3	x	1.50	=	4.5	3
Mus 101	3	x	3.00	=	9	3

Total credit hours attempted . . . 15
Total credit hours passed 12
Total quality points earned 33
Average 33q.p. ÷ 15 hrs. attempted = 2.20

Notice that the student has accumulated 12 credits toward graduation. The zero grade in Psychology means that the student must repeat that course in order to earn credit for it.

Averages are cumulative; the work of each semester will be added to the total. To graduate a student must have, at the end of the senior year, at least a 2.00 average for all courses and a 2.00 average in the major field.

Transfer credits are not included in the calculation of grade averages.

Academic Honors

The faculty grants recognition for high quality work. To be on the Deans' List, published at the end of each term, a student must earn a semester grade point average of 3.40 or higher for all courses taken. Students taking fewer than twelve credit hours will not be eligible.

Academic Probation and Ineligibility

Freshmen, defined as students who have completed thirty-six or fewer credits, must maintain a 1.70 cumulative grade point average. All other students must maintain a minimum 2.00 in both their major field and cumulative grade point averages. A student who falls below the minimum average required will automatically be placed on academic probation, as a warning to the student that he or she is not making satisfactory progress towards a degree, or may be declared academically ineligible.

Students placed on academic probation may be restricted in the number of credits they take the following semester, based on the recommendation of the student's academic advisor and such action by the Academic Standards Committee. The Committee may impose additional restrictions and requirements in individual cases, if it is determined that such restrictions and requirements are in the best interest of the student. Such restrictions may affect the student's participation in extracurricular activities.

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Students who remain on academic probation for two consecuti semesters are subject to designation as academically ineligible to co tinue at the University.

Students who have been declared academically ineligible are n allowed to enroll in any course work at Wilkes for a period of one seme ter. To be considered for readmission such students must apply to th Academic Standards Committee and be approved for readmission wi a probationary status. Students applying for readmission must prese evidence of enhanced prospects for academic success.

A decision of the Academic Standards Committee may be appeale by the student at the designated meeting for appeals at the conclusion the fall and spring semesters. Appeals must be presented to the Co mittee either in person or by letter at the appropriate appeals meetin and should include good and sufficient reasons for appealing.

Academic Honesty

Academic honesty requires students to refrain from cheating and t provide clear citations for assertions of fact as well as for the languag ideas and interpretations of others that have contributed to their writte work. Failure to acknowledge indebtedness to the work of others cons tutes plagiarism, a serious academic offense that cannot be tolerated i a community of scholars. All instances of academic fraud will b addressed in accordance with the policies of the University.

Graduation Requirements

It is the student's responsibility to meet graduation requirements. A candidates for degrees are expected to be present at Commencement. circumstances prevent their attendance, students must apply to th Dean of Student Affairs for permission to take the degree or certifica in absentia.

The faculty has approved the following requirements which a stude must satisfy in order to be eligible for graduation:

1. Complete a minimum of 120 credit hours.
2. Satisfy all requirements in the major(s). (Requirements for graduation va from department to department. See the appropriate section in this Bulle for the number of credit hours required by each major.)
3. Complete all subjects required for the degree as stated in the Bulletin in for at the time of admission to the program or any subsequent Bulletin.
4. Achieve a minimum cumulative average of 2.00 for all courses.
5. Achieve a minimum average of 2.00 for all subjects within their major.
6. Achieve a minimum cumulative average of 2.00 for all subjects within the chosen minor(s).
7. Demonstrate competence in written and spoken English.
8. Satisfy mathematics and computer literacy and other curricular skills a

knowledge requirements by participation in assessment procedures.

No student shall be graduated until all financial obligations to the University have been fulfilled.

Degree Honors

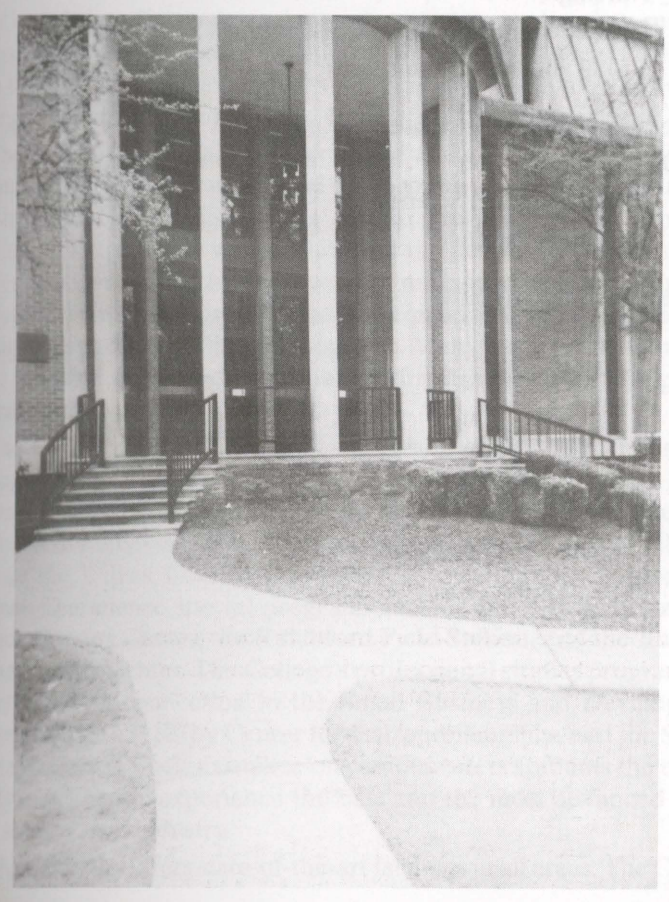
The granting of honors at Commencement is based upon the entire academic record achieved by the student at Wilkes University.

Transfer students must have completed a minimum of 60 credits at Wilkes to be eligible to be considered for honors.

Requirements for Degree Honors are:

Summa Cum Laude	**3.800**
Magna Cum Laude	**3.600**
Cum Laude	**3.400**

For Degree Honors, grade point averages are not rounded.



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Academic Structure

The College of Arts, Sciences and Professional Studies

Departments

Aerospace Studies
Biology, Chemistry, and Health Science Programs
Business Administration and Accounting
Education and Psychology
Engineering and Physics
Geo-Environmental Sciences and Engineering
Humanities
Math and Computer Science
Nursing
Social Sciences and Communications
Visual and Performing Arts

The School of Pharmacy

Departments

Pharmaceutical Sciences
Pharmacy Practice

Academic Programs

The College of Arts, Sciences, and Professional Studies

Ronnie C. Bedford, Ph.D.
Dean of the College

The College of Arts, Sciences, and Professional Studies offers a wide diversity of programs. A goal of the College is to provide a sound general education for all graduates and to insure a quality professional preparation within each major program. In other words, each program provides the necessary skills for professional employment and job success in concert with those qualities all educated, productive citizens should possess for lifelong learning.

In the General Education courses within the College, students will take courses that teach them to think critically and creatively, to communicate their knowledge effectively, and to understand their place in a complex, diverse, and changing world. Within the disciplines, students will study with talented faculty in extending the boundaries of human knowledge through scholarship, research, field work, and artistic expression.

The College offers both undergraduate and graduate degrees in programs ranging from the visual and performing arts to engineering and nursing. The College also offers several pre-professional programs leading to postgraduate work in law and the health care industry. The professional programs in engineering, nursing, and accounting are accredited by national professional organizations, signifying the high quality of each of these diverse programs. Many undergraduate majors offer valuable field work experience through industry co-ops and internships.

The College is enriched culturally, academically, and industrially through a strong regional connection in all areas. The College is linked to various special programs on campus that enhance arts, sciences, and professional studies opportunities. Such special opportunities in the arts include the Wilkes Community Conservatory and the Sordoni Art Gallery. The science special programs include the GIS Mapping and Remote Sensing Center, the Ratchford Field Station, and the Environmental Quality Center. The College's professional studies programs are enriched with a connection to the Small Business and Development Center, the Allan P. Kirby Center for Entrepreneurship, and the Survey Research Center. Their existence on campus offers students the opportunity to see and to experience the best and the most advanced in the arts, sciences, and industry.

The University offers state-of-the-art facilities in all areas. The College

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programs incorporate the best of these facilities into their discipline offe
ings. For example,the Dorothy Dickson Darte Center for the Performi
Arts has cutting edge theatre technology that showcases campus perfor
ances in music, theatre, dance and visiting lecturers in all disciplines. T
Shelburne Telecommunications Center allows students the opportunity
work in a professional television studio and with state-of-the-art Distan
Leanring equipment. Also, the College houses the Regional Compu
Resource Center which provides microcomputer laboratories and techn
cal support to teachers enrolled in graduate study at Wilkes.

The College includes the following academic departments:

Aerospace Studies
Biology, Chemistry, and Health Science Programs
Business Administration and Accounting
Education and Psychology
Engineering and Physics
Geo-Environmental Sciences and Engineering
Humanities
Math and Computer Science
Nursing
Social Sciences and Communications
Visual and Performing Arts

The College offers the following undergraduate degrees:

Bachelor of Arts Degree—Majors

Applied and Engineering Sciences
Art (minor only)
Biochemistry
Biology
Chemistry
Communications
Computer Science
Criminology
Dance (minor only)
Earth and Environmental Sciences
Economics (minor only)
Elementary Education
English
French
History
Individualized Studies
International Studies
Mathematics
Musical Theatre
Philosophy
Political Science
Psychology
Sociology
Spanish
Theatre Arts

Bachelor of Science Degree—Majors

Accounting
Biochemistry
Biology
Chemistry
Computer Information Systems
Computer Science
Earth and Environmental Sciences
Electrical Engineering
Engineering Management
Environmental Engineering
Individualized Studies
Mathematics
Mechanical Engineering
Medical Technology
Nursing

The College offers the following graduate degrees:*

Master of Business Administration
Master of Science in Education
Master of Science in Electrical Engineering
Master of Science in Nursing

* For more information on any of these masters' programs and their various optio
please consult the Wilkes Graduate bulletin.

The Nesbitt School of Pharmacy

Bernard W. Graham, Ph.D., R.Ph.
Dean of the School

The School of Pharmacy offers a four year professional program leading to the Doctor of Pharmacy (Pharm.D.) degree. Graduates of the program are eligible for state examination to become licensed pharmacists. The four years of education consist of three years of in-class (i.e. lecture, laboratory, discussion group) education and one year of experiential education. The professional pharmacy program at Wilkes is new; the first professional class entered the School in the fall of 1996 and graduated in May 2000.

The School also offers a Doctor of Pharmacy program for non-traditional students. This program is intended to allow an individual who has graduated from an accredited school of pharmacy with a B.S. and holds a valid pharmacy license to earn a Pharm.D. degree.

Our Mission

The primary mission of the Nesbitt School of Pharmacy at Wilkes University is to provide a dynamic, challenging, outcome driven, and integrated curriculum, focused on pharmaceutical care that will serve as the foundation for life long learning and practice. Consistent with the Wilkes University mission, the School of Pharmacy brings together and retains qualified students and a dedicated faculty and staff from a variety of disciplines in a supportive atmosphere that encourages intellectual and personal development.

Our Vision

We will be a national innovator in pharmacy education and a regional center for post-graduate pharmacy education. Our graduates will be able to provide quality pharmaceutical care to patients in a wide range of health systems, in urban and rural areas, and will be leaders in the profession. Finally, we will be a good corporate citizen through meaningful service to the University, the health professions and the local community.

Our Values

1.Teaching This is primarily a teaching institution; the student is our reason for being here.

2.Pharm.D. Teaching resources are devoted primarily to preparing students for one degree: the Doctor of Pharmacy.

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3. Communications Our graduates will have solid communication skil... In order to be effective professionals they must b... able to articulate their knowledge with health profe... sionals, administrators and patients.

4. TeamBuilding The ability to work effectively as part of a health ca... team is considered critical.

5. Interdisciplinary Approach Pharmacy does not have all of the answers ... health care or even pharmacy care problems. Th... broader perspectives of other academic disciplin... are actively sought in curricular design and teachin...

6. Small Size We are a small school and intend to remain small. Mea... ingful faculty-student interaction is valued. The size ... each entering pharmacy class is limited to 65 students.

7. Technology and Future Orientation Our facilities, curriculum and faculty are focus... upon training practitioners for the 21st centur... Emphasis is placed upon new technologies, as this i... major foundation for future pharmacy practice.

8. Research and Practice Research and practice are valued primarily as the... support our commitment to educational excellen... and faculty development and are valued as they affe... patient care and/or lead to the advancement of scien...

Accreditation

The American Council on Pharmaceutical Education (ACPE) h... granted the Doctor of Pharmacy (Pharm.D.) program at Wilkes Univer... sity full accreditation.

Admission

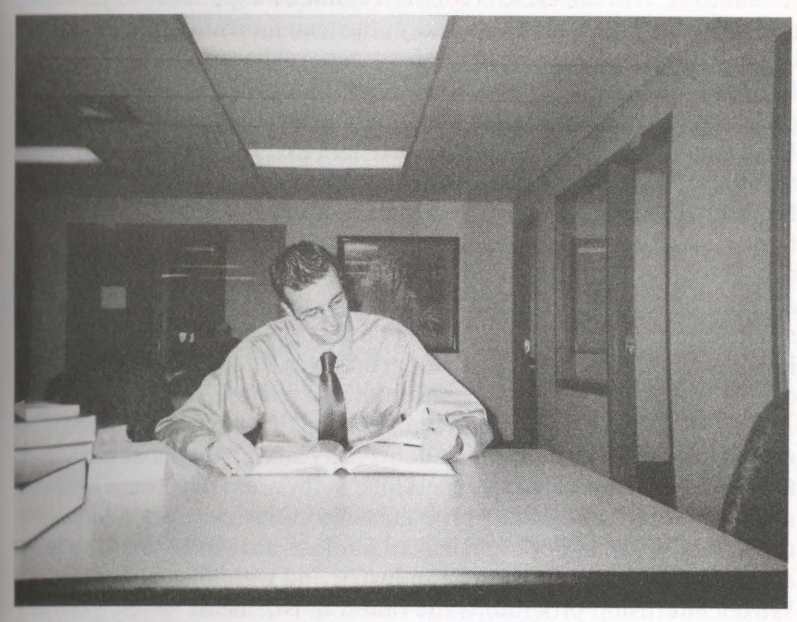
To be admitted into the professional program of the Nesbitt School ... Pharmacy, a student must have either enrolled and successfully com... pleted the *prepharmacy program* at Wilkes University or have submitte... a successful application to the School of Pharmacy. A description of th... application process for the prepharmacy program and *professional pro... gram* is found in the **Pharmacy Program** section of this bulletin. Infor... mation about successful completion of the *prepharmacy program*, th... curricula of the *prepharmacy program* and the *professional progra...* and progression requirements are also found in the **Pharmacy Progra...** section of this bulletin. A description of the Doctor of Pharma... program for non-traditional students is also found in the **Pharma... Program** section of this bulletin.

Facilities

The Nesbitt School of Pharmacy is housed in the Stark Learning Center overlooking the Susquehanna River. Facilities include modern pharmaceutical teaching and research laboratories, case conference rooms, a pharmacy information center, student activity space and faculty offices. Most lecture classes are held in other areas of the Stark Learning Center or in Breiseth Hall located across the courtyard from the Stark Learning Center.

Faculty

There are two academic departments in the School of Pharmacy. The Department of Pharmaceutical Sciences includes faculty in such areas as pharmacology, pharmaceutics and pharmacy administration. The Department of Pharmacy Practice includes faculty with practice specialties in such areas as drug information, community care, general medicine, primary care and critical care. When at full strength, the School of Pharmacy will have approximately twenty-four full-time faculty members.



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Academic Programs

ACCOUNTING

Professor Alves, Chairperson; Professor Emeritus, Capin; Associate Professor Emeritus Broadt; Associate Professors Chisarick, Rexer.

Total minimum number of credits required for a major in Accounting leading to the B.S. degree — 121.

Total minimum number of credits required for a minor — 18.

The Business Administration and Accounting Department offers a major in Accounting providing the necessary background for an entry level professional position in public, private or governmental accounting. Students receive the necessary educational background to compete successfully for placement in graduate and professional schools, and licensures as certified public accountants and certified management accountants. Those choosing a career in administration receive the managerial training necessary for success in a full range of leadership roles.

The accounting curriculum parallels that of business administration and contains a minimum of three tiers. The **first tier** begins with a comprehensive study of the arts, sciences, mathematics, communications, and humanities. This liberal arts core is a common experience to all majors and provides the basis for a broadly educated individual. The **second tier** of educational experience provides a general background in statistical, financial, and managerial techniques. All students majoring in the disciplines contained within the Business Administration and Accounting Department are required to complete BA 151, Introduction to Management and Entrepreneurship. Subjects included in this area of study are finance, economics, management, and computer science. The **third tier** of basic educational skills relates to the fields of financial and managerial accounting. A rigorous thirty-three credit hours are devoted to current accounting theory and applications through the use of texts, computer applications, cases, and practical experience. The sequence begins with introductory level accounting and progresses through intermediate, tax, cost, auditing, and accounting information systems. A **fourth tier** is available for students interested in gaining practical experience through an accounting internship. Most students are placed with public accounting firms where it is possible to experience many areas of accounting as well as a broad range of business problems in a short time-span. Additionally, for students with a more specialized interest, accounting internships are also available in banks, private industry, and with the government. The Wilkes internship program is the oldest in Northeast Pennsylvania and most successful interns have been placed in positions of their choice including the large international accounting firms. A **fifth tier**, a five-year BS/MBA program, is available for students who wish to meet the need

of a professional in the 21st century. This program offered by the Business Administration and Accounting Department has been developed to encompass each of the above-mentioned levels, along with an additional calendar year of graduate course work. Upon successful completion, the student will have earned a Bachelor of Science degree in Accounting and a Master of Business Administration degree with 157 credit hours of course work.

Students from other disciplines, even those unrelated to business or economics, have been inclined to select an **accounting minor** to enhance their major field of study. The minor provides the student with enough background to begin with professional entry-level employment while developing a background in his or her chosen field of study. The minor program is composed of Acc 101-102, Acc 203, and nine additional credits in accounting.

Accounting alumni can be found in public accounting firms ranging in size from those of individual practitioners to international organizations. Many of our graduates who began their careers in public accounting have since moved into leadership positions with government or private industry. The accounting major in the Business Administration and Accounting Department at Wilkes University will provide an individual with the combined educational skills to be a future success as a leader in the accounting profession, industry, or government.

Recommended Course Sequence for a Major in Accounting

First Semester		Second Semester	
Eng 101 Composition or	4	Eng 101 Composition or	4
Distribution Requirement	3	Distribution Requirement	3
CS 115 Computers and App.	3	COM 101 Public Speaking	3
BA 151 Introduction to Management		Distribution Requirements	6
and Entrepreneurship	3	Acc 101 Financial Accounting	3
FrF 101 Freshman Foundations	3		
Mth 107 Business Mathematics	3		
	15-16		15-16
Third Semester		**Fourth Semester**	
Acc 102 Managerial Accounting	3	Acc 203 Intermediate Accounting I	3
Ec 101 Economics I (Core Course)	3	Ec 102 Economics II (Core Course)	3
BA 234 Business Law	3	Distribution Requirements	6
Distribution Requirements	6	Free Elective	3
	15		15
Fifth Semester		**Sixth Semester**	
Acc 204 Intermediate Accounting II	3	Acc 205 Intermediate Accounting III	3
Acc 321 Taxes	3	Acc 322 Advanced Taxes	3
BA 319 Business Statistics	3	BA 321 Marketing	3
BA 351 Management of Organizations	3	BA 341 Managerial Finance	3
Free Elective	3	BA 352 Prod/Operations Mgmt.	3
		BA 354 Organizational Behavior	3
	15		18

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Seventh Semester		Eighth Semester
Acc 301 Advanced Accounting	3	Acc 311 Mgmt. Accounting II
Acc 331 Auditing	3	Acc 341 Accounting Info Systems
Acc 351 Senior Seminar	3	Acc 361 Internship or
BA 358 International Business Seminar	3	Free Electives
BA 360 Business Policy	3	
	15	

Recommended Course Sequence for A Major in Accounting (B.S. Degree) and a Master of Business Administration Degree (Five Year Program)

1st Semester		2nd Semester
Eng 101 Composition or	4	Acc 101 Financial Acc
Distribution Requirements	3	Eng 101 Composition or
CS 115 Computers and App.	3	Distribution Requirements
Mth 107 Business Mathematics	3	COM 101 Public Speaking
FrF 101 Freshman Foundations	3	Distribution Requirements
BA 151 Intro to Management		
and Entrepreneurship	3	
	15-16	

3rd Semester		4th Semester
Acc 102 Managerial Acc	3	Acc 203 Intermediate Acc I
Ec 101 Econ I (Core Course)	3	Ec 102 Econ II (Core Course)
BA 234 Bus Law and Ethics	3	Distribution Requirements
Distribution Requirements	6	Free Electives
	15	

5th Semester		6th Semester
Acc 204 Intermediate II	3	Acc 205 Intermediate III
Acc 321 Taxes	3	Acc 322 Advanced Taxes
BA 319 Business Statistics	3	BA 321 Marketing
BA 351 Mgmt of Organizations	3	BA 341 Managerial Finance
Free Elective	3	BA 352 Prod/Operations Mgmt
		BA 354 Organizational Behavior
	15	

7th Semster		8th Semester
Acc 301 Advanced Accounting	3	Acc 311 Mgmt Acc II
Acc 331 Auditing	3	Acc 341 Accounting Info Systems
Acc 351 Senior Seminar	3	Acc 361 Internship or
BA 358 Int'l Bus Seminar	3	Free Electives
BA 360 Business Policy	3	
	15	

MASTER IN BUSINESS ADMINISTRATION

(Total 36 Credit Hours)

Summer Session

MBA 540 Financial Management	3
MBA 552 Organizational Behaviour	3
MBA Electives	6
	12

9th Semester		10th Semester	
MBA 512 Business Research	3	MBA 513 Applied Business Models	3
MBA 520 Marketing Management	3	MBA 532 Management Economics	3
MBA 560 Finance and Managerial Accounting	3	MBA 590 Strategic Management	3
MBA 580 Bus. Issues in a Dynamic Environment	3	MBA Elective	3
	12		12

TOTAL PROGRAM CREDIT HOURS – 157

ACC 101. INTRODUCTORY FINANCIAL ACCOUNTING **Three credits**
Introduction to the accounting system and the applicable accounting principles and practices used by accountants and managers in decision making, planning, control, and preparation of financial reports.
Prerequisite: CS 115.

ACC 102. INTRODUCTORY MANAGERIAL ACCOUNTING **Three credits**
Introduction to the accounting requirements necessary in a management environment and the uses of accounting data for planning and control of business and non-profit activities.
Prerequisite: Acc 101.

ACC 203. INTERMEDIATE ACCOUNTING I **Three credits**
A study of the financial accounting and reporting system. Emphasis is placed on how basic standards and procedures relate to the accounting system as a whole. The course topics include an understanding of accounting information systems, summarizing techniques, spreadsheet procedures, extensive computer applications, and financial statement preparation based on current accounting concepts, standards, and principles.
Prerequisite: Acc 101.

ACC 204. INTERMEDIATE ACCOUNTING II **Three credits**
A study of the accounting standards applicable to all the corporate balance sheet accounts and their related counterparts that result in revenue and expense recognition on the income statement and statement of retained earnings. Included in this study will be a complete analysis and review of cash and receivables, inventories and cost of goods sold, plant and depreciation, intangibles and amortization, current and long-term liabilities, and stockholders' equity. Each category reviewed will include conceptual considerations, technical account procedures, and the necessary and appropriate disclosure within the body of the financial statements and the related accounting schedules and footnotes.
Prerequisite: Acc 203.

ACC 205. INTERMEDIATE ACCOUNTING III **Three credits**
A study of the application of generally accepted accounting principles to various technical reporting areas within the financial statements. Emphasis is placed on technical standards and the necessary disclosure requirements for these reporting areas. The course topics include dilutive securities, executive compensation plans, earnings per share, corporate investments, and the accounting for income taxes, employee pensions plans, employee postretirement benefits, leases, and accounting changes. The course concludes with a comprehensive review of computer spreadsheets, financial statements preparation, financial statement analysis and interpretation, full disclosure in financial reporting, and the appropriateness of the accounting principles being applied in accounting practice today.
Prerequisite: Acc 204.

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ACC 301. ADVANCED FINANCIAL ACCOUNTING Three cre
A comprehensive review and analysis of various accounting issues relating to corpo consolidations, partnerships, governmental units, non-profit organizations, estates, tru and bankruptcies. Extensive computerized applications are an integral part of this cou
Prerequisite: Acc 205.

ACC 311. COST ACCOUNTING Three cre
Principles and practices of cost accounting including a study of job, process, and stand cost systems. Informative systems design, budgeting, variance analysis, and direct cost concepts are covered.
Prerequisite: 205.

ACC 321. TAXES Three cre
Introduction to the Internal Revenue Code for individuals and sole-proprietorship Preparation of individual tax returns based on the current tax law, regulations, and re enue ruling letters. Introduction to tax research using various traditional and electron reference services.
Prerequisite: Acc 101.

ACC 322. ADVANCED TAXES Three cre
Introduction to certain tax laws as they apply to Corporations, S Corporations, and Par nerships. This involves developing a thorough understanding of tax research and how t planning may help the financial entity to minimize the tax liability.
Prerequisite: Acc 321.

ACC 331. AUDITING Three cre
To understand the most important concepts in auditing and how they are used in decisi making, evidence accumulation and reporting. This entails understanding the concep methods and processes of control that provide for the accuracy and integrity of financi data and the safeguarding of business assets; along with understanding the nature of att services and the conceptual and procedural bases for performing them.
Prerequisite: Acc 205.

ACC 341. FINANCIAL AND MANAGERIAL ACCOUNTING SYSTEMS Three cre
To develop a solid understanding of and appreciation for the use of accounting inform tion employed to process and sort business events so as to provide information for t functions of financial reporting, internal responsibility accounting and decision suppor This understanding includes applications via spreadsheets, databases, general ledgers, a the internet.
Prerequisite: Acc 102 and BA 351.

ACC 351. SENIOR SEMINAR IN FINANCIAL ACCOUNTING Three cre
To develop an understanding of the accounting system and its impact on the public and pr vate sectors by bridging the student's knowledge of generally accepted accounting prin ples and ethics with financial and non-financial decision making. Team oriented concep and strategies are further developed through case work analysis and presentation.
Prerequisite: Acc 205.

ACC 361. ACCOUNTING INTERNSHIP Three or six cre
To provide on-the-job accounting experience for accounting majors through a minimum 170 (3 credits) or 340 (6 credits) hours working experience with either certified publ accounting firms, governmental agencies, or private businesses. Internships are offered a competitive basis following student interviews with interested employers. Students o obtaining an internship may substitute 6 credits of free electives. (All courses liste through the seventh semester should be taken prior to this course.)
Prerequisite: Acc 205.

ACC 395-396. INDEPENDENT RESEARCH One to three credits

ACC 397. SEMINAR One to three credits

ACC 198/298/398. TOPICS Variable credit
Special offerings designed to introduce students to subjects of current interest in accounting which are not covered in other courses.

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AEROSPACE STUDIES (Air Force ROTC)

Lieutenant Colonel Smith, Chairperson; Assistant Professors: Major Myers, Major Palmer, Captain Dusek.

Total minimum number of credits required for a minor – 22.

The Air Force Reserve Officer Training Corps (AFROTC) program at Wilkes University permits students to earn commissions as officers in the U.S. Air Force while pursuing a university degree. Students may enroll in either the four-year or two-year program. (Students with three years remaining until graduation may enroll concurrently in the freshman and sophomore Aerospace Studies courses and can complete the four-year program in three years). A minor in Aerospace Studies is available to students who complete a minimum of 22 semester hours including: up to 16 hours of Aerospace Studies courses (AS 101, 102, 201, 202, 301, 302, 401, 402 and 3 hours for AFROTC Field Training AS 240, 4-week AFROTC Field Training; AS 250, 5-week AFROTC Field Training) and a minimum of 3 credit hours within one area listed below. This area should explore a discipline other than the student's major.

Additional courses required in the minor, by concentration:

History: 101, 102, 207, 208, 328, 334, 335, 376.

Political Science: 111, 131, 141, 211, 213, 221, 253, 261, 331, 332, 335.

Business Administration: 101, 212, 233, 234, 321, 326, 327, 341, 351, 352, 353, 354, 356, 357.

Communication: 101, 102, 201, 202, 206, 220, 303, 352, 361, 399.

General Military Course
(4-Year Program Only)

The first two years of the four-year program constitute the General Military Course (GMC). GMC courses are open to any university student. Students enrolling in these courses do not incure any military service obligation. (Exception: Air Force scholarship recipients incur a commitment at the beginning of their sophomore year.) The GMC curriculum consists of four one-credit Aerospace Studies courses, plus a non-credit leadership laboratory each semester, which introduces students to U.S. Air Force history and environment, customs, courtesies, drill and ceremonies, and leadership skills.

Professional Officer Course
(2 and 4-Year Programs)

The final two years of the four-year program comprise the Professional Officer Course (POC). It consists of four three-credit Aerospace Studies courses, plus a non-credit leadership laboratory each semester. POC cadets earn a $200-per-month, tax-free subsistence allowance during the academic year and incur a military obligation. To be accepted into the POC, students must pass a physical examination and an officer qualification test, as well as AEROSPACE STUDIES (Air Force ROTC) meeting certain academic standards. Four-year cadets must complete a four-week field training program; two-year applicants must complete a six-week field training program, both of which are administered the summer before POC entry. In addition, all POC cadets must complete a course in mathematical reasoning prior to being commissioned.

Field Training

Field training consists of a four-week, 3-credit Aerospace Studies Course or a 5-week, 3-credit Aerospace Studies Course conducted at selected Air Force bases. It provides students an opportunity to observe Air Force units and people at work and at home; to participate in marksmanship, survival, athletics, and leadership training activities; to experience aircraft orientation flights; and to work with contemporaries from other colleges and universities. Transportation from the legal residence of the cadet to the field training base and return, food, lodging, and medical and dental care are provided by the Air Force.

Advanced Training Program (ATP) (Optional)

This program allows POC members to visit a USAF base for two weeks during the summer between the cadet's junior and senior years and to work with an active duty officer working in the student's chosen career area . Transportation from the legal residence of the cadet to the ATP base (and return), food, lodging, and medical and dental care during the two weeks are provided by the Air Force. The participating cadet also is provided a weekly salary during the program.

Uniforms

All uniforms, equipment, and textbooks for AFROTC are supplied by the U.S. Air Force.

Scholarships

AFROTC also offers 2-to-5 year, full and partial tuition scholarships for which qualified students may compete, if they enroll in AFROTC. All scholarship awards are based on individual merit, regardless of financial need, with most scholarship recipients determined by central selection boards. Since scholarship applicants must meet certain academic, physical fitness and medical requirements to be considered by the scholarship boards, contact the Aerospace Studies department early in the Fall semester, High school students wishing to compete for AFROTC college scholarships must complete and submit an application early in the fall term of their senior year. ALL AFROTC SCHOLARSHIP RECIPIENTS ENTERING (OR TRANSFERRING TO) WILKES UNIVERSITY RECEIVE **FREE** ROOM AND BOARD. (To receive free room and board, the scholarship recipient must live in a Wilkes University

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owned and operated residence hall.)

Commissioning

Students who satisfactorily complete the POC curriculum require ments are commissioned as Second Lieutenants in the U.S. Air Force and will serve on active duty in a career specialty they have chosen, consistent with USAF needs. Qualified students may compete for duty as pilots, navigators, engineers, missile or space operations officers, nurses, engineers, meteorologists, computer analysts, lawyers, security police or any of a number of other career fields.

Recommended 4-Year Course Sequence Leading to a Commission in the United States Air Force

General Military Course (GMC) — Consists of four one-credit courses which are introductory in nature and open to freshmen or sophomores. Student enrolling in these courses do not incur any military service obligation (Exception: Air Force scholarship recipients incur a commitment at the beginning of their sophomore year.) Course credit value are shown with each course.

First Semester		Second Semester	
AS 101 Foundations of the USAF I	1	AS 102 Foundations of the USAF II	1
AS 103 Leadership Laboratory	0	AS 104 Leadership Laboratory	0
	1		1
Third Semester		**Fourth Semester**	
AS 201 Evolution of USAF Air and Space Power I	1	AS 202 Evolution of USAF Air and Space Power II	1
AS 203 Leadership Laboratory	0	AS 204 Leadership Laboratory	0
	1		1

Variations in the above schedule are possible. Sophomores with no AFROTC experience can enroll in both the one-credit freshman **and** sophomore courses (our "dual-enrollee" program). Students who have not taken any GMC courses and have at least two years remaining until graduation may still apply for entry into the POC, but must apply early in their sophomore year.

Summer Field Training

4-Week AFROTC Field Training		5-Week AFROTC Field Training	
AS 240 4-week AFROTC field Training	3	AS 250 5-week AFROTC Field Training	3

Professional Officer Course (POC) — Consists of four three-credit courses open to students who have at least two full-time years of college remaining. Cadets enrolled in the POC receive $150 per month and have a military service obligation. Course credit values are shown with each course.

Fifth Semester		Sixth Semester	
AS 301 Air Force Leadership Studies I	3	AS 302 Air Force Leadership Studies II	3
AS 303 Leadership Laboratory	0	AS 304 Leadership Laboratory	0
	3		3
Seventh Semester		**Eighth Semester**	
AS 401 National Security Affairs: Preparation for Active Duty I	3	AS 402 National Security Affairs: Preparation for Active Duty II	3
AS 403 Leadership Laboratory	0	AS 404 Leadership Laboratory	0
	3		3

AS 103/104/203/204/303/304/403/404, Leadership LABORATORY, is mandatory for **all** cadets who enroll in AFROTC and must be taken concurrently with each Aerospace study course.

General Military Courses

The General Military Courses (GMC) constitute a two-year program for freshmen and sophomores and are designed to provide a general knowledge of the roles, organization, missions, and historical development of U.S. air power. Students enrolled in the GMC who are not receiving Air Force scholarships incur **no** military obligations.

AS 103/104/203/204. LEADERSHIP LABORATORY **No credit**
Involves a progression of experience designed to develop each student's leadership potential in a supervised training laboratory. Examines U.S. Air Force customs and courtesies, drill and ceremonies, career opportunities, life and work of an Air Force company grade officer.

AS 101. FOUNDATIONS OF THE USAF I **Fall — One credit**
Introduction to the background, missions, and functions of U.S. military forces, with emphasis on U.S. Air Force organization, command structure and the mission and organization of various major commands. Development of individual communications skills.

AS 102. FOUNDATIONS OF THE USAF II **Spring — One credit**
Introduction to USAF professions, geopolitics, U.S. defense policy/strategy, U.S. general purpose military forces, insurgency/counter-insurgency, aerospace support forces and organization of other military sevices. Development of individual communications skills.

AS 201. EVOLUTION OF USAF AIR AND SPACE POWER I **Fall — One credit**
A study of air power development in historical perspective through the end of World War II; including the evolution of missions, concepts, doctrine, and force employment, with emphasis on changes in conflict and factors which have prompted technological developments. Development of individual communications skills.

AS 202. EVOLUTION OF USAF AIR AND SPACE POWER II **Spring — One credit**
A study of traits of effective leaders and followers coupled with characteristics and values important to the U.S. Air Force. Definition, history and basic concepts of Total Quality Management (TQM) principles used in the Air Force. Application of oral presentation skills.

Prerequisite: AS 201 or permission of instructor.

AFROTC Field Training

AS 240. AFROTC Field Training (4-Weeks) **Summer — Three credits**
Intensive study of military education, experience in leadership and management at an active duty installation. Also training in marksmanship, survival, and athletics.

Prerequisite: AS 101, 102, 201, 202 and an interview by Professor of Aerospace Studies.

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AS 250. AFROTC Field Training (5-Weeks) **Summer — Three credits**
Intensive study of military education, experience in leadership and management at an active duty installation. Also training in marksmanship, survival, and athletics.
Prerequisite: Interview by Professor of Aerospace Studies.

Professional Officer Courses

The Professional Officer Courses (POC) constitute a four-semester program, normally taken during the junior and senior years, leading to commissioning as a U.S. Air Force officer. The POC concentrates on concepts and practices of management and leadership, national defense policy, and communicative skills.

AS 303/304/403/404. LEADERSHIP LABORATORY **No credit**
Involves a progression of experience designed to develop each student's leadership potential in a supervised training laboratory. Examines U.S. Air Force customs and courtesies, drill and ceremonies, career opportunities, life and work of an Air Force company grade officer.

AS 301. AIR FORCE LEADERSHIP STUDIES I **Fall — Three credits**
General theory and practice of management with special reference to the U.S. Air Force. Covers evolution of management thought, including classical, behavioral, and management science schools; policy formulation, principles and practices in planning, organizing, staffing, directing, and controlling business and Air Force activities; resource control techniques; social and ethical issues within the management process; development of communicative skills and Total Quality Management (TQM) principles. **Note: AFROTC cadets may substitute AS 301 for BA 351.**
Prerequisite: AFROTC approved membership in the POC or permission of instructor.

AS 302. AIR FORCE LEADERSHIP STUDIES II **Spring — Three credits**
Quality leadership tools and theory: practical experience in influencing people, individually and in groups, to accomplish organizational missions effectively; development of communications skills.
Prerequisite: AS 301 or permission of instructor.

AS 401. NATIONAL SECURITY AFFAIRS/ PREPARATION FOR ACTIVE DUTY I **Fall — Three credits**
The role and functions of the professional military officer in a democratic society and civil-military interaction; basic framework of defense policy and formulation of defense strategy; the impact of East Asia, Latin America, Africa, the Middle East, and the Commonwealth of Independent States on U.S. national security policy. Development of individual communications skills. **Note: AFROTC cadets may substitute AS 401 for PS 390 with Social Science and Communications Department approval.**
Prerequisite: AFROTC approved membership in the POC or permission of instructor.

AS 402. NATIONAL SECURITY AFFAIRS/ PREPARATION FOR ACTIVE DUTY II **Spring — Three credits**
The problems of developing defense strategy in a rapidly changing technological environment; effective deterrent posture and management of conflict; dynamics and agencies of defense policy making.
Prerequisite: AS 401 or permission of instructor.

ANTHROPOLOGY

Professor Baldino, Chairperson; Professor Merryman.

The Department of Social Sciences and Communications offers a variety of courses in anthropology. The anthropology curriculum is designed to provide students with a solid grounding in the fundamentals of sociocultural anthropology and an opportunity to study cultural diversity. Students may apply anthropology courses towards B.A. degrees with majors in either International Studies or Sociology. Anthropology courses may also be used in satisfying General Education requirements in the social sciences.

Students from all majors are invited to complete a "concentration" in Anthropology. A concentration in Anthropology consists of 12 hours, including Ant 101, Ant 102, and two upper-level courses in Anthropology.

Graduates with a strong background in anthropology have used this preparation in a variety of ways. Some have found employment in business and government upon graduation. Others have taken advanced degrees in the social sciences and regional development at American and British Universities. Still others have pursued careers in secondary education.

The following is a listing of the Anthropology courses offered at Wilkes:

ANT 101. INTRODUCTION TO ANTHROPOLOGY **Three credits**
A general survey of the processes that generate human cultural and biological variation through time and among contemporary human groups. An introduction to cultural and physical anthropology, archaeology, and anthropological linguistics.

ANT 102. CULTURAL ANTHROPOLOGY **Three credits**
A detailed examination of the methods and theories employed in the description and comparison of human cultures, as applied to problems in intercultural relations. Course content is based upon case and cross-cultural studies.

ANT 211. ANTHROPOLOGY THROUGH FILM **Three credits**
A general survey of the use of still photography and cinematography in the depiction of the content of various cultures.
Prerequisite: Ant 101 or Ant 102 or approval of instructor.

ANT 212. PEOPLES AND CULTURES OF THE WORLS **Three credits**
An overview of social organizations, ethnicity, and cultural developments in various regions of the world: North American Native Americans, the Middle East, Africa, Latin America, Asia. Topics are rotated. The contributions of ecological, economic, political and ideological factors to the region's social system are examined in regard to present cultural obligations.

ANT 395-396. INDEPENDENT RESEARCH **One to three credits**
Independent study and research for advanced students in the field of the major under the direction of a staff member. A research paper at a level significantly beyond a term paper is required.
Prerequisite: By arrangement with an instructor and approval of department chairperson.

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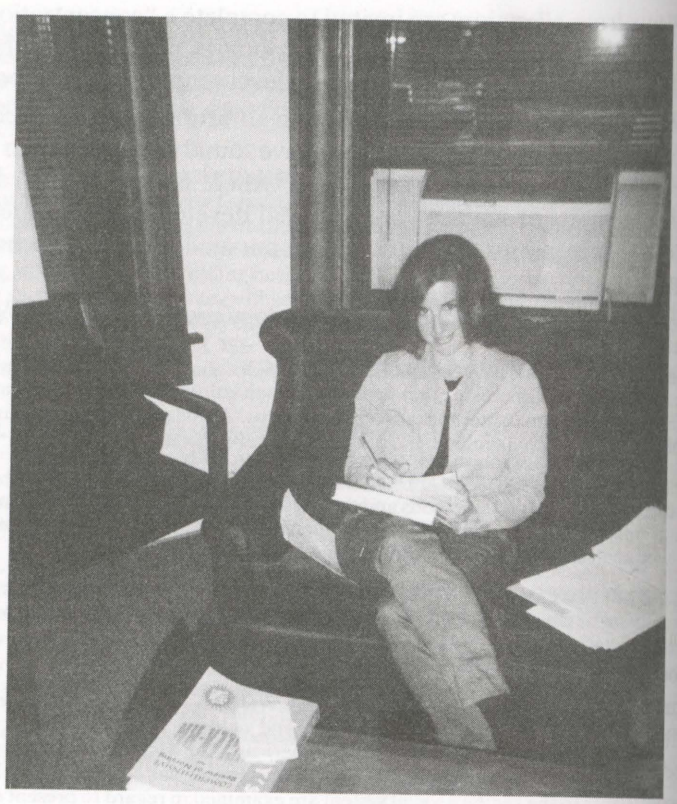
ANT 399. COOPERATIVE EDUCATION **One to six credits**

Professional cooperative education placement in a private/public organization related to the student's academic objectives and career goals. In addition to their work experience, students are required to submit weekly reaction papers and an academic project to a Faculty Coordinator in the student's discipline. (See page 52 in Bulletin for placement procedures.)

Prerequisites: Sophomore standing, 2.0 cumulative average, consent of academic advisor, approval of placement by department chairperson.

ANT 198/298/398/498. TOPICS **Three credits**

A study of topics of special interest not extensively treated in regularly offered courses.



APPLIED AND ENGINEERING SCIENCES

Associate Professor Maxwell, Chairperson; Professor Arora, Associate Professors Gilmer, Srinivasan; Technical Support Staff: Lennox, Sickler, Wilk.

Total minimum number of credits required for a major in Applied and Engineering Sciences leading to the B.S. degree – 123.

Engineering is the profession of creative problem solving. The Wilkes engineering programs provide the student with the knowledge and the investigative skills, both theoretical and experimental, to responsibly address professional and societal needs through modern curricula, hands-on experience and a personalized educational environment.

The mission of the Applied and Engineering Science program is to enhance the ability of the student to integrate knowledge and apply it effectively and responsibly in solving problems through a dynamic curriculum characterized by its fast response to new developments, opportunities for design and industrial experience, availability of modern laboratories, the use of computer simulations, and team building.

The Engineering and Physics Department offers a four-year degree program in Applied and Engineering Science. This program provides strong engineering and scientific experience with advanced techniques heavily integrated into the curriculum. Students intending to major in engineering are encouraged to be well prepared in the sciences and mathematics. The first three semesters of course work are common for all engineering programs.

The four-year program in Applied and Engineering Science leading to the Bachelor of Science degree offers various concentrations. The student can choose to specialize within this program in a particular discipline or in one of the following interdisciplinary areas: Information Systems, Cognitive Studies, Allied Health, Physical Sciences, Planning & Technology Management and Environmental & Public Policy. A minimum of 15 credits must be completed in a concentration.

Cooperative education provides applied professional training to Wilkes engineering students that is often valued by prospective employers. The electrical engineering curriculum includes an optional six-credit cooperative education assignment in the sixth semester. The assignment may continue into the summer preceding the seventh semester. Since all students may not be willing or able to elect such a cooperative educational assignment as an option, the student may complete six credits of technical electives.

The student chapters of the Society of Women Engineers (S.W.E.), and the Pennsylvania Society of Professional Engineers (P.S.P.E.), in conjunction with the Department, periodically offer seminars on subjects of a timely nature. Attending these seminars and taking the E.I.T. (Engineering in Training) exam are mandatory for the completion of the

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degree. Students are also highly encouraged to participate in the activities of other on-campus organizations such as Engineering Club.

In 1979 the Technology Transfer Program (TTP) was initiated to enable the community to draw upon the department's technical expertise and advanced facilities in Northeastern Pennsylvania. This effort is directed to assist in the development and expansion of industries, and the establishment of high technology facilities in Northeastern Pennsylvania.

Honors Programs in Engineering

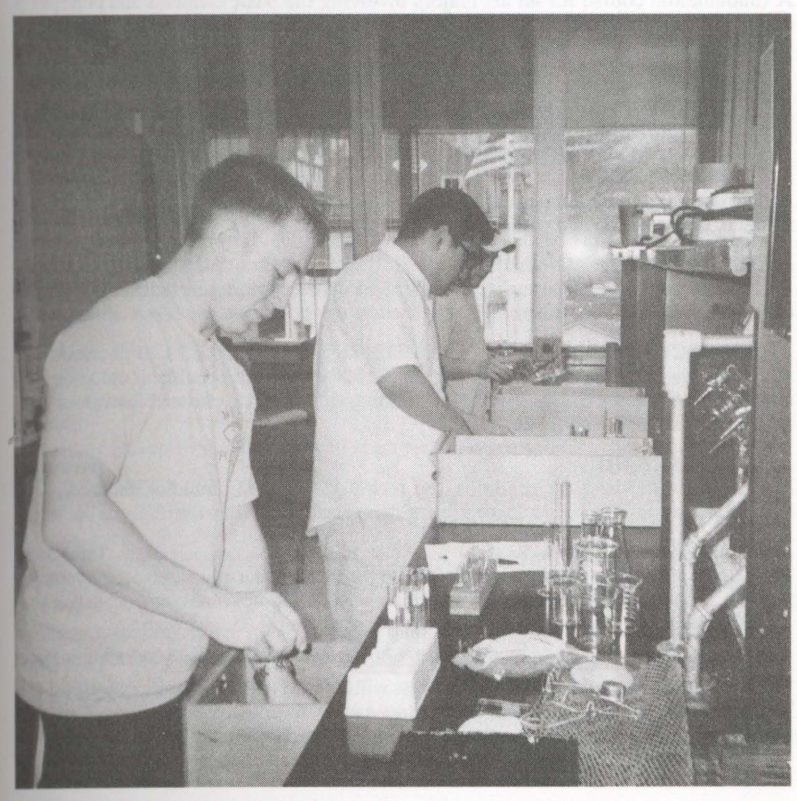
Upon the recommendation and approval of the engineering faculty, honor students in Engineering will be recognized upon completion of the following requirements: achieving an overall grade point average of 3.25 or better; receiving grades of 3.00 or better in all engineering courses of his or her discipline; pursuing independent research or special projects in engineering; and presenting the results at meetings, conferences, or through publication of a paper. The distinction "Honors in Engineering" will be recorded on the student's transcript upon graduation.

Recommended Course Sequence for a B.S. Degree with a Major in Applied & Engineering Sciences

First Semester		Second Semester	
Eng 101 Composition	4	Mth 106 Introduction to Calculus II	4
ME 180 CADD Lab	1	or 112 Calculus II	
Mth 105 Introduction to Calculus I	4	Distribution Requirement	3
or 111 Calculus I		EE 145 Computer Science I or	4
Fr.F. 101 Freshman Foundations	3	EGR 140 Computer Utilization	3
Distribution Requirement	3	Free Elective	3
	15		16-17
Third Semester		**Fourth Semester**	
Chm 115 Elements and Compounds	4	GES 202 Biogeochemistry or	3
Phy 171 Classical and Modern	4	MAE 200 Materials Engineering	
or 201 Physics I		Phy 174 Classical and Modern	4
Free Elective	3	or 202 Physics II	
Distribution Requirement	3	Free Elective	6
		Distribution Requirement	3
	14		16

Fifth Semester		Sixth Semester	
E.E. 283 Electrical Measurements Lab.	1	EE 399 Cooperative Education	6
ME 231 Statics & Dynamics	3	Technical Elective	3
EE 211 Circuit Theory I	3	Distribution Requirements	3
Free Elective	6	EGR 201 Professionalism and Ethics	1
Distribution Requirement	3	EGM 320 Engineering Project Analysis	3
	16		16
Seventh Semester		**Eighth Semester**	
EE 391 Senior Project I*	1	EE 392 Senior Project II*	2
Technical Electives	6	Electives	6
Free Elective	9	Technical Electives	6
	16		14

* EE 391 and 392 can be replaced by EgM/ENV/ME 391 and 392 depending on the student's concentration. The Technical Electives and the Free Electives must be selected from a program outline approved and documented in advance by the program coordinator and the student's advisor. Technical Electives must be selected from advisor-approved science or engineering courses numbered 200 or above with at least 6 credits in engineering courses. Consult with Co-op advisor for availability and proper scheduling of Cooperative Education.



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ART

Professor Zipay, Chairperson; Professors Emeriti Fuller, Simon, Sterling; Associate Professor Bowar; Adjunct Faculty Adams, Conway, Sedor, Sleboda.

Total minimum number of credits required for a minor in Studio Art — 18.

Total minimum number of credits required for a minor in Art History - 18.

The minor in **Art History** requires that students complete ART 140, 141, 240, 249 and 6 credits of art history topics courses.

The minor in **Studio Art** accepts any courses above the 101 level, with no more than 6 credits in art history.

ART 101. EXPERIENCING ART **Three credits**
Lectures and discussion on the elements of art and the forerunners of modern and contemporary art. Two and three dimensional studio work is explored through the creative process in a variety of media.

ART 111. FUNDAMENTALS OF COLOR AND DESIGN **Three credits**
A fundamental course for all art majors involving the basic elements and principles of design and the study of color systems including their physical, psychological, and sociological properties.

ART 113. DRAWING **Three credits**
An introductory course exploring the organization and potential of line, space, and texture through a variety of media and subject matter.

ART 120. PAINTING I **Three credits**
An introduction to painting methods, techniques, and materials. Emphasis on the organization of composition and painting techniques.

ART 121. PRINTMAKING **Three credits**
An introduction of relief, intaglio, and planographic techniques including block printing, etching, lithography, and silk screen.

ART 122. SCULPTURE **Three credits**
An introductory course into the basic concepts of three dimensional form and space. Modeling in clay from life; casting and direct building techniques in plaster; basic carving experiences in stone and wood. Fee: $25.

ART 123. CERAMICS **Three credits**
Exploration into the basic methods and techniques of hand building and wheel work. Experimentation in surfaces decoration, glazing, and kiln firing. Fee: $30.

ART 133. PHOTOGRAPHY **Three credits**
An introduction to the fundamentals of photography; camera usage, subject consideration, lighting, darkroom techniques, and the preparation of photographs for exhibit. Fee: $25.

NOTE: Each student must have access to an adjustable 35mm camera.

ART 134. COMPUTER GRAPHICS I **Three credits**
The Macintosh computer and QuarkXPress will be used to solve graphic design problems. Typographic principles, production techniques and printing processes will be discussed to familiarize students with terminology and procedures. Fee: $25.

ART 140. HISTORY OF ART I **Three credits**
A survey of the art and architecture of Western Civilization from pre-history through the Early Renaissance. Non-western cultures will also be introduced. Slide lectures and discussion will focus on major artworks and trends within their cultural setting.

ART 141. HISTORY OF ART II **Three credits**
A survey of the art and architecture of Western Civilization from the High Renaissance to the present. Slide lectures and discussions will focus on major artists, artworks, and trends within their cultural setting.

ART 220. PAINTING II **Three credits**
Increased emphasis on development of style and experimentation in contemporary art methods and techniques.

Prerequisite: Art 120 or permission of instructor.

ART 234. COMPUTER GRAPHICS II **Three credits**
A continuation of Graphic Design I, emphasizing Adobe Illustrator and Adobe Photoshop for solving visual problems. Scanning images, importing images, and techniques for sending files to printers will be covered. The printing process will be discussed at length to familiarize students with terminology and procedures. Fee: $25.

Prerequisite: Art 134 or permission of instructor

ART 235. GRAPHIC DESIGN I **Three credits**
Familiarization with the tools, design elements, and production processes of the graphic artist. The value and contribution of the graphic arts to society will be discussed. Students will experience methods and techniques currently being practiced in the graphic design field. Fee: $25.

ART 240. MODERN ART AND DESIGN **Three credits**
20th century art and design will be considered in relation to central themes in modern civilization, such as science and technology, social and political revolution, historicism, and formalism. Slide lectures and discussions will treat objects as diverse as paintings and refrigerators, buildings and billboards.

ART 335. GRAPHIC DESIGN II **Three credits**
A continuation of Art 235 with emphasis on publication design. The course will provide opportunities for students to design page layouts, catalogues, small books and other printed material using the computer as a design tool.

Prerequisite: Art 235 or permission of instructor.

ART 395-396. INDEPENDENT RESEARCH **One to three credits**
Independent study and research for advanced students in the field of the major under the direction of a staff member. A research project at a level significantly beyond a term paper is required.

Prerequisite: Approval of department chairperson is required.

ART 399. COOPERATIVE EDUCATION **One to six credits**
Professional cooperative education placement in a private/public organization related to the student's academic objectives and career goals. In addition to their work experience, students are required to submit weekly reaction papers and an academic project to a Faculty Coordinator in the student's discipline. (See page 52 in Bulletin for placement procedures.)

Prerequisites: Sophomore standing, 2.0 cumulative average, consent of academic advisor, approval of placement by department chairperson.

ART 198/298/398. TOPICS **Variable credit**
A study of topics of special interest not extensively treated in regularly offered courses. Recent studio topics have included Ceramic Sculpture, Color Photography, and Typography. Recent art history topics have included Nineteenth Century Art and Modern Architecture.

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BIOCHEMISTRY

Professor Turoczi, Chairperson; Professors Emeriti Bohning, Faut, Rozelle, Salley, Swann; Professors Redmond, Stine; Associate Professor, Wignot; Assistant Professor Kiessling; Laboratory Manager Bianco; Adjunct Professor Gregorek; Visiting Assistant Professor Phillips.

Total minimum number of credits required for a major in Biochemistry leading to the B.S. degree – 127.

Total minimum number of credits required for a major in Biochemistry leading to the B.A. degree – 124.

The Biochemistry curriculum is designed to provide comprehensive background education and training for those students interested in this interdisciplinary area.

The B.S. curriculum meets the liberal arts requirements of the university with a concentration in advanced courses. It was developed for those students who wish to prepare for Biochemistry as a professional option. Holders of this degree seek employment directly in the field or they can pursue advanced degrees in graduate school.

The B.A. degree was developed for those students interested in Biochemistry as a means of preparation for entrance into health science professional schools, such as allopathic, osteopathic, and podiatric medicine, dental medicine, optometry, etc. Two specific features of the program are that students (1) may pursue the first three years of the biochemistry degree curriculum in the three-year option under one of the Wilkes University combined seven-year medical and baccalaureate degree programs or (2) use the seventh or eighth semesters in cooperative research programs. The latter option is particularly useful for those students selected to The Premedical Scholars Program (see Affiliated Degree Programs in Medicine).

Recommended Course Sequence for a Bachelor of Arts Degree and Bachelor of Science Degree in Biochemistry

First Semester	B.A.	B.S.	Second Semester	B.A.	B.S.
Chm 115 Elements and Compounds	4	4	Chm 116 The Chemical Reaction	4	4
Bio 121 Principles of Modern Biology I	4	4	Bio 122 Principles of Modern Biology II	4	4
Mth 111 Calculus I*	4	4	Mth 112 Calculus II*	4	4
Fr.F 101 Freshman Foundations	3	3	Eng 101 Composition	4	4
	15	15		16	16

* Students in the BA program may substitute Mth 105 for Mth 111, Mth 106 for Mth 112.

Third Semester	B.A.	B.S.	Fourth Semester	B.A.	B.S.
Chm 231 Organic Chemistry I	4	4	Chm 232 Organic Chemistry II	4	4
Phy 201 General Physics I*	4	4	Phy 202 General Physics II*	4	4
Mth 211 Intro. Linear Algebra and Differential Equations	0	4	Bio 226 Cellular and Molecular Biology	4	4
Distribution Requirement	3	0	Distribution Requirement	3	3
CS Elective	3	3	Free Elective	3	3
	14	15		18	18

* Students in the BA program may substitute Phy 171 for Phy 201, Phy 174, for Phy 202.

Fifth Semester	B.A.	B.S.	Sixth Semester	B.A.	B.S.
Chm 244 Instrumental Analysis Lab	3	3	Chm 252 Physical Chemistry II	3	3
Chm 251 Physical Chemistry I	3	3	Chm 254 Physical Chemistry II Lab	0	1
Chm 253 Physical Chemistry I Lab	0	1	Chm 362 Biochemistry II	3	3
Chm 361 Biochemistry I	3	3	Distribution Requirements	3	9
Chm 363 Biochemistry Lab	1	1	Free Electives	9	0
Major Elective	4	4			
Distribution Requirements	3	3			
	17	18		18	16

Seventh Semester	B.A.	B.S.	Eighth Semester	B.A.	B.S.
Chm 342 Instrumental Analysis	3	3	Chm 392 Senior Research II*	2	2
Major Electives	3	3	Distribution Requirements	3	3
Chm 391 Senior Research I*	1	1	Major Electives	3	3
Distribution Requirements	3	0	Free Electives	5	5
Free Electives	3	9			
	13	16		13	13

* BIO 391-392 may be substituted with approval of the research proposal by the advisor and permission of the chemistry faculty.

Chemistry Major Electives: One required from Mth 212, Chm 222, 272, 323, 346 or others with approval of the department.

Biology Major Electives: Two required from Bio 324, 325, 326, 327 or 345.

Special Requirements

Chemistry 391-392 are laboratory research courses, which can be completed in either the chemistry or biology departments. The written project proposal must be approved by the student's advisor and the departments. A student may obtain permission of the department to carry out a Senior Project which is not laboratory research. This permission will be granted only in exceptional cases.

The Department strongly recommends that students elect a foreign language to satisfy one of the General Education humanities requirements. The language of choice should be German, Russian, or French in that priority.

The Department strongly recommends that students elect COM 101, Public Speaking.

All upper division Biochemistry majors are expected to attend Department seminars. Seniors must participate in the seminars to receive credit for Chm 391.

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BIOLOGY

Professor Turoczi, Chairperson; Professors Emeriti Ogren, Reif; Associate Professor Emeritus Hayes; Professor Klemow; Associate Professors Kalter, Pidcock, Steele, Terenghi; Adjunct Faculty Chapman; Laboratory Preparations Specialist, Zayleskie.

Total minimum number of credits required for a major in Biology leading to the B.A. degree – 122.

Total minimum number of credits required for a major in Biology leading to the B.S. degree – 122.

Total minimum number of credits required for a minor – 22.

The biology program is a generalized program covering basic areas of biology. Specific pre-professional training is minimized in favor of the broadest possible background in the liberal arts as well as the biological sciences.

The B.A. curriculum offers flexibility so that those students in secondary education who are preparing to teach can include the professional semester of student-teaching either in the seventh or eighth semester. In addition, this program provides the opportunity for students to double major and jointly satisfy the requirements of both the Department of Biology, Chemistry, and Health Sciences as well as those of the other department involved. Students majoring in Biology may receive a Pennsylvania Teaching Certificate for teaching elementary school or Biology in grades 7-12. Please see the requirements listed in the Education section of this Bulletin.

The B.S. curriculum meets all of the liberal arts requirements for the Bachelor of Arts degree. In addition, it provides a greater concentration of advanced biology courses. This program is recommended for those students planning to enter industry, professional schools, or continue with graduate study in biology.

In order to emphasize the broadening aspects of biological knowledge, the department has established categories of specific biological fields from which the student must achieve reasonable diversity in the selection of upper-level courses. The four categories are (1) Molecular/Cellular Biology, (2) Structural and Functional Biology, (3) Diversity and Populational Biology, and (4) Botanical Biology. The B.A. major is required to take a total of four electives with one upper-level course from each of the four categories. The B.S. major must take a total of five electives with one upper-level course from each of the four categories and additionally select any one course from those same categories.

Courses within the four categories are constituted as follows:
(1) Molecular/Cellular — Bio 324, 326, 328, 338, 345, 398
(2) Structural/Functional — Bio 311, 314, 321, 323, 325, 327
(3) Diversity/Populational — Bio 306, 312,341, 343, 344, 346, 398
(4) Botanical — Bio 361, 362, 366, 368, 398

Students in majors other than Biology may wish to elect a minor in Biology. The minor in Biology shall consist of a minimum of 22 credits. Required courses are Bio 121-122, 225-226 plus two 300-level, biology electives. These upper-level electives (exclusive of Independent Research, Bio 395-396) will be selected after consultation with the department chairperson.

Summer Experiences and Opportunities in the Marine Sciences and Oceanography Wallops Island Marine Science Station

Wilkes University is a member of the Wallops Island Marine Science Consortium, an association of both state and private institutions that oversee the operation of a marine field station located in southeastern Virginia. Through its membership in the Consortium, Wilkes offers to its students the full range of courses in marine sciences and oceanography regularly taught at the Station each summer. Interested students in Biology and GeoEnvironmental Sciences (as well as any other students meeting course prerequisites) are encouraged to complement regular course work with these unique summer field experiences.

Courses taken at the Wallops Island Marine Science Station can be used to fulfill some of the upper level requirements in the Biology and GES Majors. Courses typically carry three credits and involve three weeks of intensive field and laboratory study at the Marine Station and related field sites (e.g. Florida Keys). Facilities at the station include dormitory space, cafeteria, labs, lecture halls, a variety of field and laboratory equipment (e.g. two large oceanographic vessels) and a range of coastal, marine, and estuarine field sites. To enroll, students must first contact the coordinators of the Wallops Island Program at Wilkes University (prior to the spring semester) and then register for the appropriate course through the Wilkes University Registrar.

Courses regularly offered at the Station include:

MS 110 Introduction to Oceanography
MS 211 Field Methods in Oceanography
MS 221 Marine Invertebrates
MS 241 Marine Biology
MS 250 Wetland Ecology
MS 260 Marine Ecology
MS 300 Behavior of Marine Organisms
MS 330 Tropical Invertebrates
MS 331 Chemical Oceanography
MS 342 Marine Biology
MS 343 Marine Ichthyology
MS 345 Ornithology
MS 362 Marine Geology
MS 394 Physiology of Marine Organisms
MS 431 Ecology of Marine Plankton
MS 432 Marine Evolutionary Ecology
MS 433 Advanced Methods in Coastal Ecology
MS 450 Coastal Geomorphology
MS 451 Coastal Environmental Oceanography
MS 464 Biological Oceanography
MS 470 Research Diver Methods
MS 491 Coral Reef Ecology
MS 492 Marine Mammals
MS 493 Behavioral Ecology
MS 500 Problems in Marine Science

See Coordinators of the Wallops Island Program for outlines of individual courses and more information on how to integrate these courses into Biology and GeoEnvironmental Sciences curricula.

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Honors Program in Biology

Honor students in Biology will be recognized upon completion of the following requirements: achieving a graduating grade point average of 3.25 or better, receiving grades of 3.00 or better in all biology courses, pursuing independent research in biology and presenting their project results either at a national or regional scientific conference or through publication of a research paper. The distinction "Honors in Biology" will be recorded on the student's transcript upon graduation.

Recommended Course Sequences for a Major in Biology

First Semester

	B.A.	B.S.
Bio 121 Principles of Modern Biology I	4	4
Chm 115 Elements & Compounds	4	4
FrF 101 Freshman Foundations	3	3
Mth 105 Calculus for Life, Managerial, and Social Sciences I or Mth 111 Calculus I	4	4
	15	15

Second Semester

	B.A.	B.S.
Bio 122 Principles of Modern Biology II	4	4
Chm 116 The Chemical Reaction	4	4
Eng 101 Composition	4	4
Mth 106 Calculus for Life, Managerial, and Social Sciences II or Mth 112 Calculus II	4	4
	16	16

Third Semester

	B.A.	B.S.
Bio 225 Population and Evolutionary Biology	4	4
Chm 231 Organic Chemistry I	4	4
Distribution Requirements	6	6
	14	14

Fourth Semester

	B.A.	B.S.
Bio 226 Cellular and Molecular Biology	4	4
Chm 232 Organic Chemistry II	4	4
Distribution Requirements	6	6
	14	14

Fifth Semester

	B.A.	B.S.
Bio 397 Professional Preparation Techniques*	2	2
Bio Elective/Research	3	3
Phy 171 Classical and Modern Physics	4	4
Distribution Requirements	0	3
Free Elective**	9	3
Mth 150 Elementary Statistics	—	3
	16-18	16-18

Sixth Semester

	B.A.	B.S.
Bio 397 Professional Preparation Techniques*	2	2
Bio Elective/Research	3	3
Phy 174 Classical and Modern Physics	4	4
Distribution Requirements	3	3
Computer Science Elective	3	3
Free Elective**	3	3
	16-18	16-18

Seventh Semester

	B.A.	B.S.
Bio 391 Senior Research Projects	1	1
Bio Electives	3-4	6-8
Free Electives**	12	9
	16-17	16-18

Eighth Semester

	B.A.	B.S.
Bio 392 Senior Research Projects	2	2
Bio Electives	3-4	6-7
Distribution Requirement	3	0
Free Electives**	7	7
	15-16	15-16

*Only one semester of Bio 397 is required but it must be taken in either the fifth or sixth semester.

**Any course other than a biology course.

BIO 105. THE BIOLOGICAL WORLD **Three credits**

The Biological World will present concepts and modern ideas pertaining to the natural world and the life sciences. Each semester a selected topic will be addressed and explored from an investigative set of perspectives. While the scientific method will be emphasized in each offering, the range of topics, identified as a subtitle in the course offering data, will include for example (1) Genetics, Evolution and Ecology: Implications for a Changing Society, or (2) Human Biology, or (3) Contemporary Issues in the Life Sciences, among others. This course is intended for students who are not majoring in science, engineering, prepharmacy, nursing or B.S. programs in mathematics or computer science. Two hours of lecture and two hours of laboratory per week. Fee: $40.

Offered every fall semester.

BIO 113. MICROBIOLOGY **Four credits**

This course presents the basic principles of bacteriology and the relationship of microorganisms to disease and its prevention, control, and treatment. It considers the effects of microbes within the body and the body's reaction to them. Lecture, three hours a week; laboratory, three hours a week. Laboratory fee: $40.

Offered every spring semester.

BIO 115-116. HUMAN ANATOMY AND PHYSIOLOGY **Four credits each**

This course provides a general study of the human body, its structure and normal function. It provides an appreciation of the complex nature of the human body with relation to the promotion of a healthy organism. Dissections of specimens are required in the laboratory portion of these courses. Lecture, three hours a week; laboratory, three hours a week. Laboratory fee: $40 each course.

Bio 115. Offered every fall semester.

Bio 116. Offered every spring semester.

BIO 121. PRINCIPLES OF MODERN BIOLOGY I **Four credits**

An introduction to concepts of modern biology for students majoring in biology and other sciences. Topics covered include the origin of life, basic biochemistry, cell structure and function, energetics, reproduction and heredity, molecular genetics, and evolution. Four hours of lecture and three hours of laboratory per week. Laboratory fee: $40.

Corequisite: Chm 115.

Offered every fall semester.

BIO 122. PRINCIPLES OF MODERN BIOLOGY II **Four credits**

An introduction to biological diversity and mammalian structure and function for science majors, usually taken as a continuation of BIO 121. Topics include organismal classification, a survey of biological diversity (including characteristics, ecology, phylogenetic relationships, and economic and biomedical uses) of plants, animals and microbes, and an overview of the mammalian body addressing the form and function of key organ systems. Dissections of specimens are required in the laboratory portion of this course. Four hours of lecture, three hours of laboratory per week. Laboratory fee: $40.

Offered every spring semester.

BIO 225. POPULATION AND EVOLUTIONARY BIOLOGY **Four credits**

This course emphasizes the patterns and processes of evolutionary change in living systems in an ecological context. It reviews the basic characteristics and dynamics of populations, and the relevance of population ecology and population genetics to the evolution of species. Human evolution, sociobiology and other controversial issues are also covered. Laboratory exercises emphasize an experimental approach to more in-depth study of specific topics covered in lecture. Four hours of lecture, three hours of laboratory. Required of all biology majors. Laboratory fee: $40.

Prerequisite: Bio 121-122.

Offered every fall semester.

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BIO 226. CELLULAR AND MOLECULAR BIOLOGY **Four credi**

Cell structure in relation to function. Biochemistry and physiology of animal, plant, a bacterial cells and their viruses are presented in a molecular biology context. The cell division and development. Four hours lectures, three hour of laboratory. Required of biology majors. Laboratory fee: $40.

Prerequisite: Bio 121-122, 225.

Offered every spring semester.

BIO 306. INVERTEBRATE BIOLOGY **Four credi**

This course is a study of the major invertebrate phyla with respect to their taxonomy, evolution, morphology, physiology, and ecology. Lecture, three hours a week; laboratory, thre hours a week. Laboratory fee: $40.

Prerequisites: Bio 121-122, 225-226, or permission of instructor.

Offered in alternate years.

BIO 311. COMPARATIVE PHYSIOLOGY **Four credi**

Comparative Physiology encompasses the study of organ functions and organ system fun tions in different animal groups. Emphasis will be on the systemic physiology of vertebra animals. Lecture, three hours; laboratory, three hours a week. Laboratory fee: $40.

Prerequisites: Bio 121-122, 225-226, or permission of instructor.

Offered in alternate years.

BIO 312. PARASITOLOGY **Four credi**

Parasitology is the study of organisms that live on or within other organisms and the rel tionship of these organisms to their hosts. This course deals with the common parasite that infect man and other animals. Lecture, three hours; laboratory, three hours a week Laboratory fee: $40.

Prerequisites: Bio 121-122, 225-226, or permission of instructor.

Offered in alternate years.

BIO 314. COMPARATIVE VERTEBRATE ANATOMY **Four credi**

This course deals with the evolution and anatomy of the organ systems of vertebrates. Le tures survey the comparative anatomy of the vertebrate classes. Laboratory Dissection include the Lamprey, Shark, Mud Puppy, and Cat in detail. Lecture three hours per week laboratory three hours per week. Laboratory fee: $40.

Prerequisites: Bio 121-122, 225-226.

Offered in alternate years.

BIO 321. MAMMALIAN PHYSIOLOGY **Four credi**

This course examines the function of mammalian systems with regard to homeostasis, metabolism, growth and reproduction. Normal physiological processes as well as some pathophysiological situations are covered. The emphasis is on human physiology; however, other mammalian systems are discussed to demonstrate physiological adaptability to various environmental situations. Laboratory exercises include physiological experimentation in living systems and in computer simulations. Lecture: three hours; Laboratory: three hours. Fee: $40

Prerequisites: Bio 121–122, 225–226, or permission of instructor.

BIO 323. FUNCTIONAL HISTOLOGY **Four credi**

This course emphasizes the microscopic examination of mammalian tissues from morphological and physiological perspectives. Reference is made to organ embryogenesis to support the understanding of organ form and function. Tissue preparation for histological examination is demonstrated. Lecture, three hours; laboratory, three hours per week. Laboratory fee: $40.

Prerequisites: Bio 121-122, 225-226, or permission of instructor.

Offered in alternate years.

BIO 324. MOLECULAR BIOLOGY **Four credits**

This course deals with how the instructions encoded in DNA are used to construct living organisms, and how genetic information is copied and passed on to the next generation. Lectures will cover genome structure and function, regulation of gene expression, DNA, RNA, protein, lipid and carbohydrate synthesis, organelle assembly, cell division and genetic recombination. Laboratories will introduce students to techniques used for genetic engineering. Lecture, three hours; laboratory, three hours per week. Laboratory fee: $40.

Prerequisites: Bio 121-122, 225-226, Chm 231-232, or permission of instructor.

Offered in alternate years.

BIO 325. ENDOCRINOLOGY **Three credits**

This course will focus on the structure, biochemistry, and function of mammalian hormones and endocrine glands, but avian, amphibian and insect hormones will also be discussed where relevant. In addition, clinical pathologies resulting form excess or insufficient hormone production will be discussed, as this is essential to mastering an understanding of Endocrinology. Lecture: three hours.

Prerequisites: Bio 121-122, 225-226, or permission of instructor.

Offered every other Fall semester.

BIO 326. IMMUNOLOGY AND IMMUNOCHEMISTRY **Four credits**

This course is concerned with the biologic mechanisms and chemistry of reactants and mediators associated with natural and acquired states of immunity, tissue and blood serum responses to infection and immunization, and related patho-physiologic alterations of hypersensitivity phenomena in vertebrate animals and man. Three lectures and one three-hour laboratory per week. Laboratory fee: $40.

Prerequisites: Bio 121-122, 225-226, or permission of instructor.

Offered in alternate years.

BIO 327. MEDICAL MICROBIOLOGY **Four credits**

Medical Microbiology provides a professional-level introduction to microbiology that is focused on application of microbiology to the study of infectious disease etiology and epidemiology. The laboratory covers techniques used in isolation and identification of microorganisms. Lecture: three hours a week; Laboratory: three hours per week. Laboratory fee: $40.

Prerequisites: Bio 121-122, Chm 231-232

BIO 328. DEVELOPMENTAL BIOLOGY **Three credits**

A course dealing with principles of organismic development, gametogenesis, fertilization, cleavage, embryogenesis, differentiation, morphogenesis, regeneration. Laboratory work includes vertebrate embryology, microtechnique, and some experimentation. Lecture, two hours; laboratory, three hours a week. Laboratory fee: $40.

Prerequisites: Bio 121-122, 225-226, or permission of instructor.

Offered in alternate years.

BIO 338. BIOLOGY OF CANCER **Three credits**

This lecture course is designed to explore the various concepts and mechanisms associated with the origins, elaborations and future developments in cellular transfromation and carcinogenesis. Emphasis is placed on the molecular biology and physiology of these processes; therefore, a solid background in basic biology is required. Oncogenes, tumor suppressor genes and the disruption of homeostasis are covered in detail, while the medical phenomena typically receive a more general level of coverage.

Prerequisites: Bio 121-122, 226; Chm 231-232.

Bio 331 – Offered every Fall Semester; Bio 332 – Offered every Spring Semester.

BIO 341. LIMNOLOGY **Three credits**

A study of the chemical, physical, and biological aspects of freshwater systems. Laboratory investigations will consist of in-depth analyses of local lakes and streams. Lecture, two hours; laboratory, three hours. Laboratory fee: $45. (Same as GES 340)

Prerequisites: Bio 121-122, 225-226, or permission of instructor.

Offered in alternate years.

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BIO 343. MARINE ECOLOGY **Three cred**

An examination of the biology of marine life within the context of modern ecological pr ciples. The structure and physiology of marine organisms will be studied from the pe spectives of adaptation to the ocean as habitat, biological productivity, and interspec relationships. Emphasis will be placed on life in intertidal zones, estuaries, surface wate and the deep sea. Two hours of lecture and three hours of laboratory per week. Fee: $4 (Same as GES 342)

Prerequisites: GES 230 (Ocean Science) and Bio 121-122 or junior biology major st tus. Students must have formal course experiences in oceanography and biology at the science major level or have completed their sophomore year as a biology major. Offered in alternate years.

BIO 344. ECOLOGY **Four cred**

Ecology examines contemporary ecological thinking as it pertains to the interrelationship of organisms and their environments. Interactions at the population and community lev are emphasized. Lecture, three hours; laboratory, three hours a week. Laboratory fee: $4 (Cross-listed with GES 317)

Prerequisites: Bio 121-122, or permission of instructor.
Offered in alternate years.

BIO 345. GENETICS **Four cred**

Genetics will present a detailed treatment of genetics beyond the introductory level wi particular emphasis on populational and molecular aspects of heredity. Topics will inclu plant and human genetics. Lecture, three hours; laboratory, three hours a week. Labora tory fee: $40.

Prerequisites: Bio 121-122, 225-226, or permission of instructor.
Offered every fall semester.

BIO 346. ANIMAL BEHAVIOR **Four cred**

Animal Behavior is a course emphasizing behavior as the response of an organism to phy ical and social environmental change, and covering the processes that determine whe changes in behavior occur and what form the changes take. Laboratories, using local faun demonstrate principles discussed in lecture. Lecture, three hours; laboratory, three hour a week. Laboratory fee: $40.

Prerequisites: Bio 121-122, 225-226, or permission of instructor.
Offered in alternate years.

BIO 361. PLANT FORM AND FUNCTION **Four cred**

An introduction to the morphology, anatomy, cytology and physiology of plants, with emphasis on the vascular plants. Structural and functional aspects of plants will be inter preted in relation to each other and within ecological and evolutionary contexts. Lecture three hours per week; laboratory, three hours per week. Laboratory fee: $40.

Prerequisites: Bio 121-122, 225-226, or permission of instructor.
Offered every fall semester.

BIO 362. PLANT DIVERSITY **Four cred**

A comprehensive survey of bryophytes, vascular plants and plantlike organisms (fungi and algae) emphasizing their structure, reproductive biology, natural history, evolution, and importance to humans. Lecture, three hours per week; laboratory, three hours per week. Laboratory fee: $40.

Prerequisites: Bio 121-122, 225-226, or permission of instructor.
Offered every spring semester.

BIO 366. FIELD BOTANY **Three cred**

This is a specialized summertime field course which emphasizes a taxonomic, phyloge netic, and ecological survey of higher plants indigenous to Northeastern Pennsylvania. Due to the extensive field work, enrollment is somewhat more restricted than in other courses; therefore, written permission from the instructor is the prime prerequisite f those upperclassmen wishing to register for the course. (Cross-listed with GES 385)

Prerequisites: Bio 121-122, or permission of instructor.

BIO 368. MEDICAL BOTANY **Three credits**

A specialized summertime course that provides a scientifically-based overview of the ways that plants affect human health. Topics include cultural and historical perspectives of plants and medicine, plants that cause human ailments, plants that cure human ailments, and psychoactive plants. Lecture two hours per day for five weeks.

Prerequisites: Bio 121-122, 225, Chm 231-232 or permission of instructor.
Offered in alternate years.

BIO 391-392. SENIOR RESEARCH PROJECTS **One credit, two credits**

The student will pursue independent research as a member of a team of senior biology majors. Each team will be responsible for the identification of an original research problem, a thorough literature review of the problem, a detailed prospectus prepared in the format of a grant proposal, complete execution of the research project, a formal oral presentation, and a final manuscript prepared in standard journal format. Senior research is required of all biology majors seeking a four-year degree in biology.

Prerequisite: Open only to senior biology majors.
Bio 391. Offered every fall semester.
Bio 392. Offered every spring semester.

BIO 394. BIOLOGICAL FIELD STUDY **One to three credits**

On-site study of biological problems or situations incorporating field documentation and investigation techniques. May be repeated for credit when no duplication of experience results. One hour of lecture per week plus field trip. Fee: variable.

Prerequisites: Bio 121-122, or permission of instructor.

BIO 395-396. INDEPENDENT RESEARCH **One to three credits**

This course involves independent study and research for advanced students in the field of the major under the direction of a staff member. A research paper at a level significantly beyond a term paper is required; it must also be orally presented at an appropriate off-campus science meeting.

Prerequisite: Written approval of department chairperson is required. Candidates for Independent Research must have a minimum GPA of 3.00 and be of upper class standing.

BIO 397. PROFESSIONAL PREPARATION TECHNIQUES **Two credits**

Professional Preparation Techniques introduces biology majors to biology as a profession. Students learn how to read, write, and dissect research papers, and how to make oral presentations and posters using electronic and paper-based supplements. Career development issues, including effective presentation of credentials, are also addressed.

Prerequisite: Junior-level standing.
Offered every fall and every spring semester.

BIO 399. COOPERATIVE EDUCATION **One to six credits**

Professional cooperative education placement in a private/public organization related to the student's academic objectives and career goals. In addition to their work experience, students are required to submit weekly reaction papers and an academic project to a Faculty Coordinator in the student's discipline. (See page 52 in Bulletin for placement procedures.)

Prerequisites: Sophomore standing, 2.0 minimum cumulative average, consent of academic advisor, approval of placement by department chairperson.

BIO 198/298/398. TOPICS **Variable credit**

A study of topics of special interest not extensively treated in regularly offered courses.

Prerequisites: Bio 121-122, 225-226, or permission of instructor.

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BUSINESS ADMINISTRATION

TBA, Chairperson; Professor Emeritus Gera; Professors Batory, Liuzzo, Taylor; Associate Professors Engel, Grandzol, Loftus, O'Hop, Raspen.

Total minimum number of credits required for a Bachelor of Business Administration degree — 121.

Total minimum number of credits required for a minor — 24.

The Business Administration and Accounting Department offers undergraduate and graduate degree programs in business administration with a variety of concentrations leading to executive, managerial and technical careers in business, industry, and governmental organizations. The Association of Collegiate Business Schools and Programs (ACBSP) has accredited both the undergraduate and graduate business administration programs as well as the undergraduate program in accounting. ACBSP accreditation affirms the excellence of our programs to graduate and professional schools as well as potential employers and therefore serves as a major competitive advantage for students completing the business administration major at Wilkes. Students interested in pursuing graduate or professional studies will find that the curriculum provides the appropriate foundation for such opportunities.

The Business Administration curriculum is composed of three tiers or steps intended to combine simultaneously a rigorous general education with the flexibility of individualized program design. The first is the liberal arts General Education Requirements of the University core. This core consists of 40 credits — 13 credits in the Skill Requirements Area and 27 credits in the General Education Requirements Area. To become competitive, effective, organizational leaders and self-fulfilled individuals, Business Administration graduates are expected to possess the skills and knowledge acquired through this liberating exposure to the arts, sciences, mathematics, and the humanities.

The second tier of the curriculum is the Business Administration core of 54 credits. The Business Administration core begins with BA 151, Introduction to Management and Entrepreneurship, a course designed to provide an overview of the functions of management and the entrepreneurial process. The balance of the core transmits a common educational experience to all business administration majors by addressing topics that are recognized to be basic and necessary to all practicing professionals. Although the following twenty-three courses are required by the Business Administration core, five of them fulfill Distribution Area requirements of the University core and so are counted in the first tier grouping. They appear here for completeness:

Acc 101	Introductory Financial Accounting
Acc 102	Introductory Managerial Accounting
BA 151	Introduction to Management and Entrepreneurship
BA 233	The Legal Environment of Business

BA 257	Management Information Systems
BA 309	Business Correspondence and Reports
BA 319	Business Statistics
BA 321	Marketing
BA 341	Managerial Finance
BA 351	Management of Organizations
BA 352	Production and Operations Management
BA 354	Organizational Behavior
BA 356	The Social Responsibility of Business
BA 358	Seminar on International Business Management
BA 360	Business Policy and Decision-Making Seminar
BA 381, 399 or an experiential BA 395–396	
COM 101	Public Speaking
CS 115	Survey of Computers
Ec 101	Economics I
Ec 102*	Economics II (Distribution Area III)
Mth 107	Business Mathematics
6 additional credits in General Education Electives	

*Meets a requirement in the University core.

The third and final tier requires completion of twelve credits of elective courses within the major. These twelve credits must be comprised of courses listed in five concentration areas (Finance, Marketing, Business Economics, International Business, and Entrepreneurship) and those designated as "Other Electives." Students wishing to satisfy the requirements for a particular concentration area must complete at least six of their third-tier credits within that concentration area (See below for a complete description of these concentration areas.)

The Bachelor of Business Administration degree program also contains twelve credits of free electives for further customization of one's educational program. A student who wishes to declare a minor in areas such as computer science, communications, foreign languages, political science, psychology, or sociology, can easily do so. Through a judicious selection of elective concentration courses and use of the free electives courses, it is possible for a student to fulfill two concentrations without the necessity of adding extra credits or extra semesters to one's program. Academic, personal, and career advisors are available to assist students in the selection of concentration areas and coursework. In much the same way, minors, double majors, or a personalized package of electives can be constructed around the interests of the students with the concerned, caring advice of these counselors.

For majors in other disciplines, the Business Administration and Accounting Department offers the minor program in Business Administration with concentrations in Finance, Marketing, Management, International Business, Business Economics and Entrepreneurship, as explained below. Thus, students who may be contemplating a career in business as a means of fully utilizing their already chosen majors will find that the Busi-

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ness Administration minor can be customized to complement their other academic and career interests. Business Administration alumni can be found in positions of leadership in organizations throughout the world. They are leaders in both the public and private sectors. In addition, our alumni are educators, researchers, scholars, entrepreneurs, and other professionals.

For the next generation of executives and professionals seeking similar realizations of their ambitions, the Bachelor of Business Administration degree program at Wilkes will prepare them admirably for their demanding futures as leaders of our global and diverse environment in the twenty-first century.

Closely linked to the Business Administration and Accounting Department are the Allan P. Kirby Center for Free Enterprise and Entrepreneurship and the Small Business Development Center. Both units provide academic and experiential opportunities for business students to apply what they study in classroom settings to functioning organizations under the direction of senior professional staff at each unit.

The following course sequence is recommended for students pursuing the Bachelor of Business Administration degree. By following this recommendation, all University core and Departmental core requirements will be completed in their proper sequences. Students transferring into Wilkes and/or the Bachelor of Business Administration degree program can use this semester-by-semester outline as guidance for completing coursework.

Recommended Course Sequence for a Major in Business Administration

First Semester		Second Semester	
BA 151 Introduction to Management and Entrepreneurship	3	COM 101 Public Speaking	3
CS 115 Survey of Computers	3	Ec 102 Principles of Economics II (Dist)	3
Ec 101 Principles of Economics I	3	Eng 101 Composition or	4
Eng 101 Composition or Distribution Requirement	3	Distribution Requirement	3
Fr. F 101 Freshman Foundations	3	Mth 107 Business Mathematics	3
		Distribution Requirement	3
	15-16		15-16
Third Semester		**Fourth Semester**	
Acc 101 Intro. Financial Accounting	3	Acc 102 Intro. Managerial Accounting	3
BA 233 Legal Environment of Business	3	Distribution Requirements	3
Distribution Requirements	9	BA 257 Mgt. Information Systems	3
		Free Electives	6
	15		15

Fifth Semester		Sixth Semester	
BA 319 Business Statistics	3	BA 341 Managerial Finance	3
BA 321 Marketing	3	BA 352 Production & Operations Mgt.	3
BA 351 Management of Organizations	3	General Education Elective	3
BA 356 Social Responsibility of Bus.	3	BA 354 Organizational Behavior	3
Distribution Requirement	3	Concentration Elective	3
Free Elective	3	Free Elective	3
	18		18
Seventh Semester		**Eighth Semester**	
BA 358 Seminar: International Business Management	3	BA 309 Business Correspondence and Reports	3
Concentration Electives	9	BA 360 Business Policy and Decision-Making Seminar	3
Free Elective	3	Concentration Elective	3
		Free Elective	3
	15		12

Bachelor of Business Administration Degree

Note: Students who pursue the Bachelor of Business Administration degree must complete 15 credits from any of the concentration areas and the "Other Electives" section shown below. Students who wish to satisfy the requirements for a particular concentration area must complete at least 9 of their 15 credits within that concentration area. Students are not required to satisfy the requirements for a concentration area, but they may choose to do so. Students may create a customized concentration through course selection approved by their advisor. Examples might include health services administration, electronic commerce, etc. Students will receive credit for no more than 2 concentration areas.

CONCENTRATION AREAS

Business Economics

Any EC prefixed course in addition to EC 101, EC 102 and EC/BA 319.

Entrepreneurship

BA 281 Nature and Essence of Entrepreneurship
BA 381 Entrepreneurship Internship
BA 382 Practicing Entrepreneurship
BA 384 Small Business Consultancy

Finance

ACC 203 Intermediate Accounting I
BA 342 Property and Life Insurance
BA 343 Investments and Portfolio Management
BA 345 Long-Range Financial Planning
BA 399 Cooperative Education

International Business

BA 212 Government and Business
BA 399 Cooperative Education
EC 301 Comparative Economic Systems
EC 310 Economic Development
EC 340 International Trade and Finance

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Marketing

BA 322 Advertising
BA 324 Retailing
BA 326 The Selling Process
BA 327 Marketing Seminar
BA 328 Consumer Behavior
BA 399 Cooperative Education
COM 302 Public Relations

Other Electives

BA 234 Business Law
BA 395-396 Independent Research
BA 198-298-398 Topics
BA 399 Cooperative Education
BA 399 Cooperative Education
EC 315 Business Cycles
EC 385 Collective Bargaining
Other courses with BA or EC prefixes

BUSINESS ADMINISTRATION MINOR

All students wishing to minor in Business Administration will be required to take eight courses, or twenty-four credits, in business. Five courses are required and three courses are elective. The following five courses are required for all students:

1. EC 102
2. BA 233
3. BA 321
4. BA 341
5. BA 351

In addition to the above five courses, students wishing to minor in Business Administration will be required to take any three courses from any of the Areas of Concentration or Other Electives listed above. Students who wish to minor in Business Administration and also concentrate in a particular area of business may do so by selecting all three of their courses from the same Area of Concentration. In addition to the Areas of Concentration listed above, students may, if they wish, concentrate in Management by taking three of the following courses:

1. BA 352
2. BA 354
3. BA 356
4. BA 357

BA 151. INTRODUCTION TO MANAGEMENT AND ENTREPRENEURSHIP **Three credits**
An introduction to business, management, and entrepreneurship. The functional areas of business and managment practices are highlighted using the small business environment as the primary source of examples. The entrepreneurial process is demonstrated throughout the course. Students begin developing competencies in research, communications, and decision-making.

BA 212. GOVERNMENT AND BUSINESS **Three credits**
A study of the relationship of government to economic enterprises with special attention to conditions in the United States; the regulatory activities of government agencies; administrative methods, objectives, and results of governmental control. Reference is made to monopoly and quasi-monopoly situations, public utilities, trusts, transportation, extractive industries, and public enterprise.

BA 233. THE LEGAL ENVIRONMENT OF BUSINESS **Three credits**
This course provides a foundation for business managers to operate within the legal environment in which all businesses in our society function. It provides an overview of law and our legal system, the lawmaking and adjudicatory processes, and the roles of economic, social, and political forces in the shaping of constraining legal rules and regulations.
Prerequisite: Sophomore standing.

BA 234. BUSINESS LAW **Three credits**
An in-depth study of contracts, commercial transactions, the Uniform Commercial Code, business organizations, property law, liability and accountants, and debtor-creditor relationships. Provides the necessary legal background for those entering the accounting profession.

BA 257. MANAGEMENT INFORMATION SYSTEMS **Three credits**
This course introduces the fundamental concepts underlying the design, implementation, control, and evaluation of business-oriented computer based information systems, office automation, information reporting, and decision making. (Cross-listed with ACC 341)
Prerequisites: Acc 102.

BA 281. NATURE AND ESSENCE OF ENTREPRENEURSHIP **Three credits**
An introduction to entrepreneurs and self-career creation in small and large entrepreneurial organizations. The importance of entrepreneurs in the local, national and world economies and personal characteristics of successful entrepreneurs will be studied. Guest speakers and a case study are included.

BA 309. BUSINESS CORRESPONDENCE AND REPORTS **Three credits**
An emphasis on written communications: practice in writing major classification of business letters; persuasive requests and refusals, inquiry, order, sales, application, credit, collection, and goodwill letters. Investigative techniques of research and analytical report writing. Designated writing intensive.

BA 319. BUSINESS STATISTICS **Three credits**
An introduction to the primary tools of research in business and economics; the collection, summarization, analysis, and interpretation of statistical findings relevant to business decisions. Two hours of lecture and one hour of individualized laboratory. Topics covered will include, but not be limited to, descriptive statistics, probability, sampling theory, hypothesis testing, and regression and correlation analysis. (Cross-listed as Ec 319.)

BA 321. MARKETING **Three credits**
An introduction to the planning and activities of marketing. Emphasis on budgeting, product conception and development, pricing, distribution channels and promotion.
Junior/Senior standing recommended.

BA 322. ADVERTISING **Three credits**
A managerial analysis of the decisions involved in advertising. Topics include research, ethics, campaign design, copy, art, media, budgeting, and effectiveness.
Prerequisite: BA 321.

BA 324. RETAILING **Three credits**
A basic course that discusses opportunities in retailing; types of retail institutions; problems of store policy, store location; study of organizational structure of department stores; organization and functions of all store divisions.
Prerequisite: BA 321.

BA 326. THE SELLING PROCESS **Three credits**
Examines the buyer-seller relationship process of marketing products and services to consumers and organizations. Emphasis is placed on sales techniques, presentation styles and sales management skills appropriate to the business interaction.
Prerequisite: BA 321.

BA 327. MARKETING SEMINAR **Three credits**
In-depth examination of selected issues and problems in marketing. Specific topics alternate depending on student and faculty interests in areas such as marketing strategy formulation, marketing research, new product development, international marketing and sports marketing.
Prerequisite: BA 321.

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BA 328. CONSUMER BEHAVIOR **Three credits**
This course presents a survey and integration of concepts and theories that help explain or predict consumer behavior. Emphasis is on the implications of this information for marketing planning.
Prerequisite: BA 321.

BA 341. MANAGERIAL FINANCE **Three credits**
A study of the financial theories and decision-making models relating to: financial analysis and planning; working capital management; cash budgeting; capital asset acquisitions; capital asset financing; cost of capital; capital structuring; acquisitions; divestitures; and reorganizations.
Junior/Senior standing recommended.

BA 342. PROPERTY AND LIFE INSURANCE **Three credits**
A study of principles of life, health, property, and liability insurance applied to the needs of individuals and organizations
Prerequisite: BA 341.

BA 343. INVESTMENTS and portfolio management **Three credits**
A survey of the features and characteristics of investment instruments; the operation and regulation of security markets; the techniques of security analysis and valuation; financial intermediaries; modern and traditional portfolio theory and management.
Junior/Senior standing recommended.

BA 345. LONG-RANGE FINANCIAL PLANNING **Three credits**
A survey of the tools and techniques currently employed by financial decision-makers when evaluating organizational performance and developing future courses of action. Emphasis will be placed upon long-range planning and capital budgeting techniques.
Prerequisites: BA 341 and BA 343.

BA 351. MANAGEMENT OF ORGANIZATIONS **Three credits**
Introduction to the theory and practice of managing organizations, including planning, organizing, and controlling. Interdisciplinary in nature, social and ethical dimensions of managing are examined.
Junior standing recommended

BA 352. PRODUCTION AND OPERATIONS MANAGEMENT **Three credits**
Principles of decision-making, systems design, introduction to quantitative tools of analysis; fundamentals of production, inventory, financial, and distribution management.
Prerequisite: BA 319 and BA 351.

BA 354. ORGANIZATIONAL BEHAVIOR **Three credits**
A behavioral science approach to understanding individual, formal, and informal group behavior; macro- and micro-organizational structures, motivation and leadership theories, group influences, conflicts, decision-making, communication, with emphasis on behavioral science applications in developing organizational effectiveness.
Prerequisite: BA 351.

BA 356. THE SOCIAL RESPONSIBILITY OF BUSINESS **Three credits**
A course dealing with the problems faced by managers in responding to issues such as: the kinds and extent of social responsibility to be assumed by businesses, employee rights, consumerism, and the balance of public and private interests.
Junior standing recommended.

BA 358. SEMINAR ON INTERNATIONAL BUSINESS MANAGEMENT **Three credits**
An introduction to the field of international business. The empirical dimensions of the world economy; business enterprise in international trade; trade channels; effects of economic, political and social environment on international management problems of international operations; the role of government in fostering international business. A substantial amount of writing is required.
Prerequisite: BA 351 and senior standing.

BA 360. BUSINESS POLICY AND DECISION-MAKING SEMINAR **Three credits**
A capstone course that integrates the functional areas of business from the point of view of top management. Emphasis is on the role of management in the formation of strategic and long-range plans. A substantial writing component is included.
Prerequisite: BA 351 and senior standing.

BA 381. ENTREPRENEURIAL INTERNSHIP **Three credits**
The course content provides on-the-job mult-discipline experience assisting a working local entrepreneur in the development and operation of a business enterprise.

BA 382. PRACTICING ENTREPRENEURSHIP **Three credits**
Advanced essentials and elements of becoming an entrepreneur, or intrapreneur, will be examined through current classic "real life' entrepreneurial case readings and entrepreneur and guest faculty lectures. Students will create their own entrepreneurial enterprise as a team project.
Prerequisites: Senior standing, BA 281 and BA 381, or permission of instructor.

BA 384. SMALL BUSINESS CONSULTANCY **Three credits**
Teams of students diagnose, analyze, and recommend solutions for problems defined by small business clients. Course requires students to apply a range of classroom skills in a real situation and present oral and written reports to the client firm.
Prerequisites: Senior standing and instructor permission.

BA 395-396. INDEPENDENT RESEARCH **One to three credits**
Independent study and research for advanced students in the field of the major under the direction of a staff member. A research paper at a level significantly beyond a term paper is required.

BA 399. COOPERATIVE EDUCATION **One to six credits**
Professional cooperative education placement in a private/public organization related to the student's academic objectives and career goals. In addition to their work experience, students are required to submit weekly reaction papers and an academic project to a Faculty Coordinator in the student's discipline. (See page 52 in Bulletin for placement procedures.)
Prerequisites: Sophomore standing, 2.0 cumulative average, consent of academic advisor, approval of placement by department chairperson.

BA 198/298/398. TOPICS **Variable credit**
Lectures on subjects of special current interest in business which are not covered in other courses.

CHEMISTRY

Professor Turoczi, Chairperson; Professors Emeriti Bohning, Faut, Rozelle, Salley, Swan; Professors Redmond, Stine; Associate Professor Wignot; Assistant Professor Kiessling; Laboratory Manager Bianco; Adjunct Professor Gregorek; Visiting Assistant Professor Phillips.

Total minimum number of credits required for a major in Chemistry leading to the B.S. degree — 129.

Total minimum number of credits required for a major in Chemistry leading to the B.A. degree — 125.

Total minimum number of credits required for a minor — 22.

The chemistry curriculum is designed to provide a comprehensive background in the fundamentals of the science and to contribute to the general education of the student. Graduates with a B.S. degree may find industrial or government employment or continue advanced studies in a graduate or professional school. The B.A. degree is available for students who need additional flexibility to prepare for a career in secondary education, the health professions (such as medicine, dentistry, etc.), law, business, engineering, computer science, or other related areas. Utilizing existing courses and programs, it is also possible for a student to achieve a B.A. degree with a double major in chemistry and computer science. In all cases students will choose electives for the various career options after consultation with departmental advisors.

A minor in Chemistry consists of the completion of 22 credits in chemistry, including Chm 115 and Chm 116. Selection of other courses must be in keeping with the existing prerequisites as specified in this Bulletin.

Wilkes is approved by the American Chemical Society for the professional training of chemists. Students who complete the B.S. program may be certified for membership eligibility in the Society at graduation.

Required courses are indicated in the following suggested curricular outlines which are based on an extensive prerequisite structure. The order of the courses presented in this sequential arrangement is a suggested one and changes in the order may be made after faculty advisement.

Recommended Course Sequence for a Major in Chemistry

First Semester

	B.A.	B.S.
Chm 115 Elements and Compounds	4	4
Eng 101 Composition or	4	4
Distribution Requirement	3	3
Mth 111 Calculus I*	4	4
Fr.F 101 Freshman Foundations	3	3
CS Elective	3	3
	17-18	17-18

Second Semester

	B.A.	B.S.
Chm 116 The Chemical Reaction	4	4
Eng 101 Composition or	4	4
Distribution Requirement	3	3
Mth 112 Calculus II*	4	4
Distribution Requirements	3	3
Free Elective	3	3
	17-18	17-18

** Students in the BA program may substitute Mth 105 for Mth 111, Mth 106 for Mth 112.*

Third Semester

	B.A.	B.S.
Chm 231 Organic Chemistry I	4	4
Mth 211 Intro. Linear Algebra and Differential Equations	0	4
Distribution Requirement	3	3
Phy 201 General Physics I*	4	4
Free Electives	3	0
	14	15

Fourth Semester

	B.A.	B.S.
Chm 222 Systematic Inorganic Chemistry	4	4
Chm 232 Organic Chemistry II	4	4
Distribution Requirement	3	3
Phy 202 General Physics II*	4	4
	15	15

** Students in the BA program may substitute Phy 171 for Phy 201, Phy 174 for Phy 202.*

Fifth Semester

	B.A.	B.S.
CHM 244 Instrumental Analysis	3	3
Chm 251 Physical Chemistry I	3	3
Chm 253 Physical Chemistry I Lab	0	1
Chm 272 Chemical Structure Determination	3	3
Major Elective	3	3
Free Elective or Chm 361*	3	3
	15	16

Sixth Semester

	B.A.	B.S.
Chm 252 Physical Chemistry II	3	3
Chm 254 Physical Chemistry II Lab	0	1
Chm 342 Principles of Instrumental Analysis	2	2
Distribution Requirements	9	9
Free Elective or Chm 362*	3	3
	17	18

Seventh Semester

	B.A.	B.S.
Chm 321 Advanced Inorganic Chemistry	0	3
Chm 323 Advanced Inorganic Chemistry Lab	0	1
Chm 391 Senior Research	1	1
Chm 342 Instrumental Analysis	3	3
Free Electives	12	9
	16	17

Eighth Semester

	B.A.	B.S.
Chm 392 Senior Research	2	2
Free Electives	8	8
Major Elective	3	3
	13	13

** Students in both BA and BS programs must include either Chm 361 or Chm 362.*

Special Requirements

B.A. degree students must elect a minimum of two 300-level courses, one of which must be in the Chemistry program.

B.S. degree students must elect a minimum of two 300-level courses in addition to the required 300-level courses, Chm 321, 323, 391-392.

Chemistry 391-392 are laboratory research courses. A student may obtain permission of the department to carry out a Senior Project which is not laboratory research. This permission will be granted only in exceptional cases.

Teacher certification students must satisfy the requirements described in the Education section of this Bulletin as they pertain to chemistry certification. The certification student must take an introductory biology course, must work in the Chemistry program as a Laboratory Assistant for a minimum of one semester, and will be required to do certain special assignments related to teacher training in Chm 391.

The Chemistry program strongly recommends that students elect a foreign language to satisfy one of the General Education humanities requirements. The language of choice should be German, Russian, or French in that priority.

The Chemistry Department strongly recommends that students elect COM 101, Public Speaking.

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All upper division Chemistry majors are expected to attend Department seminars. Seniors must participate in the seminars to receive credit for Chm 391.

CHM 95. PREPARATION FOR GENERAL CHEMISTRY **Three credits**
This course is designed to serve the remedial needs of students who require a "preparatory" course to General Chemistry (CHM 115/116, 118). It provides an introduction to and practice with the principles and concepts essential for understanding chemistry. Key topics covered in this course include reviewing basic mathematical tools and improving problem-solving skills. In addition, a discussion of the fundamental chemical laws, the structure of matter, and the periodic table is presented. Finally, the use of chemical formulas to describe various chemical reactions and their stoichiometry is covered. Please note, however, that this course does not satisfy any chemistry requirements in any major.

CHM 105. CHEMISTRY AND MODERN SOCIETY **Three credits**
This course will emphasize consumer applications of chemistry with some emphasis on environmental consequences of the use of various forms of energy (nuclear, coal, petroleum, natural gas) and everyday chemicals including food, drugs, agricultural chemicals, and chemicals used in pest control. Details are given separately. Class, two hours a week; laboratory, two hours a week. Fee: $40.

CHM 115. ELEMENTS AND COMPOUNDS **Four credits**
Emphasis is placed on the periodic table and stoichiometry, including chemical properties, physical states, and structure. Class, three hours a week; laboratory, three hours a week; problem session, one hour a week. Fee: $40.

CHM 116. THE CHEMICAL REACTION **Four credits**
A detailed study of chemical equilibria in aqueous solution. Class, three hours a week; laboratory, three hours a week; problem session, one hour a week. Fee: $40.
Prerequisite: Chm 115.

CHM 222. SYSTEMATIC INORGANIC CHEMISTRY **Four credits**
A systematic description of the chemistry of the main group elements based on fundamental chemical principles. Fundamental techniques of inorganic synthesis. Class, three hours a week; laboratory three hours a week. Fee: $40.
Prerequisite: Chm 116.

CHM 231. ORGANIC CHEMISTRY I **Four credits**
An introduction to the chemistry of carbon compounds which develops the theoretical principles underlying the mysterious "vital force" from which all organic materials were supposedly derived. These principles will be investigated and applied in the laboratory. Class, three hours a week; laboratory, three hours a week; pre-lab session, one hour a week. Fee: $40.
Prerequisite: Chm 116 or Chm 118.

CHM 232. ORGANIC CHEMISTRY II **Four credits**
A continuation of Chm 231 with emphasis on modern organic syntheses. The laboratory integrates syntheses, isolation, analysis, and instrumentation. Class, three hours a week; laboratory, three hours a week; pre-lab session, one hour a week. Fee: $40.
Prerequisite: Chm 231.

CHM 244. INSTRUMENTAL ANALYSIS **Three credits**
A laboratory course in the application of instrumental techniques for obtaining qualitative and quantitative information about the composition and structure of matter. Lab work includes chromatographic, spectroscopic and electrometric techniques, and the use of computers for data acquisition, management and analysis. The course serves students in biochemistry, chemistry, biology, geology, health-related sciences, engineering and environmental sciences who desire experience with these techniques and how they are used in chemical problem-solving. One 1.5 hour pre-lab session and one four hour lab period per week. Fee: $50. (Cross-listed with GES 244.)
Prerequisite: Chm 116 or Chm 118.

CHM 251. PHYSICAL CHEMISTRY I **Three credits**
The first and second laws of thermodynamics are developed, leading to an emphasis on the applications of the free energy concept: electrochemistry, the phase rule, and colligative properties. Chemical kinetics is introduced. Class, three hours a week.
Prerequisites: Chm 116, Mth 106 or Mth 211, Phy 106 or Phy 202.

CHM 252. PHYSICAL CHEMISTRY II **Three credits**
Elementary quantum theory, kinetic molecular theory, and nuclear chemistry are studied. The molecular orbital theory and other approximate methods of quantum theory are developed. Statistical mechanics and surface chemistry are introduced. Class, three hours a week.
Prerequisite: Chm 251.

CHM 253. PHYSICAL CHEMISTRY I LABORATORY **One credit**
Laboratory experiments related to the subject matter of Chm 251 are carried out, including calorimetry, electrochemistry, gas laws, and kinetics. Statistics and data analysis are also covered. Must be taken concurrently with Chm 251 or with permission of the instructor. Laboratory, three hours a week; pre-lab, one hour a week. Fee: $40.
Prerequisites or Corequisites: Chm 251 or permission of instructor.

CHM 254. PHYSICAL CHEMISTRY II LABORATORY **One credit**
Laboratory experiments related to the subject matter of Chm 252 are carried out, including kinetics, spectroscopy, and polymers. Must be taken concurrently with Chm 252 or with permission of the instructor. Laboratory, three hours a week; pre-lab, one hour a week. Fee: $40.
Prerequisites or Corequisites: Chm 252 or permission of instructor.

CHM 272. CHEMICAL STRUCTURE DETERMINATION **Three credits**
A study of structure determination techniques with emphasis on chromatographic methods and spectroscopy, including nuclear magnetic resonance, infrared, untraviolet, visible and mass spectroscopy. Class, one hour a week; laboratory, six hours a week. Fee: $50.
Prerequisites: Chm 222, 232, 251.

CHM 321. ADVANCED INORGANIC CHEMISTRY **Three credits**
Introduction to ligand field theory; chemistry of the first transition series, organometallic, and pi acceptor compounds; mechanisms of inorganic reactions. Class, three hours a week.
Prerequisites: Chm 222 and 252.

CHM 323. ADVANCED INORGANIC CHEMISTRY LABORATORY **One credit**
Synthesis of coordination and organometallic compounds, and spectroscopic characterization of the products using modern laboratory techniques. Must be taken concurrently with Chm 321 or with permission of instructor. Laboratory, three hours a week. Fee: $50.
Prerequisites or Corequisites: Chm 321 or permission of instructor.

CHM 342. PRINCIPLES OF INSTRUMENTAL ANALYSIS **Three credits**
A course in the fundamental principles upon which measuring devices are based and used to build analytical instruments. With these principle, intelligent choices among competing approaches to solving an analytical problem may be made, while the limitations and pitfalls that accompany physical measurements are understood. Two one hour lecture periods per week.
Prerequisite: Chm 251-252.

CHM 346. POLYMER CHEMISTRY **Three credits**
Introduction to high polymers as an engineering material and the mechanical, electrical, and optical properties of polymers. Class, three hours a week. (same as MaE 332)
Prerequisite: Junior or senior standing.

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CHM 361. BIOCHEMISTRY I — **Three credits**
This course is a study of the physical and chemical properties of proteins, nucleic acid, fatty acids, and carbohydrates emphasizing the relationship between the chemical structure and the biological function. The course includes the physical methods of biochemistry, enzyme kinetics, bioenergetics and nucleic acid transcription and translation.
Prerequisite: Chm 232.

CHM 362. BIOCHEMISTRY II — **Three credits**
This course is a study of the catabolism and anabolism of carbohydrates, fatty acids and amino acids. The course emphasizes the regulation and integration of major metabolic pathways, including glycolysis, the Kreb's cycle, electron transport, gluconeogenesis, pentose phosphate pathway, fatty acid metabolism and amino acid metabolism.
Prerequisite: Chm 232.

CHM 363. BIOCHEMISTRY LABORATORY — **One credit**
Laboratory experiments which emphasize biochemical techniques used in isolation and characterization of macromolecules. Included in the course are various chromatographic techniques, electrophoresis, spectrophotometry and classic biochemical methods. Laboratory three hours a week. Pre-lab, one hour per week. Fee: $50.
Prerequisite or Corequisite: Chm 361 or permission of instructor.

CHM 391. SENIOR RESEARCH I — **One credit**
The planning and execution of a chemistry research project under the direction of a faculty member. It is expected that this will be a laboratory research project. Students will also learn how to search the chemical literature using modern computer methods. Students are required to attend weekly Department seminars and present at least one seminar. Fee: $30.
Prerequisite: Senior standing in a Chemistry curriculum.

CHM 392. SENIOR RESEARCH II — **Two credits**
Students will carry out a chemistry research project under the direction of a faculty member. It is expected the project will be a laboratory research project. The project must culminate in a written report and the results must be presented at a Department seminar. Students are required to attend weekly Department seminars and present at least one seminar. Fee: $30.

CHM 395-396. INDEPENDENT RESEARCH — **One to three credits each**
Independent study and research for advanced students in the field of the major under the direction of a staff member. A research paper at a level significantly beyond a term paper is required. Cannot be taken for credit before the seventh semester but may be a continuation of work begun before the seventh semester. Fee: one credit $30, two credits $40, three credits $50.

CHM 398. TOPICS — **One to three credits**
A study of topics of special interest, such as advanced physical chemistry, advanced analytical chemistry, advanced organic chemistry, surface and colloid chemistry, nuclear chemistry, chemical kinetics, or spectroscopy.

CHM 399. COOPERATIVE EDUCATION — **One to six credits**
Professional cooperative education placement in a private/public organization related to the student's academic objectives and career goals. In addition to their work experience, students are required to submit weekly reaction papers and an academic project to a Faculty Coordinator in the student's discipline. (See page 52 in Bulletin for placement procedures.)
Prerequisites: Sophomore standing, 2.0 cumulative average, consent of academic advisor, approval of placement by department chairperson.

Students without the indicated prerequisites for 200- and 300-level chemistry courses may enroll after written permission of the instructor has been approved by the department chairperson.

COMMUNICATIONS

Professor Baldino, Chairperson; Professor Emeritus Bigler; Professors Elmes-Crahall, Kinney; Assistant Professor Stine; Visiting Assistant Professor Frantz; Director of Shelburne Center Brigido.

Total minimum number of credits required for a major in Communications leading to the B.A. degree — 120.

Total minimum number of credits required for a minor — 18.

The major in Communications has concentrations in Rhetoric and Public Communication; Organizational Communication; Telecommunications (Radio/Television); and Journalism. Each concentration offers a wide choice of career options as well as graduate school preparation. While each concentration has its own unique curricular aspects, the goals are the same — a graduate who is able to write, speak, and think both analytically and creatively. Each concentration offers skills and performance courses and co-curricular activities that can be applied to every-day situations. In addition, the theory, writing and analysis courses enable students to advance beyond the entry level in their chosen fields or even to change fields entirely. We believe the curriculum also affords ample opportunity for the student to explore other disciplines. It is recommended that students who major in Communications take a foreign language.

Students majoring in Communications may receive a Pennsylvania Teaching Certificate for teaching elementary school or Communications in grades 7-12. Please see the requirements listed in the Education section of this **Bulletin.**

The Major

Departmental Requirements:

All students choosing to major in Communications must fulfill specific department requirements. These courses contain skills, theory, analysis, performance, writing, and research. They are as follows:

COM 101	Fundamentals of Public Speaking
COM 102	Principles of Communication
COM 202	Interpersonal Communication
COM 224	Mass Media in Society
COM 324	Communication Research Methods
COM 397	Senior Seminar

The Department also has a six-hour writing requirement for all communication majors.

Concentration Requirements:

Each concentration is described and outlined on the following pages.

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Organizational Communication

This concentration introduces students to the theory, skills, and application of face-to-face communication in interpersonal, small group, organizational, and public settings. Its theoretical foundation is primarily in the behavioral sciences. Communication is viewed as an ongoing process, knowledge of which permits the student to apply his or her skills to a variety of contexts.

All students concentrating in Organizational Communication will take the following three courses (9 credits):

COM 206 Business and Professional Speaking
COM 302 Fundamentals of Public Relations
COM 303 Organizational Communication

In addition, Organizational concentrators will complete 9 credits selected from the following courses:

COM 203 Small Group Communication
COM 252 Internship
(Only three credits of internship may count in the concentration.)
COM 301 Persuasion
COM 304 Intercultural Communication
COM 352 Advanced Public Relations
BA 322 Advertising
(All prerequisites must be met for BA 322)

Writing Requirement (6 credits):

COM 260 Basic Newswriting and either
COM 262 Copyediting, Headwriting and Layout or
Eng 202 Technical Writing

Public Relations Track:

The Public Relations Society of America has developed guidelines for undergraduates wishing to enter the field of public relations. Students should consult an advisor within the department to determine what additional courses will be necessary to meet these guidelines.

Rhetoric and Public Communication

This concentration introduces students to the history, principles, and practices of traditional rhetoric. The concentration derives its theoretical foundation from the works of classical rhetoric. It is a performance-centered concentration in which students research, write, deliver, and analyze public discourse. Each course emphasizes adaptation of messages to diverse audiences, usually found in formal, deliberative settings.

All students concentrating in Rhetoric and Public Communication are required to take the following three courses (9 credits):

COM 204 Argumentation and Debate
COM 300 Rhetorical Criticism
COM 301 Persuasion

In addition, Rhetoric concentrators will take 9 credits selected from the following courses:

COM 201 Advanced Public Speaking

COM 203 Small Group Communication
COM 205 Oral Interpretation
COM 206 Business and Professional Speaking
COM 207 Voice and Diction
COM 252 Internship
(Only three credits of internship may count in the concentration.)
COM 302 Fundamentals of Public Relations
COM 398 Topics in Presidential Campaign Rhetoric

Writing Requirement (6 or 7 credits):

Eng 201 Writing About Literature and Culture or
COM 225 Media Criticism and
COM 260 Basic Newswriting

Political Communication Track:

Students who are interested in careers in political communication must satisfy the twelve-credit concentration requirement, and take three political science courses at the 200 level or above. These courses should be chosen in consultation with an advisor.

Recommended Course Sequence for Organizational Communication and Rhetorical and Public Communication Concentrations

First Semester		Second Semester	
Eng 101 Composition or	4	Eng 101 Composition or	4
Distribution Requirement	3	Distribution Requirement	3
COM 101 Fundamentals of Speech	3	COM 102 Principles of Communication	3
Distribution Requirements	6	Distribution Requirements	9
FrF 101 Freshman Foundations	3		
	15-16		15-16
Third Semester		**Fourth Semester**	
COM 202 Interpersonal Communication	3	Concentration Selections	6
COM 260 Basic Newswriting	3	Writing Requirement	3
Writing Requirement	3	Distribution Requirements	6
Free Elective	6		
	15		15
Fifth Semester		**Sixth Semester**	
COM 224 Mass Media	3	COM 300 Rhetorical Criticism or	3
COM 302 Public Relations	3	COM 303 Organizational Communication	
Concentration Selection	3	Concentration Selection	3
Free Electives	6	Free Elective	3
	15		15
Seventh Semester		**Eighth Semester**	
COM 324 Research Methods	3	COM 397 Senior Seminar	3
Concentration Selection	3	Free Electives	12
Free Electives	9		
	15		15

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Telecommunications

This concentration introduces students to the history, economics, regulations, and functions of the radio, television and cable industries. It provides students with a combination of skills, performance, and theory that will enable graduates to seek employment in those industries. In addition, students should be competitive in advertising, marketing, and research firms as well as audio/video media.

All students concentrating in Telecommunications must take the following three courses (9 credits):

COM 220	Introduction to Telecommunications
COM 221	Basic Audio Production
COM 222	Basic Video Production

In addition, Telecommunications concentrators will take 9 credits selected from the following courses:

COM 223	The Art of Film
COM 225	Media Criticism
COM 252	Internship (Only three credits of internship may count in the concentration.)
COM 320	Media Management
COM 321	Broadcast Journalism
COM 322	Advanced Video Production
COM 362	Mass Communication Law

Writing Requirement (6 or 7 credits):

COM 260	Basic Newswriting and
Eng 201	Writing About Literature and Culture or
Eng 202	Technical Writing

Recommended Course Sequence for Telecommunications Concentration

First Semester		Second Semester	
Eng 101 Composition or	4	Eng 101 Composition or	4
Distribution Requirement	3	Distribution Requirement	3
COM 101 Fundamentals of Speech	3	COM 102 Principles of Communication	3
Distribution Requirements	6	Distribution Requirements	9
FrF 101 Freshman Foundations	3		
	15-16		15-16
Third Semester		**Fourth Semester**	
COM 202 Interpersonal Communication	3	COM 220 Intro. to Telecommunications	3
COM 260 Basic Newswriting	3	Concentration Selection	3
Concentration Selection	3	Eng 201 Advanced Composition	3
Free Elective	6	Distribution Requirements	6
	15		15

Fifth Semester		Sixth Semester	
COM 221 Basic Audio Production	3	COM 222 Basic Video Production	3
COM 224 Mass Media	3	Free Electives	12
Free Elective	9		
	15		15
Seventh Semester		**Eighth Semester**	
COM 324 Research Methods	3	COM 397 Senior Seminar	3
Concentration Selection	3	Free Electives	12
Free Electives	9		
	15		15

Journalism

This concentration is designed to prepare students to write crisp, concise, lively prose for mass audiences; to utilize, interpret, and analyze primary sources; and to offer thought-provoking commentary on contemporary issues and current events. Students are strongly advised to pursue a minor in English, Political Science, History or another area, with departmental approval.

All students concentrating in Journalism will take the following three courses (9 credits):

COM 262	Copyediting, Headwriting and Layout
COM 360	Advanced Newswriting
COM 362	Mass Communication Law

In addition, Journalism concentrators will take 9 credits selected from the following courses:

COM 225	Media Criticism
COM 252	Internship (Only three credits of internship may count in the concentration.)
COM 261	American Newspaper
COM 302	Fundamentals of Public Relations
COM 361	Feature Writing

Writing Requirement (6 or 7 credits):

COM 260	Basic Newswriting and
Eng 201	Writing About Literature and Culture *or*
Eng 202	Technical Writing

Recommended Course Sequence for Journalism Concentration

First Semester		Second Semester	
Eng 101 Composition or	4	Eng 101 Composition or	4
Distribution Requirement	3	Distribution Requirement	3
COM 101 Fundamentals of Speech	3	COM 102 Principles of Communication	3
Distribution Requirements	6	Distribution Requirements	9
FrF 101 Freshman Foundations	3		
	15-16		15-16

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Third Semester	
COM 202 Interpersonal Communication	3
COM 260 Basic Newswriting	3
Concentration Selection	3
Free Electives	6
	15

Fourth Semester	
COM 262 Copyediting, Headwriting & Layout	3
Concentration Selection	3
Eng 201 Advanced Composition	3
Distribution Requirements	6
	15

Fifth Semester	
COM 224 Mass Media	3
Concentration Selections	6
Free Electives	6
	15

Sixth Semester	
COM 360 Advanced Newswriting	3
COM 362 Mass Communication Law	3
Free Elective	9
	15

Seventh Semester	
COM 324 Research Methods	3
Concentration Selection	3
Free Electives	9
	15

Eighth Semester	
COM 397 Senior Seminar	3
Free Electives	12
	15

The Minor

Minors are offered in each of the areas of concentration provided by the Department. Minor requirements are as follows:

Organizational Communication Minor

Required: Either COM 101 Fundamentals of Speech or COM 102 Principles of Communication

Electives: Five of the following:
- COM 202 Interpersonal Communication
- COM 203 Small Group Communication
- COM 206 Business and Professional Speaking
- COM 301 Persuasion
- COM 302 Fundamentals of Public Relations
- COM 303 Organizational Communication

Rhetoric and Public Communication Minor

Required: Either COM 101 Fundamentals of Speech or COM 102 Principles of Communication

Electives: Five of the following:
- COM 201 Advanced Public Speaking
- COM 203 Small Group Communication
- COM 204 Argumentation and Debate
- COM 206 Business and Professional Speaking
- COM 300 Rhetorical Criticism
- COM 301 Persuasion
- COM 302 Fundamentals of Public Relations

Telecommunications Minor

Required: COM 220 Introduction to Telecommunications

Electives: Five of the following:
- COM 221 Basic Audio Production
- COM 222 Basic Video Production
- COM 223 The Art of Film
- COM 224 Mass Media in Society
- COM 321 Broadcast Journalism
- COM 322 Advanced Video Production
- COM 362 Mass Communication Law

Journalism Minor

Required: COM 260 Basic Newswriting

Electives: Five of the following:
- COM 224 Mass Media in Society
- COM 261 The American Newspaper
- COM 354 Publication Design
- COM 360 Advanced Newswriting
- COM 361 Feature Writing
- COM 362 Mass Communication Law

COM 101. FUNDAMENTALS OF PUBLIC SPEAKING **Three credits**
Principles of study, application, and evaluation of public speaking. Emphasis will be upon meeting the needs of students through individualized instruction in oral communication settings. The course is taught each semester.

COM 102. PRINCIPLES OF COMMUNICATION **Three credits**
A study of the theory and process of communication. Required of all department majors. Taught every spring semester.

COM. 144. DEPARTMENT PRACTICUM **One to two credits**
A - Debate and Forensics, B – P.R. Agency, C – WCLH Radio, D – The Beacon, E – Television, F – Department. The Department Practicum may be taken for one to two credits per semester with the total not to exceed six. Students may earn credit for major roles and positions of major responsibility in the above cocurricular activities. Credit for participation in these activities is optional, and voluntary participation (without credit) is also encouraged. The department, through the advisor or instructor of the activity, has the authority to approve or reject any contract for credit under this designation. Credits earned are applicable toward graduation but do not count toward the requirements of any concentration in COM. Written approval of credit must be by advisor and Department Chairperson.

COM 201. ADVANCED PUBLIC SPEAKING **Three credits**
Inquiry into the practice and principles of speech composition and presentation. Detailed analysis of the areas of invention, arrangement, style, and delivery, and an introduction to speech criticism.
Prerequisite: COM 101 or consent of instructor.

COM 202. INTERPERSONAL COMMUNICATION **Three credits**
The course focuses on interpersonal communication theory and its application to improving the student's interpersonal skills in managing conflict, negotiating, interviewing, and in developing relationships. Taught fall semesters.
Prerequisite: COM102 or consent of instructor

COM 203. SMALL GROUP COMMUNICATION **Three credits**
The course is designed to expand the student's knowledge of the theories and types of small group communication. Emphasis on the task, leadership, and interpersonal skills of participants.
Prerequisite: COM 102.

COM 204. ARGUMENTATION AND DEBATE **Three credits**
Training in the fundamentals of argumentation and debate, with practice in gathering and organizing evidence and support materials. Course taught every other fall semester.
Prerequisite: COM 101 or consent of instructor.

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COM 205. ORAL INTERPRETATION **Three credits**
An investigation of literature that combines analysis with interpretive oral performance.

COM 206. BUSINESS AND PROFESSIONAL SPEAKING **Three credits**
Course will concentrate on communication theory as applied to business and professional settings. Students will make several oral presentations and participate in interviewing and conferences. Course taught fall semester, every year.

COM 220. INTRODUCTION TO TELECOMMUNICATIONS **Three credits**
Study of the radio, television, and cable industries. Emphasis on their development as public and commercial institutions. Consideration of economic and regulatory issues affecting programming.
Prerequisite: COM 224.

COM 221. AUDIO PRODUCTION **Three credits**
A study of the principles and techniques of audio production. A special emphasis is placed on radio-related issues, skills, and projects. Consideration of the sound media as tools of artistic expression. Lecture and laboratory.
Prerequisite: COM 220. Taught every fall semester.

COM 222. BASIC VIDEO PRODUCTION **Three credits**
A study of the principles and techniques of TV Studio Production. A special emphasis is placed on the utilization of these techniques in a broadcast setting. Included will be: Camerawork, Switching, Studio Equipment, Set Design, Directing and Producing. Fee: $25.

COM 223. THE ART OF FILM **Three credits**
An introduction to the esthetics, techniques, and critical analysis of cinematic art through the study of representative films of current and past film directors. Screenings and writing intensified.

COM 224. MASS MEDIA IN SOCIETY **Three credits**
A study of the mass media and their role in contemporary society.

COM 225. MEDIA CRITICISM **Three credits**
Students analyze and evaluate all forms of mass media content — visual and verbal. Written analysis of primary texts: plays, scripts, essays, short stories, newspaper and magazine articles, as well as radio and television programming, speeches, and films. Critical principles will be applied.

COM 252. INTERNSHIP **Three to six credits**
A supervised program of work and study in any of the concentrations. Written permission of the department is required.

COM 260. BASIC NEWSWRITING **Three credits**
Fundamentals of newsgathering, newswriting, and news judgment for all media; study of news sources; fieldwork, research, and interview techniques. Designated writing intensive. Fee: $25.
Prerequisite: Eng 101.

COM 262. COPYEDITING, HEADWRITING AND LAYOUT **Three credits**
The focus of the course is evaluating news, assignment position in newspapers, editing and rewriting news to conform to publication style. Students will become familiar with typography and the use of type in the design of newspapers, news letters or in-house publications. The course provides hands-on instruction in achieving typographical balance and attractive display through type variation. Assessment of story composition for clarity and continuity, as well as freedom from basic writing errors will be explored. Extensive practice in editing copy with the use of universal copy editing symbols. Course involves both lecture and hands-on laboratory experience.
Prerequisite: COM 260 or permission of instructor.

COM 300. RHETORICAL CRITICISM **Three credits**
Theories from classical to contemporary will be applied to the analysis of the spoken word. Emphasis on speech writing and criticism.
Prerequisite: COM 101.

COM 301. PERSUASION **Three credits**
Study and practice of persuasive speaking. General theories of persuasion, the role of persuasion in a democratic society, and an introduction to modern experimental research in the field.
Prerequisite: COM 101.

COM 302. FUNDAMENTALS OF PUBLIC RELATIONS **Three credits**
An introduction to the fundamentals of public relations practice, including program planning and evaluation, working with the media, writing for PR, and coordinating special events and functions. Taught fall semesters.
Prerequisite: COM 260.

COM 303. ORGANIZATIONAL COMMUNICATION **Three credits**
Course focuses attention on traditional and modern concepts of communication channels in simple and complex organizations. Considerable attention is given to interviewing and conducting communication audits.
Prerequisite: COM 102 or permission of instructor.

COM 304. INTERCULTURAL COMMUNICATION **Three credits**
Intercultural Communication is a systematic study of what happens when people from different cultural backgrounds interact face-to-face. The course is a balance between theoretical and practical knowledge, with emphasis on immediately usable knowledge. Guest speakers, in-class simulations, cross-cultural interviews, and research projects ask students to apply communication skills to actual intercultural situations.
Prerequisite: COM 102 or permission of instructor.

COM 320. MEDIA MANAGEMENT **Three credits**
This course will provide a framework for understanding the functions and methods of media managers in both print and non-print media.
Prerequisites: COM 220, COM 224 or permission of instructor.
Offered spring semesters in alternate years.

COM 321. BROADCAST JOURNALISM **Three credits**
A study of the principles and methods of broadcast journalism.

COM 322. ADVANCED VIDEO PRODUCTION **Three credits**
A study of the principles and techniques of video production. Scripting, producing, and editing videography are subjects covered extensively by this course. Each student will produce several video productions. Taught every spring semester.
Prerequisite: COM 222.

COM 324. COMMUNICATION RESEARCH METHODS **Three credits**
Study of research methods in various areas of communication. Emphasis on ability to research literature and critique a research design. Consideration of content analysis and empirical design. Required of all majors.
Prerequisite: COM 102 and completion of departmental writing requirement. Course taught every fall semester.

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COM 352. ADVANCED PUBLIC RELATIONS **Three credits**
COM 352 is an advanced course in public relations, taught in seminar format. Emphasis is placed on planning, researching, budgeting, carrying out and evaluating actual public relations campaigns. The course is both writing and speaking intensive. In cooperation with various community-based businesses and non-profit clients, student "teams" conduct actual, semester-long promotional campaigns. Students should be competent in basic newswriting, interviewing and fundamentals of public relations.
Prerequisite: COM 302.

COM 354. PUBLICATION DESIGN **Three credits**
Familiarization with the tools, design elements, and production processes of the graphic artist. The value and contribution of the graphic arts to society will be discussed. Students will experience methods and techniques currently being practiced in the graphic design field. It is suggested that students without an art background take Art 103 prior to this course. (Same as Art 131)

COM 360. ADVANCED NEWSWRITING **Three credits**
A study of specialized reporting and an introduction to news editing. Designated writing intensive.
Prerequisite: COM 260.

COM 361. FEATURE WRITING **Three credits**
A study of feature articles for newspapers, syndicates, magazines, and specialized publications. Practice in research, interviewing, and writing. Designated writing intensive.
Prerequisite: COM 260.

COM 362. MASS COMMUNICATION LAW **Three credits**
Current legal problems, theory of controls in journalism, television, and radio; libel, copyright, privacy law, and other legal issues affecting the mass media. A case study approach will be used.
Prerequisite: COM 102.

COM 395-396. INDEPENDENT RESEARCH **One to three credits**
Independent study and research for advanced students in the speech and communication programs under the direction of a staff member. A research paper at a level significantly beyond a term paper is required. Written permission of department is required.

COM 397. SENIOR SEMINAR/COMMUNICATIONS **Three credits**
An in-depth investigation of current research and ethical issues in communication. A research paper and senior project required. Required of all majors.
Prerequisite: COM 324 and junior/senior standing. Course taught every spring semester.

COM 398. TOPICS **One to three credits**
A study of topics of special interest not extensively treated in regularly offered courses.

COM 399. COOPERATIVE EDUCATION **One to six credits**
Professional cooperative education placement in a private/public organization related to the student's academic objectives and career goals. In addition to their work experience, students are required to submit weekly reaction papers and an academic project to a Faculty Coordinator in the student's discipline. (See page 52 in Bulletin for placement procedures.)
Prerequisites: Sophomore standing, 2.25 cumulative average, consent of academic advisor, approval of placement by department chairperson.

COMPUTER INFORMATION SYSTEMS

Professor Tillman, Chairperson. Professor Emeritus Earl; Associate Professor Emeritus DeCosmo; Professors, Berard, Koch, Merrill, Wong; Associate Professors Harrison, Lew, F. Sullivan; Assistant Professors Bracken, Kapolka; Visiting Assistant Professor M. Sullivan.

Total minimum number of credits required for a major in Computer Information Systems leading to the B.S. degree — 120.

Total minimum number of credits required for a minor in Management Information Systems — 23.

An interdisciplinary program leading to the B.S. degree with a major in Computer Information Systems is offered by the Department of Mathematics and Computer Science, in cooperation with the Department of Business Administration and Accounting. A minor in Management Information Systems is available to those student **not** declaring a CIS major.

Major in Computer Information Systems

The CIS program is concerned mainly with the use of computer systems in business and industrial organizations. Its principle subject matter includes the study of systems analysis, systems design and computer programming, along with other analytical and business areas which are pertinent to the development, implementation, and maintenance of information systems. Required courses for a Computer Information Systems major are indicated in the curriculum outline recommended below.

Minor in Management Information Systems*

Required courses:	**credit hours**
CS 125, 215, 224, 324	14
BA 351	3
Any two among:	
BA 352, 354, 356, 357	6
Minimum Total Required	23

*Available **only** to non-CIS majors.

Recommended Course Sequence for a Major in Computer Information Systems

First Semester		Second Semester	
Eng 101 Composition or	4	Eng 101 Composition or	4
Distribution Requirement	3	Distribution Requirement	3
CS 125 Computer Science I	4	CS 126 Computer Science II	4
Mth 105 Calculus for Life, Managerial, and Social Sciences I	4	CS 128 UNIX	1
Distribution Requirement	3	Mth 106 Calculus for Life, Managerial, and Social Sciences II	4
FrF 101 Freshman Foundations	3	Distribution Requirements	3
	17-18		15-16
Third Semester		**Fourth Semester**	
CS 215 Intro to Computer Info Systems	3	CS 224 COBOL & File Management	4
Mth 150 Elementary Statistics	3	Eng 202 Technical Writing	3
Acc 101 Intro. Financial Accounting	3	Acc 102 Intro Managerial Accounting	3
Distribution Requirements	6	Science Elective1	3
		Distribution Requirements	3
	15		16
Fifth Semester		**Sixth Semester**	
CS 324 Systems Analysis	3	CS 325 Database Management	3
BA 341 Managerial Finance	3	CS 334 Software Engineering	3
BA 351 Management of Organizations	3	CS 355 Computer Networks	3
Science Elective1	3	BA 352 Production and Operations Management	3
Free Elective	3	Free Elective	3
	15		15
Seventh Semester		**Eighth Semester**	
CS 391 Senior Projects I	1	CS 392 Senior Projects II	2
CS/Mth Elective2	3	CS/Mth Elective2	3
Free Electives	9	BA 354 Organizational Behavior or BA 356 The Social Responsibility of Business	3
		Free Electives	6
	13		14

1 See below for the Department's requirements regarding science electives.
2 See below for the Department's requirements regarding CS/Mth electives.

Summary of Minimum Credit Distribution for the CIS Major:

	credit hours
CS 125, 126, 128, 215, 224, 324, 325, 334, 355, 391, 392	31
CS/Mth Electives	6
Acc 101-102, BA 341, 351, 352	15
BA 354 or BA 356	3
Mth 105-106, and 150	11
Eng 101, 202	7
Science Electives	6
Distribution Requirements	21
Free Electives	20
Total	120

Science Electives for Computer Information Systems Majors:

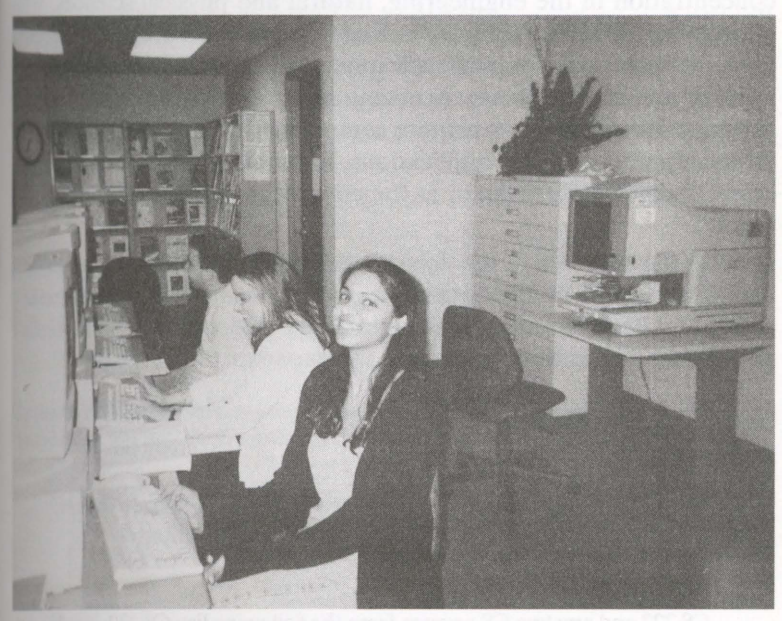
See General Education Requirements.

CS/Mth Electives for Computer Information Systems Majors:

CS/Mth electives must include one course from the Computer Applications and Programming area and one additional course from either area listed below.

Decision Support Systems: CS 321, 360, 363; Mth 354

Computer Applications and Programming: CS 227, 335, 340, 350, 367



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COMPUTER SCIENCE

Professor Tillman, Chairperson; Professor Emeritus Earl; Associate Professor Emeritus DeCosmo; Professors Berard, Koch, Merrill, Wong; Associate Professors Harrison, Lew, F. Sullivan; Assistant Professors Bracken, Kapolka; Visiting Assistant Professor M. Sullivan.

Total minimum number of credits required for a major in Computer Science leading to the B.A. degree — 123.

Total minimum number of credits required for a major in Computer Science leading to the B.S. degree — 126.

Total minimum number of credits required for a minor — 19.

A broad program of study leading to a B.A. or B.S. degree with a major or minor in computer science is offered by the Department of Mathematics and Computer Science. The Department also offers major programs in mathematics and Computer Information Systems, and minor programs in management information systems and statistics.

Major in Computer Science

The Computer Science curriculum consists of theoretical as well as application-oriented courses and is based on a strong foundation in mathematics. The B.A. degree is intended for those interested in management and social sciences, whereas the B.S. degree requires greater concentration in the engineering, natural and physical sciences. With appropriate choices of major electives, students can prepare for graduate study and research in the discipline, or for employment in government or industry. Students are encouraged, through the attainment of a minor or second major, to acquire competence in an area that lends itself to meaningful computer applications. Required courses for a computer science major are indicated in the curriculum outlines recommended below.

With the approval of the department, a student may earn credits in a maximum of five mathematics or computer science courses by passing special challenge examinations. Interested students may obtain further details and application forms from the department chairperson.

Minor in Computer Science

Required Courses:	credit hours
CS 125, 126, 128	9
Remaining courses chosen in accordance with either (a) or (b) below:	
a. CS minor with emphasis on data processing applications — CS 224, 324, 325	10
b. general CS minor — CS 227 and any two CS courses from the following list: CS 230, 319, 323, 324, 325, 326, 327, 328, 329, 330, 334, 335, 340, 350, 355, 367	
Minimum Total Required	19

Recommended Course Sequences for a Major in Computer Science

First Semester	B.A.	B.S.
CS 125 Computer Science I	4	4
Eng 101 Composition or	4	4
Distribution Requirement	3	3
Mth 111 Calculus I	4	4
FrF 101 Freshman Foundations	3	3
	14-15	14-15

Second Semester	B.A.	B.S.
CS 126 Computer Science II	4	4
CS 128 Unix	1	1
Distribution Requirements	3	3
Eng 101 Composition or	4	4
Distribution Requirement	3	3
Mth 112 Calculus II	4	
	15-16	15-16

Third Semester	B.A.	B.S.
CS 230 Machine Language	4	4
Mth 202 Set Theory and Logic	4	4
Science/Science Sequence1	3	4
Distribution Requirements	6	6
	17	18

Fourth Semester	B.A.	B.S.
CS 227 Computer Data Structures	4	4
Mth 231 Discrete Math	3	3
Science/Science Sequence1	3	4
Distribution Requirements	3	3
Eng 202 Tech. Writing	3	3
	16	17

Fifth Semester	B.A.	B.S.
CS 324 Systems Analysis	3	3
CS 326 Operating System Principles	3	3
Free Elective	3	–
Mth 351 Probability and Statistics	3	3
Science/Science Sequence1	–	4
Distribution Requirements	3	3
	15	16

Sixth Semester	B.A.	B.S.
CS 334 Software Engineering	3	3
CS Elective2	3	3
CS 330 Computer Architecture	3	3
Free Elective	6	6
	15	15

Seventh Semester	B.A.	B.S.
CS 391 Senior Project I	1	1
CS Elective2	3	3
CS 328 Analysis of Algorithms	3	3
Free Electives	9	9
	16	16

Eighth Semester	B.A.	B.S.
CS 392 Senior Projects II	2	2
CS Elective2	—	3
Free Electives	12	9
	14	14

1 See below for the department's requirements regarding science electives.
2 See below for the department's requirements regarding CS electives.

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Science Electives for Computer Science Majors:

B.A. candidates: See General Education Requirements.

B.S. candidates: A laboratory science sequence which must be one of the following: Bio 121-122; Chem 115-116; GES 211, 230; or Phy 201-202.

and

One additional 4-credit course in Biology, Chemistry, GeoEnvrionmental Sciences, Physics, or any Engineering course not cross-listed in Computer Science. *The course must be numbered above 200 except that Bio 121, 122, Chem 115 or 116 are also acceptable in this requirement.*

Computer Science Electives for Computer Science Majors:

B.A. candidates: CS 319 or CS 327, and one additional CS course numbered 300 or above.

B.S. candidates: CS 319 or CS 327 and two additional CS courses numbered 300 or above.

Summary of Minimum Credit Distribution for Computer Science Majors:

	B.A.	B.S.
Mth 111, 112, 202, 231 and 351	18	18
CS 125, 126, 128, 227, 230, 324, 326, 328, 330, 334, 391, 392	35	35
CS Electives	6	9
Science Electives	6	12
Eng 101, 202	7	7
Distribution Requirements	21	21
Free Electives	30	24
Minimum Total Required	123	126

CS 115. COMPUTERS AND APPLICATIONS **Three credits**

Introduction to computers, both large and small, but with emphasis on, and hands-on experience with, personal computers (Macintosh, IBM-PC). Includes a survey of current commercial software (including word processing, a database, and a spread sheet). Not open to students who have prior credit in any 200-level CS course. Computer science majors will not receive credit in their major for CS 115.

Offered every fall, spring and summer.

CS 125. COMPUTER SCIENCE I **Four credits**

An introduction to the fundamental concepts of computer science, with emphasis on problem solving and algorithm design using a high-level programming language. Course will contain a significant, weekly, in-class programming experience. (same as EE 145)

Prerequisite: Secondary mathematics including geometry and algebra II.

Offered every fall, spring and summer.

CS 126. COMPUTER SCIENCE II **Four credits**

A study of advanced programming techniques (including recursion and manipulation of structured data types and pointer variables) and abstract linear data structures (lists, stacks, and queues). Course will contain a significant, weekly, in-class programming experience. (same as EE 146).

Prerequisite: CS 125 (EE 145).

Offered every fall, spring and summer.

CS 128. UNIX **One credit**

Basic Unix features such as the file system, the Shell, the Emacs editor, electronic mail, and other network programs. Shell and AWK programming. Course requires 1 hour lecture and 1 hour lab per week (same as EE 148).

Prerequisite: Some programming experience.

Offered every spring.

CS 215. INTRODUCTION TO COMPUTER INFORMATION SYSTEMS **Three credits**

An introduction to computers and information technology through the use of PC-based applications. The emphasis will be on surveying current technology in information systems processing and the business problems typically encountered by systems analysts.

Prerequisite: Computer experience equivalent to CS 115.

Offered every fall.

CS 224. COBOL AND FILE MANAGEMENT **Four credits**

A study of file management techniques using ANS COBOL. Intoductory and advanced programing techniques are presented using problems commonly found in a business enviorment. Topics include control break processing, tables and arrays, file processing, and interactive processing. Course requires 3 hours lecture and 2 hours lab per week.

Prerequisite: CS 125 or previous programming experience.

Offered every spring and summer.

CS 227. COMPUTER DATA STRUCTURES **Four credits**

A study of the use of a high-level language to implement complex data structures and their application to sorting and searching. These structures include lists, trees, graphs, networks and storage allocation. Course will contain a significant, weekly, in-class programming experience. (same as EE 343)

Prerequisite: CS 126/EE 146 and CS 128/EE 148.

Offered every spring.

CS 230. MACHINE LANGUAGE **Four credits**

Basic principles of assembly language programming. Computer organization and representation of numbers, strings, arrays, list structures at the machine level. Examples utilize all levels of computer architecture. Course will contain a significant, weekly, in-class programming experience. (same as EE 242).

Prerequisite: CS 126/EE 146 and CS 128/EE 148.

Offered every fall.

CS 232. DIGITAL DESIGN **Three credits**

The electronics of digital devices, including Bipolar TTL and CMOS; digital logic functions, such as AND, OR, INVERT; Boolean algebra; combinatorial logic; minimization techniques, digital storage devices; synchronous sequential design; state machines.; programmable logic. Three hours per week. (Same as EE 241) Must be taken with CS 233 Basic Digital Design Lab.

Prerequisite: Junior standing.

CS 233. DIGITAL DESIGN LABORATORY **One credit**

Diodes and bipolar transistors; switching circuits, gates, CMOS and TTL logic characteristics. Combinational design, multiplexing, sequential design (same as EE 243) Must be taken with CS 232 Digital Design.

Prerequisite: Junior standing.

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CS 265 MEDICAL INFORMATICS **Three cred**
This course will cover basic principles of computer use and information management health care (including general medicine, dentistry, optometry, pharmacy). Topics include basic computing concepts, the characteristics of medical data, and the use of com puters in the administrative, diagnostic, and research-oriented medical tasks. The cour is primarily directed towards students who intend to pursue careers in health-related fiel (Same as EE 265).

CS 319. PRINCIPLES OF PROGRAMMING LANGUAGES **Three cred**
A study of the principles that govern the design and implementation of programming lan guages. Topics include language structure, data types, and control structures. Program ming projects will familiarize students with the features of several specific languages, such as Ada, LISP, and PROLOG.
Prerequisite: CS 227/EE 343 or permission of instructor.
Offered in the spring semester of even years.

CS 321. SIMULATION AND DATA ANALYSIS **Three cred**
Methods of handling large data bases including statistical analysis and computer simula tions. The emphasis will be upon discrete simulation models with a discussion of relevant computer languages, ARENA, GPSS, and/or SIMSCRIPT.
Prerequisites: CS 123/EE 144 or CS 125/EE 145 and one year of calculus.
Offered in the fall semester of odd years.

CS 323. THEORY OF COMPUTATION **Three cred**
This course formalizes many topics encountered in previous computing courses. Topics include languages, grammars, finite automata, regular expressions and grammars, context free languages, push-down automata, Turing machines and computability.
Prerequisites: Mth 231 and CS 126/EE 146.
Offered in the fall semester of even years.

CS 324. SYSTEMS ANALYSIS **Three cred**
A study of the design and implementation of large computer projects. Special emphasis is placed on applications to business systems. Students will use a CASE tool for automated systems analysis and design.
Prerequisite: CS 215 or CS 224 or CS 227/EE 343.
Offered every fall.

CS 325. DATABASE MANAGEMENT **Three credits**
Practical experience in solving a large-scale computer problem including determination of data requirements, appropriate data organization, data manipulation procedures, implementation, testing and documentation.
Prerequisite: CS 126, or CS 224 or permission of the instructor.
Offered every spring.

CS 326. OPERATING SYSTEM PRINCIPLES **Three credits**
Analysis of the computer operating systems including Batch, Timesharing, and Realtime systems. Topics include sequential and concurrent processes, processor and storage management, resource protection, processor multiplexing, and handling of interrupts from peripheral devices. (same as EE 344)
Prerequisite: CS 227/EE 343.
Offered every fall.

CS 327. COMPILER DESIGN **Three credits**
A study of compiler design including language definition, syntactic analysis, lexical analysis, storage allocation, error detection and recovery, code generation and optimization problems.
Prerequisite: CS 227/EE 343.
Offered in the spring semester of odd years.

CS 328. ALGORITHMS **Three credits**
Theoretical analysis of various algorithms. Topics are chosen from sorting, searching, selection, matrix multiplication of real numbers, and various combinatorial algorithms.
Prerequisites: CS 227/EE 343 and Mth 202.
Offered every fall.

CS 329. MICROCOMPUTER OPERATION AND DESIGN **Three credits**
Microprocessor architecture, microcomputer design, and peripheral interfacing. Microprogramming, software systems, and representative applications. Associated laboratory experiments consider topics such as bus structure, programming, data conversion, interfacing, data acquisition, and computer control. Two hours lecture and one two-hour laboratory per week. (same as EE 342).
Prerequisite: CS 345/EE 345.
Offered every spring.

CS 330. COMPUTER ARCHITECTURE **Three credits**
A study of the design, organization, and structure of computers, ranging from the microprocessors to the latest "supercomputers". (same as EE 346) Computer Science majors may not receive credit in both CS 330 and CS 345.
Prerequisite: CS 230/EE 242 or CS 329/EE 342.
Offered every spring.

CS 334. SOFTWARE ENGINEERING **Three credits**
A course in "programming in the large." Topics include software design, implementation, validation, maintenance, and documentation. There will be one or more team projects. (same as EE 348)
Prerequisite: CS 324 and CS 128/EE 148.
Offered every spring.

CS 335. ADVANCED DATABASE CONCEPTS **Three credits**
A continuation of CS 325. Concentration on the design of a large scale database system, current special hardware and software, and the role of a DBMS in an organization.
Prerequisite: CS 325.
Offered in the fall semester of odd years.

CS 340. ARTIFICIAL INTELLIGENCE **Three credits**
This course will provide an overview of artificial intelligence (AI) application areas and hands-on experience with some common AI computational tools. Topics include search, natural language processing, theorem proving, planning, machine learning, robotics, vision, knowledge-based systems (expert systems), and neural networks. (same as EE 317)
Prerequisite: CS 126/EE 146 and CS 128/EE 148.
Offered in the spring semester of even years.

CS 345. COMPUTER ORGANIZATION **Three credits**
Number representation, digital storage devices and computational units, bus structures; execution sequences and assembly language concepts; control units with horizontal and vertical microcoding; addressing principles and sequencing; microprocessors; basic imput and output devices; interrupts; survey of RISC principles including pipelined execution. Three hours lecture a week . (Same as EE 345) Computer Science majors may not receive credit in both CS 330 and CS 345.
Prerequisite: CS 232/EE 241.

CS 350. OBJECT-ORIENTED PROGRAMMING **Three credits**
The course serves as a practical introduction to the object-oriented programming paradigm. Fundamental concepts of object-oriented programming will be covered; these include objects, classes, inheritance, polymorphism, and data abstraction. Attention will be focused on program development; among the specific languages to be covered are Smalltalk and C++. Object-oriented databases will also be discussed.
Prerequisite: CS 227/EE 146, or CS 224 and CS 126/EE 146 and CS 128/EE 148.
Offered in the fall semester of odd years.

CS 355. COMPUTER NETWORKS **Three credi**
This course introduces basic concepts, architecture, and widely used protocols of co puter networks. Topics include the Open System Interconnection (OSI) model consist of physical link layer, data layer, network layer, transport layer, session layer, presentat layer, and application layer; medium access sublayer and LAN; various routing protoco Transmission Control Protocol (TCP) and Internet Protocol (IP) for internetworkin (same as EE 347)
Prerequisite: CS 227/EE 146, or CS 224 and CS 126/EE 146 and CS 128/EE 148.
Offered every spring.

CS 360. LINEAR PROGRAMMING **Three credi**
Graphical linear programming, simplex algorithm sensitivity analysis. Special L.P. model such as the transportation problem, transshipment problem, and assignment problem. Ma include integer programming, branch and bound algorithm, geometric programming, goa programming. (same as Mth 360)
Prerequisites:Mth 106 and CS 123 or CS 125.
Offered in the fall semester of even years.

CS 363. OPERATIONS RESEARCH **Three credi**
A survey of operations research topics such as decision analysis, inventory models, queue ing models, dynamic programming, network models, heuristic models, and non-linear pro gramming. (same as Mth 363)
Prerequisites: CS 123 or CS 125; Mth 105-106 or Mth 111-112.
Offered spring of odd years

CS 364. NUMERICAL ANALYSIS **Three credi**
Numerical methods of differentiation, integration, solution of equations and of differe tial equations with emphasis on problems that lend themselves to solution using comput ers. (same as Mth 464)
Prerequisites: CS 123/EE 244 or CS 125/EE 245 and Mth 112 or consent of instructor.
Offered in the spring semester of odd years.

CS 367. COMPUTER GRAPHICS **Three credi**
Introduction to equipment and techniques used to generate graphical representations b computer. Discussion of the mathematical techniques necessary to draw objects in two- and three-dimensional space. Emphasis on application programming and the use of a high resolution color raster display.
Prerequisite: CS 227/EE 343.
Offered in the fall semester of even years.

CS 370. SPECIAL PROJECTS **Variable credit**
The definition, formulation, programming, solution, documentation, and testing of a sophisticated problem or project under close faculty supervision. The project will be drawn from industry, business, or governmental agency in the greater Wilkes-Barre area. The stu dent will be expected to present a written report at the conclusion of the project. This course may be taken as part of the Cooperative Education Program. A student may apply at most six credits of CS 370 and a maximum of twelve credits in CS 370 and Cooperative Education 399 toward the graduation requirement in the computer science major.
Prerequisite: Senior standing and approval of department chairperson.

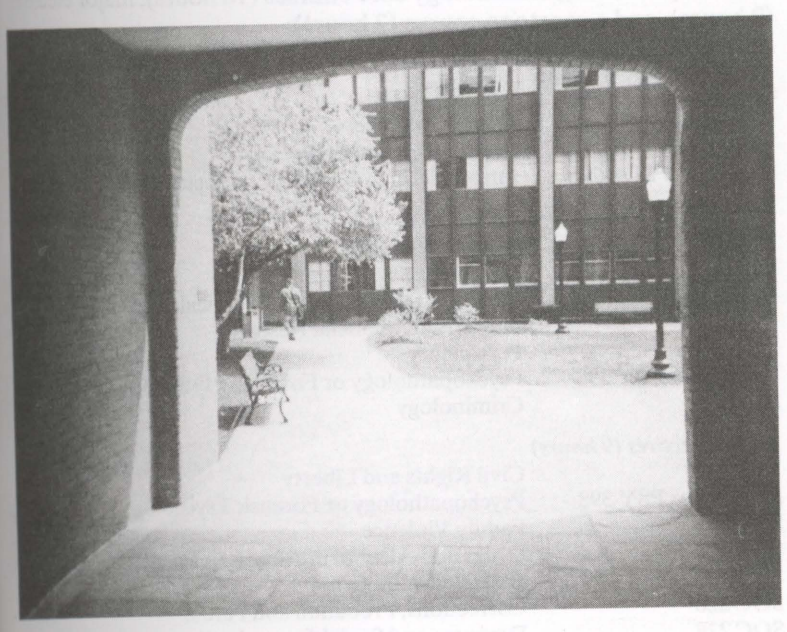
CS 391. SENIOR PROJECTS I **One credit**
Design and implementation of a software project under the direction of a faculty member. Students will normally work in teams. Detailed requirements and design documents are required, and will be presented at the end of the semester.
Prerequisite: CS 334.
Offered every fall.

CS 392. SENIOR PROJECTS II **Two credits**
Design and implementation of a software project under the direction of a faculty member. Students will normally work in teams. Production of a finished product, including software and documentation, is required. There will be an open-forum presentation of the project at the end of the semester.
Prerequisite: CS 391.
Offered every spring.

CS 395-396. INDEPENDENT STUDY IN COMPUTER SCIENCE **Variable credit**
Individual study in a chosen area of computer science under the supervision of a faculty member. May be repeated for credit.
Prerequisite: Approval of department chairperson.

CS 399. COOPERATIVE EDUCATION **One to six credits**
Professional cooperative education placement in a private/public organization related to the student's academic objectives and career goals. In addition to their work experience, students are required to submit weekly reaction papers and an academic project to a Faculty Coordinator in the student's discipline. (See page 52 in Bulletin for placement procedures.)
Prerequisites: Sophomore standing, 2.0 cumulative average, consent of academic advisor, approval of placement by department chairperson.

CS 198/298/398/498. TOPICS IN COMPUTER SCIENCE **Variable credit**
Study of one or more special topics in computer science. May be repeated for credit, if involving different topics.
Prerequisite: Varies with topics studied.



CRIMINOLOGY

Associate Professor Natzke, Criminology Advisor.

Total minimum number of credits requried for a major in Criminology leading to the B.A. degree – 120.

The Department of Social Sciences and Communications offers an interdisciplinary major in Criminology. Designed for flexibility and appeal to both the practicing professional and the student seeking admission to graduate school, the program incorporates a variety of carefully chosen courses in Sociology, Psychology, Political Science and Economics, such as Criminology, Juvenile Delinquency, Psychopathology, Forensic Psychology, Criminal Law, Law and Society, and the Economics of Crime, leading to the Bachelor of Arts degree in Criminology. Internships in the areas of corrections, law enforcement and the administration of justice are readily available to eligible students.

Information about the program and about career opportunities in the field may be obtained from the advisor to this program or from other members of the Department of Social Sciences and Communications.

Criminology Major

A major in Criminology consists of 42 hours, including introductory courses (12 hours), criminology core courses (18 hours), major electives (9 hours), and a capstone course (3 hours):

		credits
Introductory Courses (12 hours)		
PS 233	Law & Society	3
EC 102	Microeconomics	3
PSY 101	Introduction to Psychology	3
SOC 101 or SOC 221	Introduction to Sociology or Social Problems	3
Criminology Core Courses (18 hours)		
EC 320	Economics of Crime	3
PS 232	Criminal Law	3
PS 261 or SOC 371	Concepts and Methods in Political Science or Methods of Social Research	3
PSY 222	Personality	3
PSY 326 or PSY 398	Psychopathology or Forensic Psychology	3
SOC 222	Criminology	3
Major Electives (9 hours)		
PS 332	Civil Rights and Liberty	3
PSY 326 or PSY 398	Psychopathology or Forensic Psychology	3
SOC 215	Family Violence	3
SOC 223	Drugs and Alcohol in American Society	3
SOC 225	Juvenile Delinquency	3
SOC 226	Corrections, Probation and Parole	3
SOC 228	Deviance and Social Control	3
SOC 235	Corrections Counseling	3
Capstone (3 hours)		
Senior Capstone	Senior Projects	3

Recommended Course Sequence for a Major in Criminology

First Semester		Second Semester	
Eng 101 Composition or	4	Eng 101 Commposition or	4
Distribution Requirement	3	Distribution Requirement	3
Soc 101 Introduction to Sociology	3	EC 102 Microeconomics	3
Psy 101 Introduction to Psychology	3	Distribution Requirements	9
Distribution Requirements	3		
FrF 101 Freshman Foundations	3		15-16
	15-16		
Third Semester		**Fourth Semester**	
Soc 222 Criminology	3	Soc 371 Methods of Social Research or	3
Psy 222 Personality	3	PS 261 Concepts & Methods in P.S.	
PS 233 Law and Society	3	Major Elective	3
Distribution Requirement	3	Free Electives	9
Free Elective	3		15
	15		
Fifth Semester		**Sixth Semester**	
EC 320 Economics of Crime	3	Psy 326 Psychopathology or	3
Free Electives	11	Psy 398 Forensic Psychology	
		Major Electives	3
		Free Electives	9
	14		15
Seventh Semester		**Eighth Semester**	
PS 232 Criminal Law	3	Soc/PS 397 Senior Projects	3
Major Elective	3	Free Electives	12
Free Electives	9		15
	15		

DANCE

Professor Zipay, Chairperson; Degnan, Artist in Residence; Adjunct Faculty Harris.

Total minimum number of credits required for a minor — 18.

As a dimension of its continuing development in the performing arts, Wilkes University provides a comprehensive program in the field of dance. The program is structured in such a manner as to allow for the evolution of a major program in the academic discipline of dance.

The total minimum number of credits for a minor in Dance is 18 (above DAN 100). An advanced project in dance composition is also required of all students enrolled in the Dance minor; this project will be under the supervision of the minor advisor.

DAN 100. DANCE APPRECIATION: COMPREHENSIVE DANCE FORMS **Three credits**
A general introduction to the various types of dance: (classical ballet, modern, jazz, and theatrical). This course is appropriate for the person who has had absolutely no participatory experience in this art form. It is designed to cultivate especially an appreciation of the aesthetic dimensions of dance, perceived for the first time as an opportunity for personal physical engagement.

DAN 110. INTRODUCTION TO MODERN DANCE **Two credits**
An introduction to the fundamentals of modern dance, concentrating on the Graham method.

DAN 120. TAP DANCE **Two credits**
An introduction to the fundamentals of tap dancing, with special reference to the techniques of great American artists.

DAN 130. INTRODUCTION TO JAZZ DANCE **Two credits**
An introduction to the fundamentals of jazz techniques as systematized by the Luigi method.

DAN 150. CLASSICAL DANCE FOR THE STAGE **Two credits**
An introductory course entailing lecture/demonstration and studio exercises designed to explore the movement dynamics appropriate to dramatic presentation. Special emphasis is given to the development of sound classical ballet technique (per a modified Vaganova methodology) as the foundation for the cultivation of poise, stage presence, kinetic flexibility, and physical stamina — valuable qualities for the acting profession. Particular attention is given to pantomime and non-dance movement such as fencing and hand-to-hand combat in a stage-space setting.

DAN 153. POINTE I **Two credits**
Basic techniques of ballet on pointe; introduction to variations from the classical repertory. This course is designed to help the female dancer make the transition from demi-pointe dancing.

DAN 157. PAS DE DEUX I **Two credits**
The basic techniques required for male and female dancers to perform as a unit. This course is intended to provide a gradual and individually-paced introduction into the techniques as well as the psychology of classical ballet partnering.
Prerequisite: Audition.

DAN 210. MODERN DANCE I **Two credits**
This course builds on the foundation provided the student in DAN 110, elaborating further on the fundamentals of modern dance according to the Graham method. It is designed to provide an experientially structured and professionally informed exploration of the art of modern dance. Its objective is the acquisition, at each individual student's pace, of the qualities of grace, physical stamina, muscular and ligament flexibility, and movement musicality.
Prerequisite: DAN 110 or permission of instructor.

DAN 211. MODERN DANCE II **Two credits**
This course is the sequel to DAN 210, providing the truly committed student with the opportunity, at an intermediate level, for an even more substantive and diversified participatory engagement in modern dance. It engages the student/dancer in highly individualized movements based on personalized, multi-faceted and changing artistic standards.
Prerequisite: DAN 210 or permission of instructor.

DAN 230. JAZZ DANCE I **Two credits**
The first course involving an intensive and progressively challenging engagement in the Jazz techniques per the Luigi method.

DAN 231. JAZZ DANCE II **Two credits**
This is the second in the progressively demanding courses in the four-semester elective sequence in which students are intensively engaged in learning and executing jazz techniques per the Luigi method. Through the study of jazz dance techniques as systematized by the Luigi method, students are encouraged to perceive the nature of dance movement and to acquire some proficiency in its application to stage performance or at least to achieve a greater awareness of body structure and function.
Prerequisite: DAN 230 or permission of instructor.

DAN 250. CLASSICAL BALLET I **Two credits**
The first course in the study of the theory and techniques of Russian classical ballet, as pursued in the curricula of the schools of the Bolshoi and Kirov Ballets and derived from the methodology devised by Agrippina Vaganova and Cecchetti.

DAN 251. CLASSICAL BALLET II **Two credits**
This course is designed to build on the foundation acquired in DAN 250 for an intensive intellectual, emotional, and physical engagement in the study of the theory and techniques of Russian classical ballet, as pursued in the curricula of the schools of the Bolshoi and Kirov Ballets and derived from the methodology devised by Agrippina Vaganova and Cecchetti.
Prerequisite: DAN 250 or permission of instructor.

DAN 261. DANCE IMPROVISATION I **Two credits**
Designed to develop creativity in dance by exercising the student in movement in free forms while training the body as a disciplined instrument. Exploration of the broad range of dance movement in a choreographical context is intended to introduce the student into the elementary aspects of dance perception and design.

DAN 310. MODERN DANCE III **Two credits**
This is an advanced course in modern dance, affording the student the opportunity to engage, experientially, in some of the more technically and choreographically demanding and innovative aspects of modern dance. In the exploration of these movement elaborations, the aesthetic vision of the choreographers may be perceived, especially in terms of how they adapted much of the disciplined technique of classical ballet in an exciting syncretic fusion.
Prerequisite: DAN 211 or permission of instructor.

DAN 330. JAZZ DANCE III Two credits

This is the third in the progressively demanding courses in the four-semester elective sequence in which students are intensively engaged in learning and executing jazz techniques per the Luigi method. Emphasizing a blending of theory and practice, this course is intended to encourage students to explore another dimension of personal fulfillment while cultivating realistically their potential as physically coordinated, aesthetically sensitive, poised and graceful persons.

Prerequisite: DAN 231 or permission of instructor.

DAN 331. JAZZ DANCE IV Two credits

This is the fourth in the progressively demanding courses in the four-semester elective sequence in which students are intensively engaged in learning and executing jazz techniques per the Luigi method.

Prerequisite: DAN 330 or permission of instructor.

DAN 350. CLASSICAL BALLET III Two credits

This course is designed to build on the foundation laid in DAN 250-251. Course presentation will employ lecture/demonstration and studio exercises designed to explore the movement dynamics which are especially appropriate to the classical dance genre. The objective of this course is the continued individually paced development of the qualities of grace, physical stamina, muscular and ligament flexibility, and movement musicality, especially via direct and active engagement in classical dance technique.

Prerequisite: DAN 251 or permission of instructor.

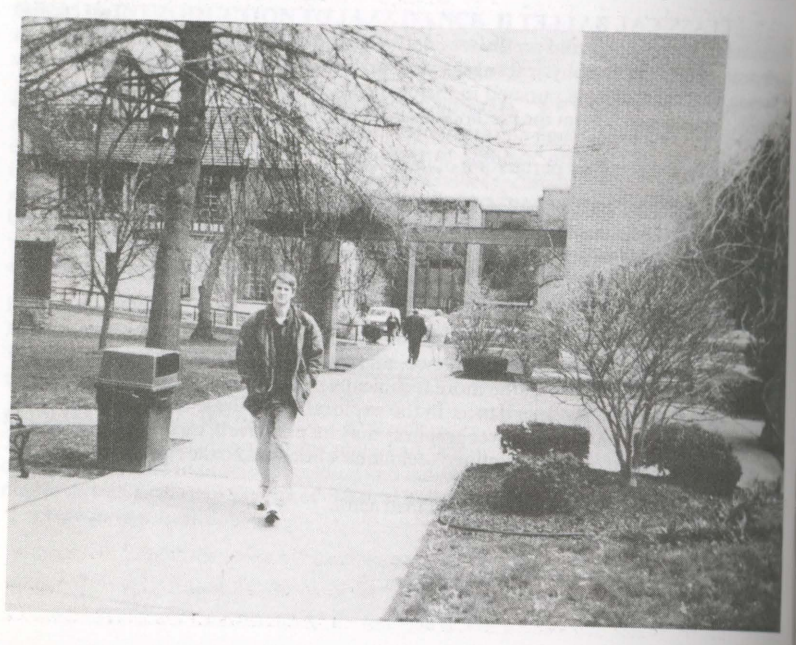
DAN 351. CLASSICAL BALLET IV Two credits

This course is designed to continue to build on the foundation laid in DAN 250-251, 350. Special emphasis will be given in this course to the development of sound classical ballet technique (per a modified Vaganova methodology) as the foundation for the cultivation of poise, stage presence, kinetic flexibility, and physical stamina.

Prerequisite: DAN 350 or permission of instructor.

DAN 198/298. TOPICS Three credits

A study of topics of special interest not extensively treated in regularly offered courses.



EARTH AND ENVIRONMENTAL SCIENCES

Professor Bruns and Associate Professor Halsor, co-chairpersons; Professors Case, Klemow, Redmond; Associate Professors Murthy, Steele; Assistant Professors Troy, Whitman; Adjunct Faculty Frederick, Hofman, Toothill, Walski; Lab Manager Oram.

Total minimum number of credits required for a major in Earth and Environmental Science leading to the B.A. — 122.

Total minimum number of credits required for a major in Earth and Environmental Science leading to the B.S. — 121.

Total minimum number of credits required for a minor — 18.

Total minimum number of credits required for a minor in Geology — 18.

The GeoEnvironmental Sciences and Engineering Department offers two major programs, both of which incorporate a strong background in all of the sciences and include extensive laboratory and field experience. The department highlights two unique facilities: a certified water quality laboratory used for teaching and contract work, and a 150 acre environmental station (Ratchford Field Station) with various aquatic and terrestrial habitats available for field study in courses and student research. The interdisciplinary nature of the programs provides the student with a unique breadth of understanding of the principles and concepts of the earth and environmental sciences while emphasizing methods of analysis and experimentation of very complex, dynamic, and interactive quality; cooperative internships with environmental organizations and industries are encouraged.

The major leading to the B.S. degree emphasizes the technical and analytical aspects of the earth and environmental sciences and is designed for those students intending to work as scientists in laboratory, field, or research positions. Students with this degree may enter graduate programs in Geology, Meteorology, and Environmental Sciences.

The major leading to the B.A. degree emphasizes human interactions with the earth and environmental sciences and as such, while still requiring an extensive background in the sciences, includes additional coursework in the social sciences and political science. The student is required to choose an appropriate minor so as to acquire an expertise in areas such as technical writing, business administration, elementary education or political science. Students with this degree would be trained to work in environmental science policy-making and administration. Another option is to satisfy the requirements leading to a Pennsylvania Secondary Teaching Certificate with certification in Earth and Space Science.

Two minors are offered by the department. A minor can be obtained by students with a demonstrated expertise in earth and environmental sciences or geology as determined by the faculty of the department. The minimum requirement for the Earth and Environmental Sciences minor can be met by students who have completed 18 credits in GES (at least 12

credits at the 200-level or above). For the Geology minor, 18 credits of prequalified environmental GES geology courses are required (at least 15 credits at the 200-level or above). Only those course credits for which a student has achieved a grade of 2.0 or higher will count toward the minimum requirements for either minor. Courses counted toward the Geology minor could not be used for the existing EES minor; however, since there is no geology major, EES majors, like any other major, could pursue a Geology minor. Also, EES majors may take any of the Environmental Engineering courses (ENV), if prerequisites are satisfied.

Courses which qualify for the Geology Minor

Course		credits	Course		credits
GES 115	Survey of Geology	3	GES 381	Mineralogy**	3
GES 211	Physical Geology	4	GES 382	Petrology**	3
GES 212	Historical Geology	3	GES 391*	Senior Projects I	1
ENV 315	Soils	3	GES 392*	Senior Projects II	2
ENV 321	Hydrology	4	GES 395*	Independent Research I	1-3
GES 370	Geomorphology	3	GES 396*	Independent Research II	1-3
GES 375	Geochemistry	3			

*Content must be within the field of geology.
** Required for minor in geology.

Summer Experiences and Opportunities in the Marine Sciences and Oceanography
Wallops Island Marine Science Station

Wilkes University is a member of the Wallops Island Marine Science Consortium, an association of both state and private institutions that oversee the operation of a marine field station located in southeastern Virginia. Through its membership in the Consortium, Wilkes offers to its students the full range of courses in marine sciences and oceanography regularly taught at the Station each summer. Interested students in Biology and GeoEnvironmental Sciences (as well as any other students meeting course prerequisites) are encouraged to complement regular course work with these unique summer field experiences.

Courses taken at the Wallops Island Marine Science Station can be used to fulfill some of the upper level requirements in the Biology and GES Majors. Courses typically carry three credits and involve three weeks of intensive field and laboratory study at the Marine Station and related field sites (e.g. Florida Keys). Facilities at the station include dormitory space, cafeteria, labs, lecture halls, a variety of field and laboratory equipment (e.g. two large oceanographic vessels) and a range of coastal, marine, and estuarine field sites. To enroll, students must first contact the coordinators of the Wallops Island Program at Wilkes University (prior to the spring semester) and then register for the appropriate course through the Wilkes University Registrar.

Courses regularly offered at the Station include:

MS 110 Introduction to Oceanography
MS 211 Field Methods in Oceanography
MS 221 Marine Invertebrates
MS 241 Marine Biology
MS 250 Wetland Ecology
MS 260 Marine Ecology
MS 300 Behavior of Marine Organisms
MS 330 Tropical Invertebrates
MS 331 Chemical Oceanography
MS 342 Marine Botany
MS 343 Marine Ichthyology
MS 345 Ornithology
MS 362 Marine Geology
MS 394 Physiology of Marine Organisms
MS 431 Ecology of Marine Plankton
MS 432 Marine Evolutionary Ecology
MS 433 Advanced Methods in Coastal Ecology
MS 450 Coastal Geomorphology
MS 451 Coastal Environmental Oceanography
MS 464 Biological Oceanography
MS 470 Research Diver Methods
MS 491 Coral Reef Ecology
MS 492 Marine Mammals
MS 493 Behavioral Ecology
MS 500 Problems in Marine Science

See Coordinators of the Wallops Island Program for outlines of individual courses and more information on how to integrate these courses into Biology and GeoEnvironmental Sciences curricula.

Recommended Course Sequences for a B.A. Degree in Earth and Environmental Sciences

	TECHNICAL WRITING	POLITICAL SCIENCE	BUSINESS ADMIN.	EARTH & SPACE SCIENCE ED.
First Semester				
Eng 101 Composition or Dist. Req.	4-3	4-3	4-3	4-3
Mth 105 Intro. to Calculus I	4	4	4	4
Fr. F 101 Freshman Foundations	3	3	3	3
Ec 101 Economics I	—	—	3	—
PS 111 Intro. to American Politics	—	3	—	—
Psy 101 General Psychology I	—	—	—	3
Distribution Requirement	6	3	—	—
	16-17	16-17	13-14	13-14
Second Semester				
Eng 101 Composition or Dist. Req.	4-3	4-3	4-3	4-3
Bio 122 Modern Biology II	4	4	4	0
GES 211 Physical Geology	4	4	4	4
Ec 102 Economics II	—	—	3	—
PS 141 Introduction to International Politics	—	3	—	—
Psy 221 Developmental Psychology	—	—	—	3
Distribution Requirements	3	—	—	3
	14-15	14-15	14-15	13-14
Third Semester				
BIO 225 Population and Evolutionary Biology	4	4	4	—
GES 230 Ocean Science	4	4	4	4
ME 180 CADD Lab	1	1	1	—
Phy 171 Classical and Modern	4	4	4	4
BA 233 Legal Environ. of Business	—	—	3	—
Technical Writing Elective	3	—	—	—
Ed 190 Effective Teaching	—	—	—	3
PS 221 Intro. to Public Administration	—	3	—	—
Distribution Requirement	—	—	—	6
	16	16	16	17

Fourth Semester	TECHNICAL WRITING	POLITICAL SCIENCE	BUSINESS ADMIN.	EARTH & SPACE SCIENCE ED.
GES 240 Principles of Environmental Science	4	4	4	4
GES 212 Historical Geology	—	—	—	3
Phy 174 Classical and Modern	4	4	4	4
BA 321 Marketing	—	—	3	—
Ed 200 Educational Psychology	—	—	—	3
Ed 371 Methods of Teaching in the Sciences	—	—	—	4
Statistics or Computer Science Elective	3	3	3	—
Distribution Requirements	3	3	3	—
	14	14	17	18
Fifth Semester				
Chm 115 Elements & Compounds	4	4	4	4
GES 251 Synoptic Meteorology	4	4	4	4
BA 351 Management of Organizations	—	—	3	—
Eng 201 Writing: Lit & Culture	4	—	—	—
Statistics or Computer Science Elective	—	—	—	3
PS Elective	—	3	—	—
Free Elective	3	3	3	1
GES Elective	3	3	3	3
	18	17	17	15
Sixth Semester				
GES Electives	7	7	7	—
GES 210 Global Climatic Change	—	—	—	3
GES 302 Literature Methods	1	1	1	1
GES 304 Environmental Data Analysis	2	2	2	2
GES 394 Field Study	1	1	1	1
Ed 210 Multicultural Education and Teaching Students with Special Needs	—	—	—	2
Ed 380 Content Area Reading	—	—	—	2
BA 341 Managerial Finance	—	—	3	—
Eng 202 Technical Writing	3	—	—	—
PS 224 Public Policy Analysis	—	3	—	—
Distribution Requirements	3	3	3	3
	17	17	17	14
Seventh Semester				
GES 391 Senior Projects I	1	1	1	1
Ed 390A Intern Teaching	—	—	—	15
Eng 203 Creative Writing	3	—	—	—
COM 101 Fundamentals of Public Speaking	3	3	—	—
PS Elective	—	3	—	—
BA Elective	—	—	3	—
GES Elective	3	3	3	—
English Elective	3	—	—	—
Free Elective	1	1	1	—
Distribution Requirements	—	3	6	—
	14	14	14	16

Eighth Semester	TECHNICAL WRITING	POLITICAL SCIENCE	BUSINESS ADMIN.	EARTH & SPACE SCIENCE ED.
GES 280 Principles of Astronomy	—	—	—	4
GES 392 Senior Projects II	2	2	2	2
GES Elective	3	3	3	6
PS Elective	—	3	—	—
BA Elective	—	—	3	—
Eng 390 Projects in Writing	3	—	—	—
Free Elective	3	3	3	—
Statistics or Computer Science Elective	3	3	3	3
	14	14	14	15
Total Minimum Credits for B.A.	**124**	**123**	**123**	**122**

NOTE — Three credits of GES electives (above) **must** include either GES 271 or GES 272. All B.A. degree candidates are required to complete an appropriate minor or teaching certification as above (others may be considered by the department). The Earth & Space Science Teaching Certification program has additional non-course requirements.

Recommended Course Sequence for a B.S. Degree in Earth and Environmental Sciences

First Semester	
Eng 101 Composition or	4
Distribution Requirement	3
Fr. F 101 Freshman Foundations	3
Mth 111 Calculus I	4
Chm 115 Elements & Compounds	4
	14-15

Second Semester	
Eng 101 Composition or	4
Distribution Requirement	3
Statistics or Computer Science Elective	3
Mth 112 Calculus II	4
Bio 122 Modern Biology II	4
	14-15

Third Semester	
GES 230 Ocean Science	4
Bio 225 Population and Evolutionary Biology	4
ME 180 CADD Lab	1
Distribution Requirements	6
	15

Fourth Semester	
Statistics or Computer Science Elective	3
GES 211 Physical Geology	4
GES 240 Principles of Environmental Science	4
Chm 116 Chemical Reaction	4
	15

Fifth Semester	
Phy 171 Classical and Modern or	4
Phy 201 Introductory Physics	
GES 251 Synoptic Meteorology	4
GES 394 Field Study	1
GES/ENV Elective	3
Distribution Requirement	3
	15

Sixth Semester	
Phy 174 Classical and Modern or	4
Phy 202 Introductory Physics	
GES/ENV Electives	3
GES 244 Instrumental Analysis	3
GES 302 Literature Methods	1
GES 304 Environmental Data Analysis	2
Distribution Requirement	3
	16

Seventh Semester	
GES 391 Senior Projects I	1
GES/ENV Elective	6
Distribution Requirements	3
Free Electives	6
	16

Eighth Semester	
GES 392 Senior Projects II	2
GES/ENV Electives	6
Free Electives	7
	15

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NOTE — B.S. candidates are encouraged to complete a science minor (e.g., Physics, Chemistry, etc.; consult the Bulletin for program details). Candidates are also encouraged to have relevant Co-op experience, 6 credits of which may count as GES electives.

Courses at the 200 level and above are intended for science and math majors only. Exceptions by permission of the instructor. Election of a 200-level course by a non-science major will preclude registration for the corresponding 100-level course.

GES 105. PLANET EARTH **Three credits**
The nature of our planet and how it works are examined in the context of Earth as a constantly changing dynamic system. An emphasis on global scale processes and the interaction of humans and their physical environment is coupled with in-depth coverage of how science is done and the scientific principles that influence our planet, its rocks, mountains, rivers, atmosphere and oceans. Major subtropical areas in the Planet Earth series may include geology (*Forces of Geologic Change*), oceanography (*The Restless Ocean*), astronomy (*The Cosmic Perspective*), and the relationship between people and their physical surroundings (*The Global Environment*). Intended for students who are not majoring in science, engineering, prepharmacy, nursing, or B.S. programs in mathematics or computer science. Two hours lecture and two hours laboratory per week. Fee: $40.
Prerequisite: No previous background in science or college-level mathematics is required.

GES 202. BIOGEOCHEMISTRY **Three credits**
Fundamentals of the circulation of materials through the earth's air, soils, waters, and living organisms are examined from the perspective of introductory chemical principles. Global cycles of water, carbon, nitrogen, phosphorus, and sulfur are investigated in detail with emphasis on the roles of microorganisms, chemical equilibrium, and oxidation-reduction processes in biogeochemical cycling. Laboratory focuses on (1) student designed projects to gather data which illustrate key concepts in chemical weathering processes in aqueous solutions, oxidation-reduction reactions, and microbial mediation of elemental cycling and (2) building problem solving skills. Two hours lecture and three hours laboratory per week. Fee: $45.
Prerequisite: Chm 115.

GES 210. GLOBAL CLIMATIC CHANGE **Three credits**
The nature and function of earth's global climate are examined from a unified system perspective. Major questions focus on scientific versus public understanding of trends in global temperature, precipitation, and sea level. The course emphasizes negative and positive feedback processes that force key changes in the earth's climate system: past, present, and future. Topics include fundamentals of global and regional heat and water balance; the role of elemental cycles in controlling climate (e.g. the carbon cycle); descriptive climate classification; long-term, short-term, and catastrophic climatic change (e.g. ice ages and bolide impacts); and human effects on climate (e.g. enhanced greenhouse, rising sea level). This course integrates a scientific understanding of climatic change and explores contemporary social and economic policy responses to change scenarios.

GES 211. PHYSICAL GEOLOGY **Four credits**
Description, analysis, and laboratory studies of earth materials, structures, and processes, including earth's surface, interior, age, and origin. Three hours lecture and three hours laboratory. Fee: $45. (For CS/Engineering/Math/Science majors only).

GES 212. HISTORICAL GEOLOGY **Three credits**
A study of the geologic record of the earth's formation and evolution, including methods of dating. Two hours lecture and three hours laboratory.
Prerequisite: GES 211 or consent of instructor.

GES 218. ENVIRONMENTAL ETHICS **Three credits**
An examination of the central problems of environmental ethics as viewed from the perspectives of science and of philosophy. The value of nature and "natural objects," differing attitudes toward wildlife and the land itself, implications of anthropocentrism, individualism, ecocentrism, and ecofeminism, bases for land and water conservation, and other topics will be examined within a framework of moral and scientific argument. (same as PHL 218).
Prerequisite: PHL 101 or GES 240 or permission of instructor.

GES 230. OCEAN SCIENCE **Four credits**
An interdisciplinary approach to the study of the fundamentals of oceanography emphasizing physical, chemical, and biological interrelationships. Three hours lecture and three hours laboratory. Fee: $45. (For CS/Engineering/Math/Science majors only).

GES 240. PRINCIPLES OF ENVIRONMENTAL SCIENCE **Four credits**
A study of living systems as they are integrated with their physical environments and impacted by human activity. Three hours lecture and three hours laboratory. Fee: $45. (For CS/Engineering/Math/Science majors only).

GES 242. ENVIRONMENTAL HEALTH **Four credits**
To provide students with an understanding of man's impact on the environment and how those impacts can be controlled or mitigated. Students completing this course should be able to recognize environmental problems and understand control and preventative measures. Three hours lecture, three hours laboratory.
Prerequisites: Introductory physics and chemistry. Students who have taken GES 240 will be admitted only with the consent of the instructor.

GES 244. INSTRUMENTAL ANALYSIS **Three credits**
Primarily a laboratory course in the applications of instrumental techniques for obtaining quantitative information about the composition and structure of matter. Lab work includes chromatographic, spectroscopic and electrochemical techniques. Emphasis is placed on the use of computers for data acquisition, management and analysis. The course serves students in biochemistry, chemistry, biology, geology, health-related sciences, engineering and environmental sciences who desire experience with these techniques and how they are applied to problem solving. Two 1-hour lecture and one 3-hour laboratory sessions per week. Fee $50. (Cross-listed with Chm 244).
Prerequisite: CHM 116

GES 251. SYNOPTIC METEOROLOGY **Four credits**
Topics include surface and upper-air weather systems, weather phenomena, climate, and local weather influences. Synoptic map analysis and interpretation are emphasized. Three hours lecture and three hours laboratory. Fee: $45. (same as Phy 225) (For CS/Engineering/Math/Science majors only).

GES 261. REGIONAL GEOGRAPHY **Three credits**
Topics covered include maps and charts, and basic elements of physical, cultural, historical, and economic geography as applied to specific geographic regions. Three hours lecture.

GES 271. ENVIRONMENTAL MAPPING I: THE GLOBAL POSITIONING SYSTEM **Three credits**
An introduction to the Global Positioning System (GPS) and environmental mapping concepts and applications. Topics include coordinate systems, reference ellipsoids, geodetic datums, and map projections. Practical field use of GPS is emphasized within the context of understanding system components, satellite signal processing, selective availability, base station differential correction, and data export to a geographical information system. Two hours lecture and three hours laboratory. Fee: $45.
Prerequisite: GES 240 or GES 211 or consent of instructor.

GES 272. ENVIRONMENTAL MAPPING II: GEOGRAPHIC INFORMATION SYSTEMS **Three credits**
An introduction to Geographic Information Systems (GIS). Topics include history of GIS, relational database management, data input/output, quality control, integration with CAD

and remote sensing technologies, data analysis, and GIS as a decision support tool. Laboratory component emphasizes practical skills in GIS data management and analysis. Two hours lecture and three hours laboratory. Fee: $45.

Prerequisite: GES 240 or GES 211 or consent of instructor.

GES 280. PRINCIPLES OF ASTRONOMY **Four credits**

Topics include orbital mechanics, results of planetary probes, spectra and stellar evolution, and cosmology. Three hours lecture and three hours laboratory. Fee: $45. (same as Phy 228) (For science majors only)

GES 302. LITERATURE METHODS **One credit**

The nature and use of important sources of information in earth and environmental sciences are developed through retrospective searching methods and current awareness techniques. The use of computer data bases, the design of personal computer information files, information search strategies, and manual search procedures are included. Literature preparation for Senior Projects (GES 391-392).

Prerequisite: Junior standing.

GES 304. ENVIRONMENTAL DATA ANALYSIS **Two credits**

To acquaint students majoring in earth and environmental sciences with the techniques and methods of data acquisition and analysis, including environmental sampling methodology and data management. Emphasis will be placed on examination of real data sets from various areas of the earth and environmental sciences with particular emphasis placed on using and applying graphical and statistical procedures used in GES 391-392 (Senior Projects).

Prerequisite: Mth 150 and junior standing.

GES 341. LIMNOLOGY **Three credits**

A study of the chemical, physical, and biological aspects of freshwater systems. Laboratory investigations will consist of in-depth analyses of local lakes and streams. Two hours lecture and three hours laboratory. Fee $45. (same as Bio 341)

Prerequisite: Bio 121-122 and consent of instructor.

Offered in alternate years.

GES 343. MARINE ECOLOGY **Three credits**

An examination of the biology of marine life within the context of modern ecological principles. The structure and physiology of marine organisms will be studied from the perspectives of adaptation to the ocean as habitat, biological productivity, and interspecific relationships. Emphasis will be placed on life in intertidal zones, estuaries, surface waters, and the deep sea. Two hours of lecture and three hours of laboratory per week. Fee: $45. (Same as BIO 343).

Prerequisites: GES 230 (Ocean Science) and Bio 121-122; or junior biology major standing. Students must have formal course experience in oceanography and biology at the science major level or have completed their sophomore year as a biology major.

Offered in alternate years.

GES 344. ECOLOGY **Four credits**

Ecology examines contemporary ecological thinking as it pertains to the interrelationships of organisms and their environments. Interactions at the population and community level are emphasized. Lecture, two hours; laboratory, three hours a week. Laboratory fee: $40. (Same as BIO 343)

Prerequisites: Bio 121-122, 223-224, or permission of instructor.

Offered in alternate years.

GES 366. FIELD BOTANY **Three credits**

This is a specialized summertime field course which emphasizes a taxonomic, phylogenetic, and ecological survey of higher plants indigenous to Northeastern Pennsylvania. Due to the extensive field work, enrollment is somewhat more restricted than in other courses; therefore, written permission from the instructor is the prime prerequisite of those upperclassmen wishing to register for the course. (Same as BIO 366).

Prerequisites: Bio 121-122, 223-224, or permission of instructor.

GES 370. GEOMORPHOLOGY **Three credits**

Land forms, their evolution, and the human role in changing the surface of the earth, utilization of geologic and hydrologic information, and field investigations. Two hours lecture and three hours laboratory. Fee: $45.

Prerequisites: GES 211 and ENV 321.

GES 375. GEOCHEMISTRY **Three credits**

Chemical properties of earth materials. Origin and abundance of the chemical elements and their distribution. Mineral equilibria. Stable and radioactive isotope variations due to geologic processes. Two hours lecture and three hours laboratory. Fee: $45.

Prerequisites: GES 211 and Chm 116, or consent of instructor.

GES 381. MINERALOGY **Three credits**

Ionic structure of minerals; physical properties and external form as consequences of structure; determination of minerals by physical tests. Two hours lecture and three hours laboratory. Fee: $45.

Prerequisites: GES 211 and Chm 111 or 115.

GES 382. PETROLOGY **Three credits**

A study of the identification, classification, composition, genesis, and alteration of igneous, sedimentary, and metamorphic rocks and their relation to crustal processes and environments. Two hours lecture and three hours laboratory. Fee: $45.

Prerequisites: GES 211 and 381.

GES 391. SENIOR PROJECTS I **One credit**

Design and development of selected projects in earth and environmental sciences and other related fields under the direction of a staff member. Technical as well as economical factors will be considered in the design. A professional paper and detailed progress report are required.

Prerequisite: Senior standing in GES.

GES 392. SENIOR PROJECTS II **Two credits**

Design and development of selected projects in earth and environmental sciences and other related fields under the direction of a staff member. Technical as well as economical factors will be considered in the design. A professional paper to be presented and discussed in an open forum is required.

Prerequisite: GES 391 or approval of the instructor.

GES 394. FIELD STUDY **One to three credits**

On-site study of an earth or environmental problem or situation incorporating field documentation and investigation techniques. May be repeated for credit when no duplication of experience results. One hour lecture, plus field trip(s). Fee: variable.

Prerequisites: GES 211 and GES 240.

GES 395-396. INDEPENDENT RESEARCH I & II **One to three credits each**

Independent study or research of a specific earth or environmental science topic at an advanced level under the direction of a departmental faculty member. For three credits, a defensible research paper is required.

Prerequisites: Upper-class standing and approval of academic advisor, research advisor, and department chairperson.

GES 399. COOPERATIVE EDUCATION **One to six credits**

Professional cooperative education placement in a private/public organization related to the student's academic objectives and career goals. In addition to their work experience, students are required to submit weekly reaction papers and an academic project to a Faculty Coordinator in the student's discipline. (See page 52 in Bulletin for placement procedures.)

Prerequisites: Sophomore standing, 2.0 cumulative average, consent of academic advisor, approval of placement by department chairperson.

GES 198/298/398. TOPICS IN GES **Variable credit**
Departmental courses on topics of special interest, not extensively treated in regularly scheduled offerings, will be presented under this course number on an occasional basis. May be repeated for credit.
Prerequisite: Varies with topic studied.

GES 498. ADVANCED TOPICS **One to three credits**
Departmental courses on advanced topics of special interest, not extensively treated in regularly scheduled offerings, will be presented under this course number on an occasional basis. Available for either undergraduate or graduate credit. May be repeated for credit.
Prerequisite: Senior or graduate standing.

EAST EUROPEAN AND RUSSIAN STUDIES PROGRAM

East European and Russian Studies Program Coordinating Committee: Professors Hupchick, (Director), Baldino, Karpinich, Merryman.

Total minimum number of credits required for a minor — 18.

The East European and Russian Studies Program is an interdisciplinary program in which undergraduate students may earn a minor. Program requirements, which can be simultaneously used to fulfill the student's major and elective requirements, are: eighteen (18) credit hours distributed over three academic disciplines (i.e., history, foreign languages and political science), with a minimum of three (3) credit hours in each and no more than nine (9) in any single discipline. One year of college-level Russian (101 and 102) or other East European language (if offered), or second-year college-level German (203 and 204), is strongly recommended. A maximum of nine (9) credit hours in applicable course work acquired through participation in Study Abroad programs may be applied toward fulfillment of the minor requirements, of which a maximum of six (6) may be accepted in any single discipline. The acceptability of Study Abroad credits toward fulfilling program requirements is determined by the East European and Russian Studies Program Coordinating Committee.

The minor is designed to add recognition of a multidisciplinary, international component to the student's degree and to supplement work in the student's major department. It further adds a professionally and personally valuable concentration for students majoring in such areas as business, history, political science, foreign languages, international studies, economics, and communications, among others.

The Coordinating Committee Director serves as the student advisor for the program. Students who select the minor should contact the Director, who will aid them in the selection of courses.

Departmental course offerings that are currently eligible for the East European and Russian Studies minor include:

Foreign Languages:

Russian 101:	Elementary Russian
Russian 102:	Elementary Russian
Russian 208:	Russian and East European Cultures
German 203:	Intermediate German
German 204:	Intermediate German
History 345:	History of Eastern Europe
History 346:	History of the Balkans
History 348:	History of Russia
Political Science 251:	European Politics
Political Science 351:	Politics of Russia and Commonwealth of Independent States

Other eligible courses may be offered as topics courses or added to the departmental offerings listed above. Course additions will be approved and publicized by the Coordinating Committee during the pertinent academic year.

Beyond overseeing the program curriculum, the Coordinating Committee also administers outreach programs, such as lecture series, seminars and cultural events, that serve to broaden the goals and content of the program to the University community and to the community at large.

EARLY LIBRARY

ECONOMICS

Professor Baldino, Chairperson; Professor Emeritus Farrar; Associate Professor Emeritus DeYoung; Professor Taylor; Associate Professor Seeley.

Total minimum number of credits required for a minor — 18.

The Social Sciences and Communications Department offers a minor program in Economics. For students who have chosen other majors, a minor in Economics often is a valuable complement. Its ability to bring into sharp focus the economic issues and problems subsumed in such areas as business administration, political science, sociology, history, pre-law, music or engineering make it a valuable career asset. The minor program in Economics requires the completion of EC 101 and EC 102 and at least 12 additional credits in Economics Courses, chosen in consultation with an academic advisor in the Department of Social Sciences and Communications.

EC 101. PRINCIPLES OF ECONOMICS **Three credits**
Presents basic economic problems and shows how these problems are solved in a free enterprise economy; the effects of the increasing importance of the economic role of government; the nature of national income and the modern theory of income determination: how money and banking, fiscal policy, and monetary policy fit in with income analysis and keep the aggregate system working. The course deals mainly with macroeconomic problems.

EC 102. PRINCIPLES OF ECONOMICS II **Three credits**
Based upon a broad microeconomic foundation concentrating on such units as the consumer, the firm, and the industry. A general view of the free market system; the economics of the firm and resource allocation under different market structures; production theory; pricing and employment of resources; economic growth and development.

EC 201. INTERMEDIATE MACROECONOMICS **Three credits**
The study of behavior of the important economic aggregates; national income, consumption, investment, public spending, and taxes. Special emphasis is on the problems of inflation and unemployment and the post-Keynesian search for their causes and solutions.
Prerequisite: Ec 101.

EC 202. INTERMEDIATE MICROECONOMICS **Three credits**
The study of the interaction between households and businesses in product and resource markets. Topics covered include consumer preferences, production theory, cost analysis, market structures and the determination of wages and prices.
Prerequisite: Ec 102.

EC 230. MONEY AND BANKING **Three credits**
A study of money, credit, and banking operations. Monetary standards, development of the American monetary and banking system. Recent developments in other financial institutions. Central banking and the Federal Reserve System; instruments of monetary control; international monetary relationships.

EC 301. COMPARATIVE ECONOMIC SYSTEMS **Three credits**
The institutions of a market economy are analyzed as a foundation for purposes of comparisons. Marxist theory of prices, wages, and the demise of capitalism is studied in order to establish the theoretical basis of Socialism and Communism. Particular stress is placed on the performance of the former Soviet economy. Attention is also given to important operational aspects of the Chinese, British, and Swedish systems.
Prerequisites: Ec 101 and 102.

EC 310. ECONOMIC DEVELOPMENT **Three credits**
A study of the problems of development and growth in developed and less developed countries and how they can achieve growth and development. Topics include population, financing development, planning and programming development, as well as theories of economic development.
Prerequisites: Ec 101 and 102.

EC 319. ECONOMIC STATISTICS **Three credits**
An introduction to the primary tools of research in business and economics: the collection, summarization, analysis, and interpretation of statistical findings relevant to business decisions. Two hours of lecture and one hour of individualized laboratory. Topics covered will include, but not be limited to, descriptive statistics, probability, sampling theory, hypothesis testing, and regression and correlation analysis. (Same as BA 319.)

EC 320 THE ECONOMICS OF CRIME **Three credits**
A study of the economic approach to crime and crime prevention. The course will apply economic analysis to such areas of interest as deterring crime, the impact of criminal activity, the allocation of crime-fighting resources, crimes against people, property crime, and victimless crimes. Controversial issues such as the desirability of the death penalty and gun control legislation will be featured.
Prerequisite: EC 102

EC 330. PUBLIC FINANCE **Three credits**
Fundamental principles of public finance; government expenditures; revenue; financial policies and administration; taxation; principles of shifting and incidence of taxation; public debts and the budget; fiscal problems of federal, state, and local government; the relation of government finance to the economy.
Prerequisites: Ec 101 and 102.

EC 340. INTERNATIONAL TRADE AND FINANCE **Three credits**
Classical and Neo-classical theories of trade; qualifications of the pure theory; new theories of trade; the transfer of international payments and the determination of foreign exchange rates; the balance of international payments; tariffs and other trade barriers; United States commercial policy and the General Agreement on Trade and Tariffs; current issues.
Prerequisites: Ec 101 and 102.

EC 374. ECONOMICS OF HEALTH CARE **Three credits**
This course provides an economic analysis of the health care industry and the public policy issues related to it. Discussion will focus on the industry's departure from a competitive model in terms of the prevalence of asymmetric information, supplier-induced demand, widespread insurance coverage, and the growth of managed care as well as the three key public policy issues of access, cost, and quality.
Prerequisites: Ec 102.

EC 380. LABOR ECONOMICS **Three credits**
A study of the forces that determine labor market outcomes such as wage rates, employment levels, and productivity of the workforce. Emphasis will be placed upon the various measures of labor supply as well as the differences in the demand for labor in competitive versus noncompetitive markets. Key topics will include: the various types of unemployment; search theory; the impact of legal and illegal immigration; collective bargaining and the economics of unions; labor market discrimination and comparable worth.
Prerequisites: Ec 101 and 102.

EC 385. COLLECTIVE BARGAINING **Three credits**
An introduction to labor problems and an analysis of major issues in the field of labor. This course deals with collective bargaining, employment, wages, hours, and union policies. Governmental participation in labor relations and collective bargaining are also investigated. Reference is made to social welfare devices such as social security, unemployment compensation, and workers' compensation.
Prerequisites: Ec 101 and 102.

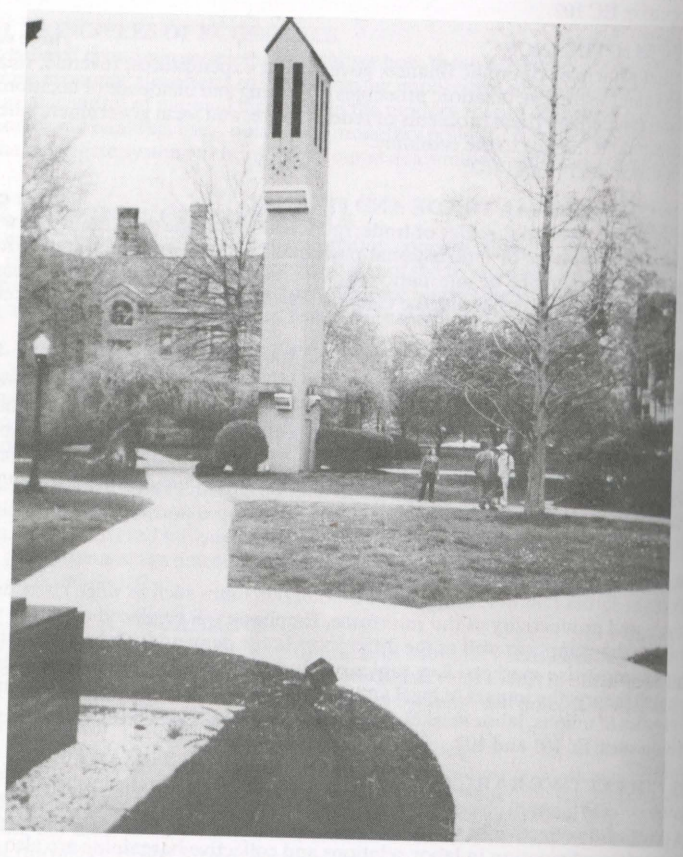
EC 395-396. INDEPENDENT RESEARCH **One to three credits**
Independent study and research for advanced students in the field of the major under the direction of a full-time faculty member. A research paper at a level significantly beyond a term paper is required.

Prerequisites: Ec 101 and 102.

EC 399. COOPERATIVE EDUCATION **One to six credits**
Professional cooperative education placement in a private/public organization related to the student's academic objectives and career goals. In addition to their work experience, students are required to submit weekly reaction papers and an academic project to a Faculty Coordinator in the student's discipline. (See page 52 in Bulletin for placement procedures.)

Prerequisites: Sophomore standing, 2.0 cumulative average, consent of academic advisor, approval of placement by department chairperson.

EC 198/298/398. TOPICS **Variable credit**
Lectures on current issues and developments in economics.



EDUCATION

Associate Professor Polachek, Chairperson; Professors Emeriti J. Bellucci, Fahmy, Johnson; Associate Professors Lynch, Meyers; Assistant Professors Baynum, B. Bellucci, Bewick.

Total minimum number of credits required for a major in Elementary Education — 131.

Mission of the Teacher Education Program

The Mission of the Teacher Education Program at Wilkes University is to provide the educational community and society at large with competent, caring, and skilled educators who are life-long learners, knowledgeable independent thinkers, and effective communicators. In the achievement of this mission, opportunities for students to grow academically and professionally are provided at Wilkes and in the surrounding community.

It is the Mission of the Teacher Education Program at Wilkes University to foster attitudes of appreciation for cultural diversity. Inherent within this mission is the development of ethical and fair-minded educators who promote the achievement of all students regardless of race, gender, ability, or background.

The Teacher Education Program at Wilkes University thoroughly prepares future educators with the tools necessary to be successful at their craft. In so doing, competence is developed in the knowledge of pedagogy and the content areas, and in the application of current research and best practices related to teaching methodologies, classroom management, and technology as both a teaching and learning tool.

The Teacher Education Program at Wilkes University models the ethic of service and dedication expected of its graduates to meet the diverse needs of all students within the learning community. It is intrinsic in this mission to produce educators who value and establish partnerships with parents and the community, and who become leaders in their advocacy for education—both for themselves and for the students and community they serve.

B.A. Degree and Certification Programs

The Department of Education and Psychology offers a B.A. in Elementary Education and programs leading to Pennsylvania Department of Education certification in the following areas: biology, chemistry, communications, early childhood education, earth and space science, English, French, general science, mathematics, social studies, and Spanish. All teacher education candidates must complete six credits of English and six credits of mathematics as required by the Pennsylvania Department of Education (PDE).

Elementary Education Certification.

Elementary Education majors must also major in one of the following academic disciplines: biology, chemistry, communications, computer science, geoenvironmental sciences, English, French, history, mathematics, political science, psychology, theatre arts, sociology, or Spanish. Students planning to major in and be certified in Elementary Education must complete the following requirements:

1. Complete an academic major as described above;
2. Complete the following courses:

English	7 credits ENG 101—Composition ENG 120—Introduction to Literature and Culture
History	3 credits HST 207—American History I OR HST 208—American History II
Math	6 credits MTH 103—Mathematics for Elementary School Teachers I MTH 104—Mathematics for Elementary School Teachers II OR two higher numbered courses in mathematics
Psychology	6 credits PSY 101—General Psychology PSY 221—Developmental Psychology
Science	9 credits 3 credits in Biology 3 credits in Chemistry or Physics 3 credits in GeoEnvironmental Sciences

3. Complete the following Education courses:

ED 190	3 credits	Effective Teaching with Field Experience
ED 200	3 credits	Educational Psychology
ED 210	3 credits	Teaching Students with Special Needs
ED 220	3 credits	Multicultural Education
ED 310	2 credits	Health, Physical Education and Safety in Early Childhood and Elementary Education
ED 315	3 credits	Integrating Technology into the Classroom
ED 321	3 credits	Foundation of Reading with Field Experience
ED 322	2 credits	Teaching of Reading
ED 330	2 credits	Mathematics in Early Childhood and Elementary Education
ED 341	3 credits	Language Arts in Early Childhood and Elementary Education
ED 350	2 credits	Arts in Early Childhood and Elementary Education
ED 360	3 credits	Social Studies in Early Childhood and Elementary Education
ED 370	2 credits	Science in Early Childhood and Elementary Education
ED 390	15 credits	Student Teaching

ED 385—Classroom Management, 3 credits, is highly recommended, as is a foreign language.

Early Childhood Education

Early Childhood Education certification candidates must complete the Elementary Education program outlined above and take the following three courses:

ED 263	2 credits	Child Development
ED 361	3 credits	Early Childhood Education (with field experience)
ED 362	3 credits	Instruction in Early Childhood Education (with field experience)

Secondary Certification

Secondary school teacher certification candidates must major in one of the following areas: biology, chemistry, communications, geoenvironmental sciences, English, French, history, political science, or Spanish. Students planning to be certified in Secondary Education must complete the following requirements:

1. Complete an academic major as described above;
2. Complete the following courses:

English	7 credits ENG 101—Composition ENG 120—Introduction to Literature and Culture

Six credits of mathematics (required by the PDE);

ED 190	3 credits	Effective Teaching with Field Experience
ED 200	3 credits	Educational Psychology
ED 210	3 credits	Teaching Students with Special Needs
ED 220	3 credits	Multicultural Education
ED 315	3 credits	Integrating Technology into the Classroom
ED 380	2 credits	Content Area Reading

One of the following methods courses (with field experience):

ED 300	4 credits	Special Methods Foreign Languages 7-12
ED 351	4 credits	Special Methods Communications 7-12
ED 371	4 credits	Special Methods Sciences 7-12
ED 381	4 credits	Speical Methods Social Studies 7-12
ENG 393	4 credits	The Teaching of English in Secondary Schools
MTH 303	4 credits	The Teaching of Mathematics in Secondary Schools
ED 390	15 credits	Student Teaching

ED 385—Classroom Management, 3 credits, PSY 222—Adolescent Psychology, 3 credits, and a foreign language are highly recommended.

Communications certification candidates must complete the following English courses:

ENG 201	4 credits	Writing About Literature and Culture
ENG 225	3 credits	Comparative Grammar
ENG 324	3 credits	History of the English Language

Any three of the following four survey courses:

ENG 233	3 credits	Survey of English Literature I
ENG 234	3 credits	Survey of English Literature II
ENG 281	3 credits	Survey of American Literature I
ENG 282	3 credits	Survey of American Literature II

One 300-level literature course

Social Studies certification candidates who major in history must take twelve credits beyond the introductory sequence in one of the social sciences (anthropology, economics, political science, psychology, or sociol-

ogy). Students who do not major in history must take twelve credits in history beyond HST 101 and HST 102. All candidates must complete the following courses:

ANT 101	3 credits	Introduction to Anthropology
EC 101	3 credits	Principles of Economics
ED 381	4 credits	Special Methods Social Studies 7-12
GES 261	3 credits	Regional Geography
HST 207	3 credits	American History I
HST 208	3 credits	American History II
PS 111	3 credits	Introduction to American Politics
SOC 101	3 credits	Introduction to Sociology

It is anticipated that in the fall of 2002, a new certification in Citizenship Education will replace the current Social Studies certification. After 2004, the PDE will no longer grant certification in Social Studies.

Admission Requirements

Students interested in preparing for teacher certification must be formally admitted to the Teacher Education Program at Wilkes University. Criteria for admission are:

1. Completion of at least 48 semester-hour credits;
2. Completion of ED 190—Effective Teaching with Field Experience, with a grade of at least a 2.5;
3. A GPA of 2.6 to be admitted, and maintenance of a cumulative 2.6 GPA to continue in the program;
4. Demonstration of writing and oral proficiency.

Prior to student teaching, candidates must pass the four PPST tests administered by Educational Testing Services.

To be admitted to the Teacher Education Program, applicants must meet all requirements. Considerations of exceptions will start with review by the Department Chair and end with the decision of a departmental committee.

Upon successful completion of the programs described above, candidates will be recommended for certification by the state after they graduate and pass the Praxis Examinations.

Title II infomration can be found through the Wilkes University website http://www.wilkes.edu

Program requirements may change at the discretion of the Pennsylvanica Department of Education.

Recommended Course Sequence for Major/ Certification in Elementary Education

First Semester		Second Semester	
FrF 101 Freshman Foundations	3	CS 115 Computers & Applications	3
COM 101 Fund. of Public Speaking	3	Scientific World Elective	3
MTH 103 Math for Elementary Teachers	3	MTH 104 Math for Elementary Teachers	3
ENG 101 Composition	4	Major Elective	3
PSY 101 General Psychology	3	PSY 221 Developmental Psychology	3
		HST 101	3
	16		18
Third Semester		**Fourth Semester**	
ED 190 Effective Teaching w/Field Exp.	3	ED 200 Educational Psychology	3
HST 207 or 208 American History	3	ED 220 Multicultural Education	3
Major Electives	6	Major Electives	6
Social Science Elective	3	Visual & Performing Arts Elective	3
Scientific World Elective	3	Science Elective	3
	18		18
Fifth Semester		**Sixth Semester**	
ED 321 Foundations of Reading w.Field Exp.	3	ED 322 Teaching of Reading	2
ED 210 Tchg. Students with Special Needs	3	ED 330 Mathematics in ECE & Elem. Ed.	2
ED 310 Health, PE, & Safety in ECE/Elem.	2	ED 341 Language Arts in ECE & Elem. Ed.	3
Major Electives	6	ED 315 Integrating Tech into the Classrm.	3
ENG 120 Intro to Literature	3	Major Electives	6
	17		16
Seventh Semester		**Eighth Semester**	
ED 350 The Arts in ECE & Elem. Ed.	2	ED 390B Student Teaching with Seminar	15
ED 360 Social Studies in ECE & Elem. Ed.	3		
ED 370 Science in ECE & Elem. Ed.	2		
Major Electives	6		
Humanities FL 101 or PHL 101	3		15
	16		

Recommended Course Sequence for Major/Certification in Secondary Education

First Semester		Second Semester	
FrF 101 Freshman Foundations	3	CS 115 Computers & Applications	3
MTH 101 Quantitative Reasoning	3	Social Science Elective	3
ENG 101 Composition	4	COM 101 Fund. of Public Speaking	3
PSY 101 General Psychology	3	Scientific World	3
Major Elective	3	Major Elective	3
	16		15

Third Semester

ED 190 Effective Teaching w/Field Exp.	3
HST 101 Hist. Foundations	3
FL 101 or PHL 101	3
Major Electives	6
	15

Fourth Semester

ED 200 Educational Psychology	3
ENG 120 Intro to Literature & Culture	3
Scientific World	3
Visual and Performing Arts Elective	3
Major Electives	3-6
	15-18

Fifth Semester

ED 210 Teaching Students w/ Special Needs	3
Major Electives	12
	15

Sixth Semester

ED 220 Multicultural Education	3
ED 380 Content Area Reading	2
Major Electives	9-12
	14-17

Seventh Semester

ED 381 Special Methods w. Field Exp Senior Capstone	3
ED 315 Integrating Technology into the Classroom	3
Major Electives	9
	15

Eighth Semester

Ed 390A Student Teaching w/Seminar	15
	15

ED 150. PRACTICUM IN EDUCATION **One credit**
This practicum experience provides an opportunity for students to gain experience as teachers' aides under supervision in regional school classrooms.

ED 190. EFFECTIVE TEACHING WITH FIELD EXPERIENCE **Three credits**
This course emphasizes concepts and skills for effective teaching. These skills include instructional techniques, library research, writing, and field experiences. Students will be involved in their first 30-hour practicum experience.

ED 200. EDUCATIONAL PSYCHOLOGY **Three credits**
This course is designed to present a study of Educational Psychology as a distinct discipline concerned with understanding the processes of learning and teaching and developing ways of improving these processes. In this course, students will identify and apply knowledge derived from the behavioral sciences to the solution of educational problems. The course focuses on the psychology and development of learners, psychosocial principles of learning and motivation and their applications to teaching, and research-based classroom management techniques. Emphasis is also placed on effective classroom communication and interpersonal relationships.

Prerequisite: Admission to the Teacher Education Program.

ED 210. TEACHING STUDENTS WITH SPECIAL NEEDS **Three credits**
This course is designed to enable preservice teachers to develop the knowledge base and instructional skills necessary to meet the educational needs of students with special needs in the classroom. Students will be familiarized with varied exceptionalities, including behavioral disorders, learning disabilities, mental retardation, Attention Deficit Hyperactivity Disorder, and physical and sensory disabilities. This course will incorporate useful pedagogical information which addresses the learning abilities of exceptional students and enhances instruction across all subject areas.

Prerequisite: Admission to the Teacher Education Program.

ED 220. MULTICULTURAL EDUCATION **Three credits**
This course is designed to address the urgent need for multicultural education by covering topics such as racism, bias, and cultural information in order to help students develop

instructional strategies for creating within their classrooms a knowledge of, appreciation of, and respect for diversity. The course will also help students develop the knowledge base and instructional skills necessary to teach basic world geography in order to understand the cultural/political effects that geography has on the diverse cultural groups included in the American educational system.

Prerequisite: Admission to the Teacher Education Program.

ED 263. CHILD DEVELOPMENT **Two credits**
This course is designed to study aspects dealing with development and research issues relating to children and their families. Theories of instruction that support the cognitive, affective, and physical development of infants, toddlers, preschoolers, primary children, and adolescents are discussed and evaluated. Relationships among cultural, social, academic characteristics, intelligence, and health are analyzed. Professional and ethical issues are discussed as are laws and policies related to child development.

Prerequisites: Admission to the Teacher Education Program and Psy 221.

ED 310. HEALTH, PHYSICAL EDUCATION AND SAFETY IN EARLY CHILDHOOD AND ELEMENTARY EDUCATION **Two credits**
This is a study of the methods and materials appropriate for teaching health, physical education and safety. Emphasis is on understanding the developmental levels, needs and interests of children in these areas from infancy to early adolescence.

Prerequisite: Admission to the Teacher Education Program.

ED 315. INTEGRATING TECHNOLOGY INTO THE CLASSROOM **Three credits**
This course is designed to build upon a basic foundation in educational technology. Future teachers develop knowledge and skills in selection, evaluation, and utilization of various instructional technologies. The application of new technologies to teaching and learning will be emphasized, along with performance-based activities in instructional design. A major portion of the course is devoted to the integration of technology-based instructional activities in the PK-12 curriculum.

Prerequisite: CS 115 or comparable skills or permission of the Teacher Education Program.

ED 321. FOUNDATIONS OF READING WITH FIELD EXPERIENCE **Three credits**
This course will present basic concepts of reading instruction: emphasis on the nature of the reading process; the nature of the learner; and reading as an interactive process. This course requires completion of a 30-hour practicum. Offered fall semesters only.

Prerequisite: Admission to the Teacher Education Program.

ED 322. TEACHING OF READING **Two credits**
The course is designed to investigate and analyze major instructional methods for teaching reading. The material is based upon current research theories and findings, and includes topics now recognized by theorists and practitioners as being most critical to developing effective school reading programs. Offered spring semesters only.

Prerequisite: Successful completion of Ed 321 and admission to the Teacher Education Program.

ED 330. MATHEMATICS IN EARLY CHILDHOOD AND ELEMENTARY EDUCATION **Two credits**
This course is designed to present a study of the research, concepts, and methodologies pertinent to the teaching of mathematics at the early childhood and elementary school levels. Emphasis is placed on 1) the integration of concrete manipulatives to facilitate the learning process, 2) the knowledge necessary to guide children to become mathematically literate, and 3) the implementation of planning and instructional techniques in the teaching of mathematics.

Prerequisite: Admission to the Teacher Education Program.

ED 341. LANGUAGE ARTS IN EARLY CHILDHOOD AND ELEMENTARY EDUCATION **Two credits**

The purpose of this course is to inform and actively involve learners in studying a variety of concepts and methodologies for teaching the language arts at the early childhood and elementary school level. The course focuses on the integration of the language arts and endorses a multidisciplinary approach to teaching and learning. The incorporation of children's literature genres as the basis for language arts themes and activities is fundamental to the course.

Prerequisite: Admission to the Teacher Education Program.

ED 350. THE ARTS IN EARLY CHILDHOOD AND ELEMENTARY EDUCATION **Two credits**

This course is designed as an exploration of the importance of the arts in the development of children in the cognitive, affective, and psychomotor domains. Students will discover how the arts are directly related to our natural and manmade environments and learn specific teaching methodologies that foster creativity and the integration of art with other subject areas.

Prerequisite: Admission to the Teacher Education Program.

ED 360. SOCIAL STUDIES IN EARLY CHILDHOOD AND ELEMENTARY EDUCATION **Three credits**

In this course, students will gain an understanding for teaching social studies at the early childhood and elementary school levels. Students will develop their personal philosophy of the purpose of social studies, review national curriculum guidelines and Pennsylvania state standards, and explore a variety of teaching strategies.

Prerequisite: Admission to the Teacher Education Program.

ED 361. EARLY CHILDHOOD EDUCATION **Three credits**

Through the study of developmental characteristics, appropriate practices, and theories of learning, early childhood perservice teachers experience theoretical and practical examples for educating young children. A 15-hour practicum highlights quality care programs for infants, toddlers, and preschool children. Students study federal and state regulations necesssary for operating a child care program, evaluate effective instruction, and reflect on classroom observations. In addition, students perpare lessons, centers, and activities that reflect developmentally appropriate themes.

Prerequisite: Admission to the Teacher Education Program.

ED 362. INSTRUCTION IN EARLY CHILDHOOD EDUCATION **Three credits**

This course is designed as a comprehensive study of the relationship between how children learn during their most formative years and the application of effective instructional techniques to enhance their development. This course offers opportunities to study and evaluate theoretical views of cognitive, affective, and physical development, developmentally appropriate practices for planning instruction, authentic assessment tools, and relevant children's literature for creating integrated thematic plans. A 30-hour practicum offers the preservice teacher practical application of instructional strategies in local day care and school settings.

Prerequisite: Admission to the Teacher Education Program.

ED 370. SCIENCE IN EARLY CHILDHOOD AND ELEMENTARY EDUCATION **Two credits**

This course presents a study of the methods and curriculum for teaching science to young children. Emphasis is placed on instruction that is activity oriented and leads to the development of science process skills, problem-solving strategies, and well-developed conceptual frameworks.

Prerequisite: Admission to the Teacher Education Program.

ED 380. CONTENT AREA READING **Two credits**

This course is designed to explore the use of various reading strategies in teaching content area subjects through the use of instructional techniques for the adaptation, enrichment, and development of materials to address the diverse reading levels of students in secondary school programs.

Prerequisite: Admission to the Teacher Education Program.

ED 385. CLASSROOM MANAGEMENT **Three credits**

This course is designed to highlight fundamental researchers such as Dewey, Canter and Ginot, and their models as profiles of effective theories for instruction and conduct in school settings. Management techniques will be identified, analyzed, evaluated, and demonstrated. Authentic assessments are reflected in practical activities and demonstrations that foster application of principle components of classroom management.

Prerequisite: Admission to the Teacher Education Program.

ED 390. STUDENT TEACHING WITH SEMINAR **Fifteen credits**

Students are assigned to work with selected classroom teachers. The students assume classroom responsibilities and teach under supervision. Observations and conferences are held on a regular basis with the university supervisors and the cooperating teachers. In addition, students attend weekly three-hour seminars at the University. Fee: $55.

Section A—Secondary (7-12) Section B—Elementary/Early Childhood Section C—K-12 Art

ED 395-396. INDEPENDENT RESEARCH **One to three credits**

Independent study and research for advanced students in the field of the major under the direction of a staff member. A research paper at a level significantly beyond a term paper is required.

Prerequisite: Approval of department chairperson is required.

ED 198/298/398. TOPICS IN EDUCATION **Variable credit**

A study of topics of special interest not extensively treated in regularly offered courses.

Secondary Methods in Education

A study of instructional methodology in Art, Communications, English, Foreign Languages, Mathematics, Sciences, Social Studies. Attention is given to characteristic problems faced by teachers in these several fields. Reading and other specialized techniques are examined. 30 hours practicum.

Ed 300 Foreign Languages (Grades 7-12)
Ed 351 Communication (Grades 7-12)
Ed 371 Sciences (Grades 7-12)
Ed 381 Social Studies (Grades 7-12)
Eng 393 English (Grades 7-12)
Mth 303 Mathematics (Grades 7-12)

Prerequisite: Admission to the Teacher Education Program.

ELECTRICAL ENGINEERING

Associate Professor Maxwell, Chairperson; Professors Arora, Nejib; Associate Professor Gilmer, Kucirka, Srinivasan; Technical Support Staff: Lennox, Sickler, Wilk.

Total minimum number of credits required for a major in Electrical Engineering leading to the B.S. degree — 130.

Total minimum number of credits required for a minor in Computer Engineering — 20.

Engineering is the profession of creative problem solving. The Wilkes engineering programs provide the student with the knowledge and the investigative skills, both theoretical and experimental, to responsibly address professional and societal needs through modern curricula. Hands-on experience and a personalized education environment.

The mission of the Electrical Engineering program is to enhance the ability of the student to integrate knowledge and apply it effectively and responsibly in solving problems through a dynamic curriculum characterized by its fast response to new developments, opportunities for design and industrial experience, availability of modern laboratories, the use of computer simulations, and team building. Communication Systems and microelectronics are the technological cornerstones of this program.

The Engineering and Physics Department offers a four-year degree program in Electrical Engineering. This program provides strong engineering and scientific experience with advanced techniques heavily integrated into the curriculum. Students intending to major in engineering are encouraged to be well prepared in the sciences and mathematics. The first three semesters of course-work are common for all engineering programs. A M.S. degree in Electrical Engineering, which is described in a separate Bulletin, is also available.

The four-year program in Electrical Engineering leading to the Bachelor of Science degree offers various concentrations. The student can choose to specialize within this program in communication systems, computer systems, electronics and controls, or microelectronics.

Cooperative education provides applied professional training to Wilkes engineering students that is often valued by prospective employers. The electrical engineering curriculum includes an optional six-credit cooperative education assignment in the sixth semester. The assignment may continue into the summer preceding the seventh semester. Since all students may not be willing or able to elect such a cooperative educational assignment as an option, the student may complete six credits of technical electives.

A Computer Engineering minor is an attractive option for students majoring in Electrical or other engineering disciplines as well as for students majoring in Computer Science. This minor should be helpful in finding jobs requiring the use of computers in larger systems, especially control communications, and other application oriented systems which utilize computer control.

Minor in Computer Engineering

Required Courses:	**credits**
EE 145 Computer Science I	4
EE 146 Computer Science II	4
EE 148 UNIX	1
EE 241 Digital Design	3
EE 243 Digital Design Lab	1
EE 345 Computer Organization	3
EE 342 Microcomputer Operation and Design	3

Plus one elective course from an Application Area:

Courses:	**credits**
EE 314 Control Systems	3
EE 350 Medical Instrumentation	3
CS 367 Computer Graphics	3
CS 355 Computer Networks	3

Total credits for Computer Engineering minor: 22

The student chapters of the Institute of Electrical and Electronic Engineers (I.E.E.E.), the Society of Women Engineers (S.W.E.), and the Pennsylvania Society of Professional Engineers (P.S.P.E.), in conjunction with the Department, periodically offer seminars on subjects of a timely nature. Attending these seminars and taking the E.I.T. (Engineer-In-Training) exam are mandatory for the completion of the degree. Students are also highly encouraged to participate in the activities of other on-campus organizations such as the Engineering Club.

ETA KAPPA NU, the International Electrical Engineering Honor Society, established the KAPPA BETA chapter at Wilkes in 1991. The Society recognizes electrical engineering students and professionals who display exemplary academic achievement, character and service. It provides a forum to encourage continued achievement and service among its members, the University and the community.

In 1979 the Technology Transfer Program (TTP) was initiated to enable the community to draw upon the Department's technical expertise and advanced facilities in Northeastern Pennsylvania. This effort is directed to assist in the development and expansion of industries, and the establishment of high technology facilities in Northeastern Pennsylvania.

Honors Programs in Engineering

Upon the recommendation and approval of the engineering faculty, honor students in Engineering will be recognized upon completion of the following requirements: achieving an overall grade point average of 3.25 or better; receiving grades of 3.00 or better in all engineering courses of

his or her discipline; pursuing independent research or special projects in engineering; and presenting the results at meetings, conferences, or through publication of a paper. The distinction "Honors in Engineering" will be recorded on the student's transcript upon graduation.

Recommended Course Sequence for a B.S. Degree in Electrical Engineering

First Semester	
Chm 115 Elements and Compounds	4
Mth 111 Calculus I	4
FrF 101 Freshman Foundations	3
ME 180 CADD Lab	1
Eng 101 Composition	4
	16

Second Semester	
MaE 200 Materials Engineering or	3
GES 202 Biogeochemistry	
Mth 112 Calculus II	4
EE 145 Computer Science I or	4
EGR 140 Computer Utilization	3
Phy 201 General Physics I	4
Distribution Requirement	3
	17-18

Third Semester	
EE 211 Circuit Theory I	3
EE 283 Electrical Measurements Lab	1
Mth 211 Intro. to Differential Equations	4
Phy 202 General Physics II	4
ME 231 Statics & Dynamics	3
Distribution Requirement	3
	18

Fourth Semester	
EGR 214 Linear Systems	3
EE 251 Electronics I	4
EE 222 Mechatronics	3
EE 241 Digital Design	3
EE 243 Digital Design Lab	1
Distribution Requirement	3
	17

Fifth Semester	
EE 252 Electronics II	3
EE 254 Electronics Lab	1
EE 271 Semiconductor Devices	3
EE 373 CAD for Microfab	1
EE 381 Microfabrication Lab	3
Distribution Requirement	3
	14

Sixth Semester	
EE 399 Cooperative Education or	6
Technical Electives	6
EGR 201 Professionalism and Ethics	1
Distribution Requirement	6
EGM 320 Engr. Project Analysis	3
	16

Seventh Semester	
EE 314 Control Systems	3
EE 337 Electromagnetics	4
EE 391 Senior Projects I	1
EE 361 Communication Systems	3
Technical Electives	6
	17

Eighth Semester	
EE 323 Electrical Machines Lab.	1
EE 382 Modern Communications Lab.	3
EE 392 Senior Projects II	2
Technical Elective	6
Free Elective	3
	15

Technical electives may be chosen from any advisor-approved science or engineering course numbered 200 or above, to satisfy a concentration requirement. Advisor-approved Free Electives are selected to enhance program focus and interest. Students consult with Co-op Advisor for availability and proper scheduling of Cooperative Education course.

EE 145. COMPUTER SCIENCE I — **Four credits**
An introduction to the fundamental concepts of computer science, with emphasis on problem solving and algorithm design using a high-level programming language. Course will contain a significant, weekly, in-class programming experience. (same as CS 125)
Prerequisite: Secondary mathematics including geometry and algebra II.
Offered every fall and spring.

EE 146. COMPUTER SCIENCE II — **Four credits**
A study of advanced programming techniques (including recursion and manipulation of structured data types and pointer variables) and abstract linear data structures (lists, stacks, and queues). Course will contain a significant, weekly, in-class programming experience. (same as CS 126)
Prerequisite: CS 125 (EE 145). Offered every spring and fall.

EE 148. UNIX — **One credit**
Basic Unix features such as the file system, the shell, the Emacs editor, electronic mail, and other network programs. Shell and AWK programming (same as CS 128).
Prerequisite: Some programming experience.
Offered every spring.

EE 211. CIRCUIT THEORY I — **Three credits**
Definitions. Formulations of circuit equations and theorems. Various techniques for circuit analysis using resistive networks. Characterizations of inductance and capacitance. Sinusoidal steady-state analysis using phasor concept. Average power and r.m.s. values. Reactive power, complex power, and power factor. Three phase circuits and their analysis. Measurement of power.
Prerequisite: Mth 112.

EE 222. MECHATRONICS — **Three credits**
Introduction to mechatronics system design with emphasis on using sensors to convert engineering system information into an electrical domain, signal conditioning and hardware integration, programming, and using actuators to effect system changes. Two one-hour lectures and one three-hour laboratory per week. (Same as ME 222). Fee: $35.
Prerequisites: EE 140 or 145, EE 283.

EE 241. DIGITAL DESIGN — **Three credits**
The electronics of digital devices, including Bipolar TTL and CMOS; digital logic functions, such as AND, OR, INVERT; Boolean algebra; combinational logic; minimization techniques; digital storage devices; synchronous sequential design; state machines; programmable logic. (same as CS 232) Must be taken with EE 243 Digital Design Lab.
Prerequisite: Junior standing.

EE 242. MACHINE LANGUAGE — **Four credits**
Basic principles of machine language programming. Computer organization and representation of numbers, strings, arrays, list structures at the machine level. Examples utilize all levels of computer architecture. Course will contain a significant, weekly, in-class programming experience. (Same as CS 230)
Prerequisite: EE 146/CS 126.

EE 243. DIGITAL DESIGN LABORATORY — **One credits**
Diodes and bipolar transistors; switching circuits, gates, CMOS and TTL logic characteristics. Combinational design, multiplexing, sequential design. (same as CS 233) Must be taken with EE 241 Digital Design.
Prerequisite: Junior Standing.

EE 248. C AND UNIX — **Three credits**
Topics include concepts of time-sharing operating systems, basic UNIX features such as file structures, the shell, the EMACS editor, the electronic mail system, and the File Transfer Protocol (ftp); basic C constructs such as loops, arrays, functions, recursive calls,

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parameter-passing methods, and pointers; advanced C constructs such as structures, unions, and user defined data types; I/O statements and system calls. (same as CS 226)

Prerequisite: CS 126 or CS 224 or permission of instructor.

Offered every fall.

EE 250. BIOMEDICAL ENGINEERING **Three credits**

Engineering principles of biomedical instrumentation relating to circulation, respiration, and motor-neural systems are developed. The relationship between human anatomy, physiological system, and transducers is treated as a man-machine interface phenomenon. Instruments emphasized include X-ray, ultrasonics, and coronary care devices.

Prerequisite: Junior or senior standing in engineering or science.

EE 251. ELECTRONICS I **Four credits**

Circuit concepts involving nonideal dependent and constant voltage and current sources. Operational amplifiers. Development of physics, operating principles, and terminal characteristics of diodes, bipolar and field-effect transistors . Development of typical design applications and other considerations like conception, analysis, simulation, interference, small and large signal modeling, power, temperature, and frequency effects. Three hours lecture and one two-hour laboratory per week.

Prerequisite: EE 211.

EE 252. ELECTRONICS II **Three credits**

Building blocks of an operational amplifier. Frequency response and bandwidth of BJT, FET, and operational amplifiers. Filters. Power amplifiers. Feedback circuits. Analog integrated circuits.

Prerequisite: EE 251.

EE 254. ELECTRONICS LABORATORY **One credit**

Design and implementation of system design principles including power supplies, BJF and FET amplifiers, power amplifiers, operational amplifiers, feedback circuits, filters, oscillators, and waveform generators. Communication skills enhancement through journal writting and formal reports. One three-hour laboratory a week. Fee: $45.

Corequisite: EE 252.

EE 265. MEDICAL INFORMATICS **Three credits**

Basic principles of computer use and information management in health care (including general medicine, dentistry, optometry, pharmacy). Basic computing concepts, characteristics of medical data, and use of computers in the administrative, diagnostic, and research-oriented medical tasks. The course is primarily directed towards students who intend to pursue careers in health-related fields.(same as CS 265)

EE 271. SEMICONDUCTOR DEVICES **Three credits**

Basic properties of semiconductors and their conduction processes, with special emphasis on silicon and gallium aresenide. Physics and characterizations of p-n junctions. Homojunction and heterojunction bipolar transistors. Unipolar devices including MOS capacitor and MOSFET. Microwave and photonic devices.

Prerequisites: Physics 203, Chm 115.

EE 283. ELECTRICAL MEASUREMENTS LAB **One credit**

A laboratory for the development of measurement techniques and use of electrical instruments for the measurement of various electrical quantities. One two-hour laboratory per week. Fee: $35.

Corequisite: EE 211.

EE 298. TOPICS IN ELECTRICAL ENGINEERING **One to three credits**

Selected topics in the field of electrical engineering.

Prerequisite: Sophomore or junior standing or permission of instructor.

EE 314. CONTROL SYSTEMS **Three credits**

Laplace transforms and matrices. Mathematical modeling of physical systems. Block diagram and signal flow graph representation. Time-domain performance specifications. Stability analysis; Routh-Hurwitz criterion. Steady state error analysis. Root-locus and frequency response techniques. Design and compensation of feedback systems. Introductory state space analysis.

Prerequisite: EE 211 and junior standing.

EE 317. ARTIFICIAL INTELLIGENCE **Three credits**

This course will provide an overview of artificial intelligence (AI) application areas and hands-on experience with some common AI computational tools. Topics include search, natural language processing, theorem proving, planning, machine learning, robotics, vision, knowledge-based systems (expert systems), and neural networks. (same as CS 340)

Prerequisite: CS 126 or CS 224 or permission of instructor.

Offered in the spring semester of even years.

EE 318. NAVIGATIONAL TECHNIQUES **Three credits**

Navigation coordinate systems including charts, geodesy and timekeeping; piloting principles of bearings, fixes, and dead reckoning; Celestial navigation principles; vehicle relative coordinates; attributes of navigation systems such as coverage and accuracy, the use of both classical and modern navigation systems.

EE 321. ELECTRIC MACHINES **One credit**

Magnetic circuits, force and torque in magnetic circuits. Principles of operation of transformers, synchronous machines, induction machines, and DC machines. One one-hour lecture per week.

EE 323. MACHINES AND CONTROLS LABORATORY **One credit**

No load and load tests on Transformers, DC Machines, Synchronous Machines, and Induction Motors. Three Phase Transformer Connections, Parallel operation of alternators. Control of DC motors and induction motors using SCRs. Fee: $45.

Prerequisite: To be taken along with or after EE 321.

EE 337. ENGINEERING ELECTROMAGNETICS **Four credits**

Guided TE and TM waves; cavities and resonant circuits; strip line; S-parameters and microwave devices; directional coupler, attenuator, frequency meter; electromagnetic radiation; dipole antenna; antenna arrays. Three hours lecture and one two-hour laboratory a week. Fee: $45.

Prerequisite: EE 336.

EE 342. MICROCOMPUTER OPERATION AND DESIGN **Three credits**

Microprocessor architecture, microcomputer design, and peripheral interfacing. Microprogramming, software systems, and representative applications. Associated laboratory experiments consider topics such as bus structure, programming, data conversion, interfacing, data acquisition, and computer control. Two hour lecture and one two-hour laboratory a week. (Same as CS 329)

Prerequisite: EE 345.

EE 343. COMPUTER DATA STRUCTURES **Three credits**

A study of the use of a high-level language to implement complex data structures and their application to sorting and searching. These structures include lists, trees, graphs, networks, and storage allocation. Course will contain a significant, weekly, in-class programming experience. (Same as CS 227)

Prerequisite: EE 146.

EE 344. OPERATING SYSTEM PRINCIPLES **Three credits**

Analysis of the computer operating systems including batch, timesharing, and realtime systems. Topics include sequential and concurrent processes, processor and storage management, resource protection, processor multiplexing, and handling of interrupts from peripheral devices. (Same as CS 326)

Prerequisite: EE 343/CS 227.

EE 345. COMPUTER ORGANIZATION **Three credits**
Number representation, digital storage devices and computational units, bus structures, execution sequences and assembly language concepts; control units with horizontal and vertical microcoding; addressing principles and sequencing; microprocessors; basic input and output devices; interrupts; survey of RISC principles including pipelined execution. (same as CS 345)
Prerequisite: EE 241.

EE 346. COMPUTER ARCHITECTURE **Three credits**
A study of the design, organization, and architecture of computers, ranging from the microprocessors to the latest "supercomputers." (Same as CS 330)
Prerequisite: EE 242 or EE 342.

EE 347. COMPUTER NETWORKS **Three credits**
This course introduces basic concepts, architecture, and widely used protocols of computer networks. Topics include the Open System Interconnection (OSI) model consisting of physical link layer, data layer, network layer, transport layer, session layer, presentation layer, and application layer; medium access sublayer and LAN; various routing protocols; Transmission Control Protocol (TCP) and Internet Protocol (IP) for internetworking. (same as CS 355)
Prerequisite: CS 126 or CS 224 or permission of instructor.
Offered in the spring semester of even years.

EE 348. SOFTWARE ENGINEERING **Three credits**
A course in "programming in the large". Topics include software design, implementation, validation, maintenance, and documentation. There will be one or more team projects. (same as CS 334).
Prerequisite: CS 324.
Offered every spring.

EE 350. MEDICAL INSTRUMENTATION **Three credits**
Applied medical instruments such as ultrasonic devices and signal processing units for ECG and EEG are discussed. The design principles of electrodes, hemodialysis devices, catheters, clinical instruments, intensive care units (ICU's) and pacemakers are treated. Mechanical and electrical design techniques are developed.
Prerequisite: Junior or senior standing in engineering or science.

EE 360. INDUSTRIAL TRAINING **One to six credits**
Industrial and/or research experience gained through engineering assignments or jobs with the community, government, business, or industry.
Prerequisite: Approval of the Electrical and Computer Engineering Department.

EE 361. COMMUNICATION SYSTEMS **Three credits**
Introduction to probability and statistics and their use in communication systems. Fundamental properties of signals. Principles and techniques of linear signal processing. Modulation and demodulation systems including pulse. Sampling, channel capacity, and coding. Methods of multiplexing. Modulator and multiplexer design. Noise and its effects on communication. 3 hours lecture/week.
Prerequisite: EE 252, EGR 214.

EE 373. CAD FOR MICROFABRICATION **One credit**
Simulation tools in process design and extraction of device parameters. Process design for a bipolar junction transistor. A project on one of the following technologies: TTL, ECL, NMOS, CMOS, or BICMOS.
Prerequisite: Senior standing.
Corequisite: EE 381.

EE 381. MICROFABRICATION LAB **Three credits**
Physics and operational principles of bipolar junction transistors, including non-ideal effects. The theoretical and practical aspects of techniques utilized in the fabrication of bipolar junction transistors (BJT's). Crystal growth, solid solubility, alloying and diffusion, oxide masking and epitaxy. Device fabrication procedures in microelectronics, and the electrical performance of devices. Ion implantation systems as a method of fabrication. Thin and thick film techniques. Communication skills enhancement through journal writing and formal reports. One, one-and-a-half hour lecture and one, four-hour lab a week. Fee: $45.
Prerequisite: Senior standing.

EE 382. MODERN COMMUNICATION LAB **Four credits**
Characterization and measurements of communication circuits and systems. Emphasis on design and test using CAD and testing equipment. RF circuit fabrication using thick film and metal etching techniques. Frequency-domain and time-domain measurements using network analyzer and digitizing oscilloscope. Antenna design and radiation pattern measurements. Optical communication link design. Analog and digital communication system design and performance test using spectrum analyzer. Computer network simulation. Two hour lecture and one five-hour laboratory a week. Fee: $45.
Prerequisite: Senior standing.

EE 391. SENIOR PROJECTS I **One credit**
Design and development of selected projects in the field of electrical engineering under the direction of a staff member. Technical as well as economic factors will be considered in the design. A professional paper and detailed progress report are required.
Prerequisite: Senior standing in engineering.

EE 392. SENIOR PROJECTS II **Two credits**
Design and development of selected projects in the field of electrical engineering under the direction of a staff member. Technical as well as economic factors will be considered in the design. This is a continuation of the EE 391. A professional paper to be presented and discussed in an open forum is required.
Prerequisite: EE 391.

EE 395-396. INDEPENDENT RESEARCH **One to three credits each**
Independent study and research for advanced students in the field of the major under the direction of a staff member. A research paper at a level significantly beyond a term paper is required.
Prerequisite: Approval of department chairperson is required.

EE 397. SENIOR SEMINAR **One to three credits**
Presentation and discussion of selected topics.
Prerequisite: Senior engineering standing.

EE 398. TOPICS IN ELECTRICAL ENGINEERING **Three credits**
Selected topics in the field of electrical engineering. These may include one or more of the following: control systems; information theory; signals and noise measurements; communication systems; network design and synthesis; magnetic and non-linear circuits; digital and analog systems; computer systems; medical engineering; power systems and generation. May be repeated for credit. Three hours lecture each week.
Prerequisite: Junior or senior engineering standing.

EE 399. COOPERATIVE EDUCATION **One to six credits**
Professional cooperative education placement in a private/public organization related to the student's academic objectives and career goals. In addition to their work experience, students are required to submit weekly reaction papers and an academic project to a Faculty Coordinator in the student's discipline. (See page 52 in Bulletin for placement procedures.)
Prerequisites: Sophomore standing, 2.0 cumulative average, consent of academic advisor, approval of placement by department chairperson.

ENGINEERING

Associate Professor Maxwell, Chairperson.

EGR 111. INTRODUCTION TO ENGINEERING **Three credits**
An introduction to the methods and tools used by engineers. Included are problem solving and engineering design, scientific principles, general and technical information retrieval, proposal development, teamwork in a design project, and effective presentation methods. Students are exposed to certain ideas and methods that will recur and be further developed in both their academic and in their professional lives. Also included are assessments of engineering skills, biographies of notable scientists and engineers, and an introduction to professionalism and professional societies. Two one-hour lectures and one two-hour lab/discussion per week.

EGR 140. COMPUTER UTILIZATION IN ENGINEERING **Three credits**
An introduction to computer techniques for engineering design and analysis of components, mechanisms, systems, and processes. Utilization of computer software packages in problem solving, performance evaluations, demonstration, trouble shooting, and determination of the interrelationships among system components as well as processes. Two hours lecture plus one two-hour laboratory per week.

EGR 201. PROFESSIONALISM AND ETHICS **One credit**
Responsibility of an engineer as a professional; ethics in science and engineering; role of professional societies; recent trends in technological innovations; career planning. Review of professional exam.

Prerequisite: Junior standing in an engineering discipline.

EGR 214. LINEAR SYSTEMS **Three credits**
Types of Signals and Systems: Discrete, Continuous Deterministic and Stochastic; Application of Laplace and Z Transforms to System Analysis and Design; Fourier and Discrete Transforms and their application to Communications and Digital Signal Processing with strong treatment of sampling, modulation, and aliasing; Modeling of Electrical, Mechanical, Optical Systems and their analysis using State Space Techniques.

Prerequisite: EE 211, Math 211.

ENGINEERING MANAGEMENT

Associate Professor Maxwell, Chairperson; Professor Orehotsky; Associate Professors Ghorieshi, Kalim, Razavi; Assistant Professors Janecek; Technical Support Staff: Lennox, Sickler, Wilk.

Total minimum number of credits required for a major in Engineering Management leading to the B.S. degree — 130.

Engineering is the profession of creative problem solving. The Wilkes engineering programs provide the student with the knowledge and the investigative skills, both theoretical and experimental, to responsibly address professional and societal needs through modern curricula, hands-on experience and a personalized educational environment.

The mission of the Engineering Management program is to enhance the ability of the student to integrate knowledge and apply it effectively and responsibly in solving problems through a dynamic curriculum characterized by its fast response to new developments, opportunities for design and industrial experience, availability of modern laboratories, the use of computer simulations, and team building.

The Engineering and Physics Department offers a four-year degree program in Electrical Engineering. This program provides strong engineering and scientific experience with advanced techniques heavily integrated into the curriculum. Students intending to major in engineering are encouraged to be well prepared in the sciences and mathematics. The first three semesters of course-work are common for all engineering programs.

The four-year program in Engineering Management leading to the Bachelor of Science degree offers various concentrations. The student can choose to specialize within this program in electrical-, environmental-, or mechanical-management.

Graduates of this program, with high academic averages, can attain an MBA degree in slightly more than one calendar year at Wilkes wit the proper selection (ACC 102 instead of BA 233, and Ec 101 instead of BA 321) as shown on the recommended course sequence.

Cooperative education provides applied professional training to Wilkes engineering students that is often valued by prospective employers. The electrical engineering curriculum includes an optional six-credit cooperative education assignment in the sixth semester. The assignment may continue into the summer preceding the seventh semester. Since all students may not be willing or able to elect such a cooperative educational assignment as an option, the student may complete six credits of technical electives.

The student chapters of the Society of Women Engineers (S.W.E.) and the Pennsylvania Society of Professional Engineers (P.S.P.E.), in conjunction with the Department, periodically offer seminars on subjects of a timely nature. Attending these seminars and taking the E.I.T. (Engineering-In-Training) exam are mandatory for the completion of the degree. Students are also highly encouraged to participate in the activities of other on-campus organizations such as the Engineering Club.

In 1979 the Technology Transfer Program (TTP) was initiated to enable the community to draw upon the department's technical expertise and advanced facilities in Northeastern Pennsylvania. This effort is directed to assist in the development and expansion of industries, and the establishment of high technology facilities in Northeastern Pennsylvania.

Honors Programs in Engineering

Upon the recommendation and approval of the engineering faculty, honor students in Engineering will be recognized upon completion of the following requirements: achieving an overall grade point average of 3.25 or better; receiving grades of 3.00 or better in all engineering courses of his or her discipline; pursuing independent research or special projects in engineering; and presenting the results at meetings, conferences, or through publication of a paper. The distinction "Honors in Engineering" will be recorded on the student's transcript upon graduation.

Recommended Four-Year Course Sequence for a B.S. Degree in Engineering Management

First Semester		Second Semester	
Chm 115 Elements and Compounds	4	MAE 200 Materials Engineering or GES 202 Biogeochemistry	3
Mth 111 Calculus I	4	Mth 112 Calculus II	4
FrF 101 Freshman Foundations	3	EE 145 Computer Science I or EGR 140 Computer Utilization	4
ME 180 CADD Lab	1	Phy 201 General Physics I	3
Eng 101 Composition	4	Distribution Requirement	4
	16		3
			17-18
Third Semester		**Fourth Semester**	
EE 211 Circuit Theory I	3	Ec 102 Economics II	3
EE 283 Electrical Measurements Lab	1	ME 232 Strength of Materials	3
ME 231 Statics & Dynamics	3	EGR 214 Linear Systems	3
Phy 202 General Physics II	4	Mth 150 Statistics or BA/Ec 319 Economic Statistics	3
Mth 211 Intro. to Differential Equations	4	Acc 101 Intro. to Financial Accounting	3
Distribution Requirement	3	EE 222 Mechatronics	3
	18		18
Fifth Semester		**Sixth Semester**	
EgM 321 Quant. Anal. & Prog. Methods	3	EgM 399 Cooperative Education or	6
BA 321 Marketing or Ec 101 Economics I	3	Technical Electives	6
BA 351 Management of Organizations	3	EGR 201 Professionalism and Ethics	1
ME 335 Egr. Modeling & Analysis	3	Distribution Requirements	6
BA 233 Business Law or Acc 102 Managerial Accounting	3	EgM 320 Engr. Project Analysis	3
	15		16
Seventh Semester		**Eighth Semester**	
EgM 391 Senior Projects I	1	EgM 392 Senior Projects II	2
BA 341 Managerial Finance	3	EgM 336 Engr. & Manag. Models	3
Technical Electives	6	Technical Electives	6
Distribution Requirements	3	Free Elective	3
Free Elective	3		
	16		14

Technical Electives must follow the approved engineering and science courses of the declared concentration in Electrical, Environmental, Manufacturing, Materials or Mechanical. Consult your advisor for advanced program preference outlines.Advisor-approved Free Electives are selected to enhance program focus and interest. Consult with Co-op advisor for availability and proper scheduling of Cooperative Education.

EgM 313. PRODUCTION SYSTEM ANALYSIS **Three credits**
Manufacturing planning and control, material requirement planning, capacity planning, shop-floor control, just-in-time manufacturing, master production scheduling, production planning, demand management, distribution requirements. Three hours lecture a week.
Prerequisite: Junior/senior standing in engineering.

EgM 318. QUALITY CONTROL ENGINEERING **Three credits**
Quality control in the manufacturing environment; statistical methods used in quality assurance; statistical process control. Three hours lecture per week. (same as ME 318).
Prerequisite: Mth 150 or consent of instructor.

EgM 320. ENGINEERING PROJECT ANALYSIS **Three credits**
Economic analysis of evaluating cash flows over time. Depreciations: techniques and strategies. Replacement analysis, break even analysis, benefit/cost ratio evaluation. Evaluating a single project: deterministic criteria and techniques. Multiple projects and constraints. Risk analysis and uncertainty. Models of project selection. Project selection using capital asset pricing theory.
Prerequisite: Junior or senior standing in engineering.

EgM 321. QUANTITATIVE ANALYSIS AND PROGRAMMING METHODS **Three credits**
Discussion of various quantitative analysis and optimization methodologies. Analytical/numerical approaches are used in solving linear and nonlinear optimization problems. Emphasizes the development of ability in analyzing problems, solving problems by using software, and post solution analysis.
Prerequisite: Junior standing or consent of instructor.

EgM 332. ENERGY MANAGEMENT ENGINEERING **Three credits**
Appraisal of energy conservation management, economic efficiency of energy sources, productivity analysis techniques. Principles of energy balance analysis and the availability of energy sources.
Prerequisite: Junior or senior study in engineering or science.

EgM 334. MANAGEMENT OF INDUSTRIAL ENGINEERING **Three credits**
Systems analysis that will include all types of problems frequently encountered by industrial engineers, their impact on the management of an industrial concern, and an exposure to the industrial engineering techniques available to solve the problems.
Prerequisite: Senior engineering standing.

EgM 335. PROJECT & SYSTEMS MANAGEMENT **Three credits**
Description of systems management, systems engineering management and the design process. The role of decision theory, modeling, and methodology in systems management analysis. Project environment and control. Program management, planning, and control.
Prerequisite: Senior engineering standing.

EgM 336. ENGINEERING AND MANAGEMENT MODELS **Three credits**
Discussion of the techniques in and the art of modeling practical problems encountered by engineers and managers.
Prerequisite: EgM 321 or consent of instructor.

EgM 390. INDUSTRIAL TRAINING **One to six credits**
Industrial and/or research experience gained through assignments or jobs with the community, government, business, or industry.
Prerequisite: Approval of the Mechanical and Materials Engineering Department.

EgM 391. SENIOR PROJECTS I **One credit**
Design and development of selected projects in the various fields of engineering under the direction of a staff member. Technical as well as economic factors will be considered in the design. A professional paper and detailed progress report are required.
Prerequisite: Senior standing in engineering.

EgM 392. SENIOR PROJECTS II **Two credits**

EARLY LIBRARY

Design and development of selected projects in the field of engineering under the direction of a staff member. Technical as well as economic factors will be considered in the design. This is a continuation of EgM 391. A professional paper to be presented and discussed in an open forum is required.

Prerequisite: EgM 391.

EgM 395-396. INDEPENDENT RESEARCH **One to three credits**

Independent study and research for advanced students in the field of their major under the direction of a staff member. A research paper at a level significantly beyond a term paper is required.

Prerequisite: Approval of department chairperson.

EgM 397. SEMINAR **One to three credits**

Presentations and discussions of selected topics and projects.

Prerequisite: Senior engineering standing.

EgM 399. COOPERATIVE EDUCATION **One to six credits**

Professional cooperative education placement in a private/public organization related to the student's academic objectives and career goals. In addition to their work experience, students are required to submit weekly reaction papers and an academic project to a Faculty Coordinator in the student's discipline. (See page 52 in Bulletin for placement procedures.)

Prerequisites: Sophomore standing, 2.0 cumulative average, consent of academic advisor, approval of placement by department chairperson.

EgM 198/298/398. TOPICS IN ENGINEERING MANAGEMENT **Variable credit**

Selected topics in the field of engineering and related areas. These may include: mechanical engineering; civil engineering; engineering management; geotechnology; radiation; etc.

Prerequisite: Senior engineering standing.

ENGLISH

Associate Professor Fields, Chairperson; Professors Emeriti Fiester, Gutin, P. Heaman, R. Heaman, Kaska, Rizzo; Professor Lennon; Associate Professors Bedford, Kuhar; Assistant Professors Bormann, Nesbitt, Starner, Weliver; Visiting Assistant Professor Lindgren; Lecturer McKinley.

Total minimum number of credits required for a major in English leading to the B.A. degree — 120.

Total minimum number of credits required for a minor — 18 (beyond Eng 101).

Wilkes University requires 120 credit hours for a B.A. degree in English. These include completion of General Education requirements and 39 credit hours in English including Eng 101.

The English major offers students an opportunity to develop skills in language, rhetoric, and writing; to practice creative and critical thinking; and to establish a foundation of liberal learning through the study of literature. The skills, values, and habits of thought acquired through the study of language and literature prepare students for careers in teaching, law, communications, journalism, business, government service, and other professional areas. It is strongly recommended that students who major in English take a foreign language.

A second major or a minor in English adds an attractive dimension to a student's major preparation in communications, business, theatre, pre-law, and other pre-professional and technical programs in which effective writing, liberal learning, and critical thinking are valued.

Students who major in English may concentrate in literature or writing, or may choose a program leading to certification in elementary or secondary teaching.

Non-majors may be admitted to courses numbered 300 and above with the permission of the instructor and department chair.

Concentrations

Students who concentrate in literature are required to take English 120, 201, 233, 234, and either 281 or 282. In addition, students must complete 19 credit hours in English courses numbered above 300, including one course in a major writer, one course in fiction or drama, two period courses in English literature before 1900, and English 397.

Students who concentrate in writing are required to take English 201 and an additional nine credit hours in other writing courses numbered 200 and above. Students must take English 120 and any three of four survey courses: English 233, 234, 281, and 282. In addition, students must complete nine credit hours in advanced literature courses. Students must also submit a portfolio of written work in the senior year.

Certification

Students seeking certification as secondary public school teachers of English must take English 112 and any three of four survey courses: English 233, 234, 281, and 282. In addition, students must complete English 201, 225, 324, 393, 397, and one course in a major figure, one course in fiction or drama, and one course in a literary period or movement. Education courses required are 190, 200, 210, and 390. Students seeking certification as elementary public school teachers should consult carefully with their advisors and the education department in planning their program.

Minor

The minor in English requires fulfillment of General Education requirements in composition and literature and fifteen credits in literature, writing or language studies courses numbered 200 or above.

Honors

Qualified students may participate in an honors program, which may lead to graduation with distinction in English. Honors students in English will be recognized upon completion of the following requirements:

1. Achievement of a graduating G.P.A. of 3.25 or higher;
2. Achievement of an average of 3.5 in English courses;
3. Completion of a program of independent study resulting in a thesis or writing project recognized as distinguished by a committee of department faculty;
4. Achievement in English studies indicated by performance on standardized assessment examinations.

The distinction "Honors in English" will be recorded on the student's transcript upon graduation.

Recommended Course Sequence for a Major in English

First Semester		Second Semester	
Eng 101 Composition or	4	Eng 120 Literature and Culture	3
Distribution Requirement	3	Distribution Requirements	9
Distribution Requirements	9	Free Elective	3
FrF 101 Freshman Foundations	3		
	15-16		15
Third Semester		**Fourth Semester**	
Eng 201 Writing about Lit. and Culture	4	Eng Survey Electives (234, 281)	6
Eng Survey Electives (233, 282)	3	Free Elective	9
Free Electives	9		
	16		15

Fifth Semester		Sixth Semester	
Major Electives*	6	Major Electives*	9
Free Electives	9	Free Electives	6
	15		15
Seventh Semester		**Eighth Semester**	
Eng 397	3	Major Capstone	1
Free Electives	12	Free Electives	12
	15		13

*Students select major electives to meet requirements in their area of concentration.

Recommended Course Sequence for a Major in English with Secondary Teacher Certification

First Semester		Second Semester	
Eng 101 Composition	4	Eng 120 Literature and Culture	3
FrF 101 Freshman Foundations	3	Psy 101 General Psychology	3
Distribution Requirements	9	Distribution Requirements	6
		Free Electives	3
	16		15
Third Semester		**Fourth Semester**	
Eng 201 Writing about Lit. and Culture	4	Eng Survey Electives (234, 281)	6
Eng Survey Electives (233, 282)	3	Ed 200 Educational Psychology	3
ED 190 Effective Teaching	3	Free Electives	6
Free Elective	6		
	16		15
Fifth Semester		**Sixth Semester**	
Eng 225 Comparative Grammar	3	Eng 324 History of English	3
Eng Survey Electives (233, 282)	3	Major Elective*	6
Major Elective*	3	Free Electives	3
Free Elective	6	Distribution Requirement	3
	15		15
Seventh Semester		**Eighth Semester**	
Eng 393 The Teaching of English	4	Major Capstone	1
Eng 397 Seminar	3	Ed 390A Intern Teaching	15
ED 210 Special Needs	2		
Free Elective	6		
	15		16

*Students select major electives to meet requirements in their area of concentration.

Recommended Course Sequence for a Major in English with Elementary Teacher Certification

First Semester		Second Semester	
Eng 101 Composition	4	Eng 120 Literature and Culture	3
Mathematics Elective	3	Psy 221 Developmental Psychology	3
BIO 105	3	Mathematics Elective	3
Psy 101 General Psychology	3	Chm 105/Phy 105	3
Distribution Requirement	3	Comp. Science Elective	3
	16		15
Third Semester		**Fourth Semester**	
Eng 201 Writing about Lit. and Culture	4	Eng Survey Electives (234, 281)	6
Eng Survey Electives (233, 282)	3	Ed 200 Ed. Psychology	3
Ed 190 Effective Teaching	3	EES 105	3
Elementary Ed. Requirement	5	Elementary Ed. Requirement	3
Hst 207 or 208 American History	3		
	18		15
Fifth Semester		**Sixth Semester**	
Eng Survey Electives (233, 282)	3	Elementary Ed. Requirements	9
Elementary Ed. Requirements	7	Major Electives*	6
Major Electives*	6	ED 210 Special Needs	2
	16		17
Seventh Semester		**Eighth Semester**	
Distribution Requirement	3	Major Capstone	1
Major Electives*	6	Ed 390B Intern Teaching	15
Eng 397 Seminar	3		
Elementary Ed. Requirements	4		
	16		16

* Students select major electives to meet requirements in their area of concentration.

ENG 098. TUTORIAL IN ENGLISH AS A SECOND LANGUAGE **One to three credits**

Individualized study in using English as a second language. Intensive practice in grammar, syntax, vocabulary, reading and writing.

ENG 099. ENGLISH AS A SECOND LANGUAGE **Three credits**

An introduction to English for non-native speakers.

ENG 101. COMPOSITION **Four credits**

Practice in writing for specific purposes and audiences to develop a coherent voice for engaging in academic and professional discourse; practice in writing with the support of computer technology; study of primary texts, models, and principles of expository and argumentative writing to develop critical reading, writing, and thinking skills; introductory bibliographic instruction and practice in writing that incorporates library research.

ENG 120. INTRODUCTION TO LITERATURE AND CULTURE **Three credits**

An introduction to literature through critical reading, writing, and discussion of the major forms of literary and cultural expression. Students will explore works in Western and Non-Western literary traditions. Major subtopic areas for the course will include: Reading Classical Traditions; Reading Great Works; Reading Cultural Crossroads; and Reading American Experience:

Reading Classical Traditions

Study of major works from the ancient world to the Renaissance, emphasizing the impact these texts have had on our literary tradition and our culture.

Reading Great Works

Study of major works since the Renaissance, emphasizing the principal modes of literary expression (poetry, drama, fiction and film).

Reading Cultural Crossroads

Study of works emphasizing a variety of cultural values, intercultural relationships, global perspectives, and aesthetic experiences.

Reading American Experience

Study of works from American literature, emphasizing the multicultural heritage and nature of American writers and American culture.

ENG 201. WRITING ABOUT LITERATURE AND CULTURE **Four credits**

Introduction to conventions, theoretical approaches, research methods, and practice of literary and cultural studies. Application of contemporary critical perspectives and research methodology in reading and writing about literary and cultural texts. Designated Writing Intensive.

Prerequisite: Eng 101.

ENG 202. TECHNICAL AND PROFESSIONAL WRITING **Three credits**

Practice in "real world writing." Students write on subjects associated with their major or intended careers. Students learn to perform as self-aware writers who have something to say to someone, to adapt their roles and voices to various audiences, and to marshal and present persuasively data that is relevant to a particular purpose and context. Designated Writing Intensive.

Prerequisite: Eng 101.

ENG 203. INTRODUCTION TO CREATIVE WRITING **Three credits**

Analysis and practice of various forms of creative writing. Study of the writer's tools and choices in creating poetry, short fiction, and dramatic scenes. Designated Writing Intensive.

Prerequisite: Eng 101.

ENG 222. LINGUISTICS **Three credits**

An introduction to the origins and structure of language and its social functions as related to politics, gender, prejudice, and advertising.

Prerequisite: Eng 101.

ENG 225. COMPARATIVE GRAMMAR **Three credits**

A comparative and critical study of traditional, structural, and transformational-generative grammar.

Prerequisite: Eng 101.

ENG 233. SURVEY OF ENGLISH LITERATURE I **Three credits**

A study of the major works and movements in English literature from the Anglo-Saxon period through the eighteenth century.

Prerequisite: Eng 101.

ENG 234. SURVEY OF ENGLISH LITERATURE II **Three credits**

A study of the major works and movements in English literature from the Romantic movement to the present.

Prerequisite: Eng 101.

ENG 281. SURVEY OF AMERICAN LITERATURE I **Three credits**
Study of the major writers, works, and movements from the discovery of the New World to the Civil War.
Prerequisite: 101.

ENG 282. SURVEY OF AMERICAN LITERATURE II **Three credits**
Study of the major writers, works, and movements from the Civil War to the present.
Prerequisite: 101.

ENG 302. ADVANCED WORKSHOP IN POETRY **Three credits**
An advanced workshop in writing various kinds of poems, ranging from fixed forms of haiku and sonnets to free verse. Designated Writing Intensive.
Prerequisite: Eng 203 or approval of instructor.

ENG 303. ADVANCED WORKSHOP IN FICTION **Three credits**
An advanced workshop in writing fiction, ranging from the short short story to the fully developed character narrative. Designated Writing Intensive.
Prerequisite: Eng 203 or permission of instructor.

ENG 304. ADVANCED WORKSHOP IN PLAYWRITING AND SCREENWRITING **Three credits**
An advanced writing workshop where students will learn how to conceive, write, and revise their own plays and screenplays. Designated Writing Intensive.
Prerequisite: Eng 203 or permission of instructor.

ENG 308. RHETORICAL ANALYSIS AND NONFICTIONAL PROSE WRITING **Three credits**
The study and practice of strategies for producing responsibly written public information and persuasion through intensive preparation in argumentation and in supporting propositions for particular audiences. Designated Writing Intensive.
Prerequisite: Eng 201 or permission of instructor.

ENG 324. HISTORY OF THE ENGLISH LANGUAGE **Three credits**
A chronological study of the origins of the English language and the systematic changes that have made it the language we speak and write today.
Prerequisite: Eng 101.

ENG 331. MEDIEVAL ENGLISH LITERATURE **Three credits**
A study of English literature to 1500, exclusive of Chaucer.
Prerequisite: Eng 101.

ENG 332. TUDOR PROSE AND POETRY **Three credits**
Study of English non-dramatic literature from 1485 to 1603.
Prerequisite: Eng 101.

ENG 333. SEVENTEENTH CENTURY PROSE AND POETRY **Three credits**
A study of the non-dramatic literature of the period.
Prerequisite: Eng 101.

ENG 334. THE EIGHTEENTH CENTURY **Three credits**
Study of the major authors and literary traditions of the Eighteenth Century.
Prerequisite: Eng 101.

ENG 335. ROMANTIC PROSE AND POETRY **Three credits**
Study of chief poets and prose writers of the Romantic Period.
Prerequisite: Eng 101.

ENG 336. VICTORIAN PROSE AND POETRY **Three credits**
Study of major writers, works, and topics of the Victorian Age.

ENG 340. CHAUCER **Three credits**
Study of Chaucer's major works, including *The Canterbury Tales* and *Troilus and Criseyde.*
Prerequisite: Eng 101.

ENG 342. SHAKESPEARE **Three credits**
A study of selected plays; written reports on others not studied in class.
Prerequisite: Eng 101.

ENG 344. MILTON **Three credits**
A study of Milton's poetry and major prose.
Prerequisite: Eng 101.

ENG 350. THE ENGLISH NOVEL **Three credits**
A study of the tradition and major writers of the English novel in the eighteenth and nineteenth centuries. Works by Defoe, Richardson, Fielding, Austen, the Brontes, Dickens, Eliot, and Hardy, among others, as well as critical and theoretical works, may be included.
Prerequisite: Eng 101.

ENG 352. AMERICAN NOVEL **Three credits**
A study of the American novel from its beginning to the present.
Prerequisite: Eng 101.

ENG 355. MODERN NOVEL **Three credits**
Study of the major novels of the twentieth century.
Prerequisite: Eng 101.

ENG 358. CONTEMPORARY FICTION **Three credits**
A study of fiction, including the novel, short story, and novella, written since World War II. Works from English, American, and world literature may be included to reflect the diversity of contemporary literature and the emergence of post-modernist themes and forms.
Prerequisite: Eng 101.

ENG 361. EARLY ENGLISH DRAMA **Three credits**
Study of the drama from the tenth century to 1642; reading of plays by medieval and Elizabethan dramatists exclusive of Shakespeare.
Prerequisite: Eng 101.

ENG 363. RESTORATION & EIGHTEENTH CENTURY DRAMA **Three credits**
Study of the drama from 1660 to 1780.
Prerequisite: Eng 101.

ENG 365. MODERN DRAMA **Three credits**
Study of important dramatists, European and American, from the time of Ibsen.
Prerequisite: Eng 101.

ENG 366. AMERICAN DRAMA **Three credits**
A study of the American drama from the colonial period to the present.
Prerequisite: Eng 101.

ENG 368. CONTEMPORARY DRAMA **Three credits**
A study of dramatic literature from the 1960s to the present. Works and major figures from British, American, and world drama may be included to reflect the diversity of the plays and playwrights of this period.
Prerequisite: Eng 101.

ENG 370. MODERN BRITISH POETRY **Three credits**
Study of major British poetry of the twentieth century.
Prerequisite: Eng 101.

ENG 376. MODERN AMERICAN POETRY **Three credits**
Study of major movements and representative figures in modern American poetry.
Prerequisite: Eng 101.

ENG 390. PROJECTS IN WRITING — **One to three credits**
Independent projects in writing for advanced students. Designated Writing Intensive.
Prerequisite: Six credits in advanced writing courses and permission of department chair.

ENG 391-392. SENIOR PROJECTS — **One credit each**
An independent project in the area of the student's concentration culminating in a formal written and oral presentation. The project serves as a capstone experience demonstrating the student's learning in the major.
Prerequisite: Open only to senior English majors.

ENG 393. THE TEACHING OF ENGLISH IN SECONDARY SCHOOLS — **Four credits**
The course deals with the theory and practice of teaching composition, literature, and English language studies on the secondary school level (grades 7 through 12). Topics include planning, methodology, presentation, and assessment of lessons. The course includes 30 hours of field experience.
Prerequisites: Junior standing in English and admission to the Teacher Education Program.

ENG 394. LITERARY CRITICISM — **Three credits**
A study of literary theory and the techniques of analysis.
Prerequisite: Eng 101.

ENG 395-396. INDEPENDENT RESEARCH — **One to three credits**
Independent study and research for advanced students in the field of the major under the direction of a staff member. A research paper at a level significantly beyond a term paper is required.
Prerequisite: Approval of department chair is required.

ENG 397. SEMINAR — **Three credits**
Presentations and discussions of selected topics.
Prerequisite: Approval of department chair is required.

ENG 399. COOPERATIVE EDUCATION — **One to six credits**
Professional cooperative education placement in a private/public organization related to the student's academic objectives and career goals. In addition to their work experience, students are required to submit weekly reaction papers and an academic project to a Faculty Coordinator in the student's discipline. (See page 52 in Bulletin for placement procedures.)
Prerequisites: Sophomore standing, 2.0 cumulative average, consent of academic advisor, approval of placement by department chairperson.

ENG 198/298/398. TOPICS — **Variable credit**
The study of a special topic in language, literature, or criticism. Possible topics include literature and science, Black literature, semiotics, children's literature, literature and film, literature and religion, etc.
Prerequisite: Eng 101.

ENVIRONMENTAL ENGINEERING

Professor Bruns and Associate Professor Halsor, Co-chairpersons; Professors Case, Klemow, Redmond; Associate Professors Murthy, Steele; Assistant Professors Troy, Whitman; Adjunct Faculty Frederick, Hofman, Toothill, Walski; Lab Manager Oram.

Total minimum number of credits required for a major in Environmental Engineering leading to the B.S. degree — 134.

The Department of GeoEnvironmental Sciences and Engineering offers both four- and five-year degree programs in Environmental Engineering. These programs provide strong engineering and scientific experience with advanced techniques heavily integrated into the curriculum. Students intending to major in this program are encouraged to be well prepared in the sciences and mathematics. The first year of course work is common to all engineering programs. Specialization is achieved through the appropriate selection of the technical electives. The department highlights two unique facilities: a certified water quality laboratory used for teaching and contract work, and a 150 acre environmental station (Ratchford Field Station) featuring living quarters scientifically designed for energy conservation. Cooperative internships with industry are encouraged. Students with an Environmental Engineering degree may work for state or federal agencies, industry, or may enter graduate programs in Environmental Engineering.

The five-year program in environmental engineering offers the student the opportunity to obtain broader education in the arts and sciences, while completing the requirements for a major in engineering. Upon successful completion of this program, the student is awarded a B.S. degree in environmental engineering. A student may elect to enter this program at any time during his or her period of study. The timing of this entry is critical, due to the sequential nature of the courses in engineering.

The student professional chapters of the Society of Women Engineers (S.W.E.) and the Pennsylvania Society of Professional Engineers (P.S.P.E.), in conjunction with the Department of GeoEnvironmental Sciences and Engineering, periodically offer seminars on subjects of a timely nature. Attending these seminars and taking the E.I.T. (Engineers-In-Training) exam are mandatory for the completion of the degree.

In 1979 the Technology Transfer Program (TTP) was initiated to enable the community to draw upon the department's technical expertise and advanced facilities. This effort is directed to assist in the development and expansion of industries, and the establishment of high technology facilities in Northeastern Pennsylvania.

Honors Programs in Environmental Engineering

Upon the recommendation and approval of the environmental engineering faculty, honor students in Environmental Engineering will be recognized upon completion of the following requirements: achieving an overall grade point average of 3.25 or better; receiving grades of 3.00 or better in all engineering courses of his or her discipline; pursuing independent research or special projects in engineering and presenting the results at meetings, conferences, or through publication of a paper. The distinction "Honors in Engineering" will be recorded on the student's transcript upon graduation.

Recommended Course Sequence for a B.S. Degree in Environmental Engineering

First Semester	
Chm 115 Elements and Compounds	4
Mth 111 Calculus I	4
ME 180 CADD Lab	1
Eng 101 Composition	4
Fr. F 101 Freshman Foundations	3
	16

Second Semester	
GES 202 Biogeochemistry or	
MAE 200 Materials Engineering	3
Mth 112 Calculus II	4
EE 145 Computer Science I or	4
EGR 140 Computers in Engineering	3
Phy 201 General Physics I	4
Distribution Requirement	3
	17-18

Third Semester	
Mth 211 Intro. to Differential Equations	4
Phy 202 General Physics II	4
EE 211 Circuit Theory I	3
EE 283 Electrical Measurements Lab	1
ME 231 Statics & Dynamics	3
Distribution Requirement	3
	18

Fourth Semester	
GES 211 Physical Geology	4
ME 322 Engineering Thermodynamics	3
GES 240 Principles of Environmental Science	4
ME 232 Strength of Materials	3
Distribution Requirement	3
	17

Fifth Semester	
ENV 315 Soils	3
ENV 321 Hydrology	4
ME 321 Fluid Mechanics	3
Distribution Requirement	3
ME 323 Fluid Mechanics Lab	1
Technical Elective[1]	3
	17

Sixth Semester	
ENV 330 Water Quality	4
ENV 332 Air Quality	4
EgM 320 Engineering Project Analysis	3
Technical Elective[1]	3
EGR 201 Professionalism and Ethics[2]	1
	15

Seventh Semester	
ENV 305 Solid Waste Management	3
ENV 351 Water and Wastewater Treatment	4
ENV 353 Air Pollution Control	3
ENV 391 Senior Projects I	1
Distribution Requirement	3
Technical Elective[1]	3
	17

Eighth Semester	
ENV 322 Water Resources Engineering	3
ENV 352 Environmental Engineering Hydraulics	3
ENV 354 Hazardous Waste Management	3
ENV 392 Senior Projects II	2
Technical Elective[1]	3
Distribution Requirement	3
	17

[1]Advisor-approved science or engineering courses numbered 200 or above with at least one course in engineering. Technical electives must include either GES 271 or GES 272.
[2]Consult with advisor for availability and proper scheduling. May be taken on campus, at other institutions and/or off campus as an independent study or distance learning course.

ENV 305. SOLID WASTE MANAGEMENT **Three credits**
Assessment of the scope of the solid waste problem and engineering and management strategies. Lecture topics include: solid waste sources, characterization and generation rates; collection and transportation technologies and management options; sanitary landfill design and operation and recycling strategies and technologies. Three hours lecture.
Prerequisites: GES 240, CH 116 or 118, Mth 112.

ENV 315. SOILS **Three credits**
Study of the structure, properties, and classification of soils. Fundamental concepts of soils science are applied to the environmental management of terrestrial ecosystems. Topics include soil genesis, classification and physical properties of soils; soil chemistry; and soil moisture relationships. Two hours lecture and three hours laboratory. Fee: $45.
Prerequisites: GES 211, Chm 116 or 118.

ENV 321. HYDROLOGY **Four credits**
A quantitative analysis of the physical elements and processes which constitute the hydrologic cycle. Topics include percipitation, infiltration, evaporation, runoff, streamflow, and ground water flow. Ground water modeling and advanced treatment of Darcy's Law is presented within the context of migration of ground water pollutants. Three hours lecture and three hours laboratory. Fee: $45.
Prerequisite: GES 211.

ENV 322. WATER RESOURCES ENGINEERING **Three credits**
Engineering aspects of hydrologic systems including flood control, reservoir systems, open channel design, surface and groundwater development.
Prerequisite: ENV 321.

ENV 330. WATER QUALITY **Four credits**
The physical, chemical and biological processes that affect the quality of water in the natural environment. The measurement of water quality parameters in water and wastes. The behavior of contaminants in ground and surface water. Three hours lecture and three hours lab per week.
Fee: $55.
Prerequisites: Chm 115 and 116 (or 118), GES 240.

ENV 332. AIR QUALITY **Four credits**
Study of atmospheric pollutants, their sources and effects; measurement and monitoring techniques for air pollutants; atmospheric chemical transformations; regulatory control of air pollution; meteorology of air pollution; transport and dispersion of air pollutants and air pollution modeling and prediction; and introduction to indoor air pollution. Lab work will include both problem-oriented and hands-on exercises. Exercises include basic gas concepts; volume measuring devices; flow, velocity and pressure measuring devices; calibration of such devices; various sampling techniques. Three hours lecture and a three hour lab per week. Fee: $55.
Prerequisites: CHM 115 and 116 (or GES 202), GES 240.

ENV 351. WATER AND WASTEWATER TREATMENT **Four credits**
Design of water and wastewater treatment systems. Estimation of demands. Physical, chemical, biological and land-based treatment processes. Sludge handling and disposal. Three hours lecture and three hours lab. Fee: $55.
Prerequisite: ENV 330.

ENV 352. ENVIRONMENTAL ENGINEERING HYDRAULICS **Three credits**
Water distribution, sewage collection, pipe network models, piping materials, pumps and pumping stations, valves and tanks. Design and operation.
Prerequisite: ME 321.

ENV 353. AIR POLLUTION CONTROL **Three credits**
This course provides the philosophy and procedures for design of air pollution control systems. Methods used for controlling air-borne emissions of gases, aerosols, and organic vapors are covered. Designs are carried out based on data for typical systems. Evaluations of alternatives with cost comparisons are also presented. Three hours lecture/ demonstration.
Prerequisite: ENV 332.

ENV 354. HAZARDOUS WASTE MANAGEMENT **Three credits**
An overview and application of engineering principles to management of hazardous wastes and the remediation of contaminated sites. Introduction to regulatory compliance and environmental laws. Three hours lecture.
Prerequisite: ENV 330, ENV 351.

ENV 373. OCCUPATIONAL HEALTH **Three credits**
Appraisal of environmental health hazards, sampling techniques, instrumentation and analytic methods. Principles of substitutions, enclosure and isolation for the control of hazardous operations in industry. Three hours lecture/demonstration.
Prerequisite: Junior or senior standing in engineering or science.

ENV 391. SENIOR PROJECTS I **One credit**
Design and development of selected projects in the various fields of engineering under the direction of a staff member. Technical as well as economic factors will be considered in the design. A professional paper and detailed progress report are required.
Prerequisite: Senior standing in environmental engineering.

ENV 392. SENIOR PROJECTS II **Two credits**
Design and development of selected projects in the field of engineering under the direction of a staff member. Technical as well as economic factors will be considered in the design. This is a continuation of ENV 391. A professional paper to be presented and discussed in an open forum is required.
Prerequisite: ENV 391.

ENV 395-396. INDEPENDENT RESEARCH **One to three credits**
Independent study and research for advanced students in the field of their major under the direction of a staff member. A research paper at a level significantly beyond a term paper is required.
Prerequisite: Approval of department chairperson.

ENV 397. SEMINAR **One to three credits**
Presentations and discussions of selected topics and projects.
Prerequisite: Senior environmental engineering standing.

ENV 399. COOPERATIVE EDUCATION **One to six credits**
Professional cooperative education placement in a private/public organization related to the student's academic objectives and career goals. In addition to their work experience, students are required to submit weekly reaction papers and an academic project to a Faculty Coordinator in the student's discipline. (See page 52 in Bulletin for placement procedures.)
Prerequisites: Sophomore standing, 2.0 cumulative average, consent of academic advisor, approval of placement by department chairperson.

ENV 198/298/398. TOPICS IN ENGINEERING **Variable credit**
Selected topics in the field of engineering and related areas. These may include: mechanical engineering; civil engineering; engineering management; geotechnology; radiation, etc.
Prerequisite: Senior environmental engineering standing.

FOREIGN LANGUAGES AND LITERATURES

Associate Professor Fields, Chairperson; Professor Karpinich; Assistant Professor Bianco-Sobejano.

Total minimum number of credits required for a major in Foreign Language leading to the B.A. degree — 120.

Total minimum number of credits required for a minor — 18.

Study of foreign languages and literatures develops competence in another language, leads to a better understanding of international issues, and cultivates an appreciation of the differences among diverse cultures. Command of a foreign language enables students to advance their foreign language studies at the graduate level, or pursue a broad range of career opportunities in the fields of education, domestic and international commerce, government service, industry, and many others.

Major

French and Spanish are offered as major fields of study. A major in a foreign language consists of twenty-four credit hours in advanced language and literature courses beyond FL 204. Students seeking public school certification in foreign language teaching must take FL 205, 206, 207, 208, 301 (Introduction to Literature), and another literature course in a major writer, or genre, or period, and FL 397. (Please see program description below).

In the interest of broadening career options, all foreign language majors are advised to combine their language studies with another discipline. Students who elect a career in education are advised to study an additional language. All majors are strongly urged to spend at least a semester abroad arranged through the Study Abroad Coordinator.

Minor

Students may elect to minor in French or Spanish. A minor in foreign language consists of eighteen credit hours beyond FL 102.

In addition, the Department offers study in Japanese, Italian, Latin, Hebrew, Polish, and Ukrainian on a demand basis (see below).

Special Program

Foreign language majors may pursue a special program of study leading to the Bachelor of Arts and the Master of Business Administration Degrees. During the first four years students complete requirements for the BA, including eighteen credit hours in certain specific Accounting, Business Administration and Economics courses. They devote the summer following their graduation and an additional calendar year to the MBA.

Information on the above programs and about career opportunities in the field may be obtained from the Chairperson of the Department of Humanities.

Recommended Course Sequence for a Major in Foreign Languages (French or Spanish)

First Semester		Second Semester	
FL 101 Elementary I	3	FL 102 Elementary II	3
Eng 101 Composition or	4	Eng 101 Composition or	4
Distribution Requirement	3	Distribution Requirement	3
Distribution Requirements	6	Distribution Requirements	9
FrF 101 Freshman Foundations	3		
	15-16		15-16
Third Semester		**Fourth Semester**	
FL 203 Intermediate I	3	FL 204 Intermediate II	3
Distribution Requirements	3	FL 205 Conversation	3
Free electives	9	Free Electives	9
	15		15
Fifth Semester*		**Sixth Semester**	
FL 206 Adv. Grammar, Stylistics & Comp.	3	FL 208 Culture and Civilization	3
FL 207 Applied Linguistics	3	FL 301 Introduction to Literature	3
Free Electives	9	Free Electives	9
	15		15
Seventh Semester		**Eighth Semester**	
FL 302, or 303, or 304 Literature	3	FL 397 Seminar	3
FL 298 Topics	3	Free Electives	11
Free Electives	9		14
	15		

*Study Abroad is strongly encouraged and is recommended during the junior year.

Recommended Course Sequence for Teacher Certification in Foreign Languages (French or Spanish)

First Semester		Second Semester	
FL 101 Elementary I	3	FL 102 Elementary II	3
Eng 101 Composition or	4	Eng 101 Composition or	4
Distribution Requirement	3	Distribution Requirement	3
Distribution Requirements	6	Distribution Requirements	9
FrF 101 Freshman Foundations	3		
	15-16		15-16
Third Semester		**Fourth Semester**	
FL 203 Intermediate I	3	FL 204 Intermediate II	3
Ed 190 Effective Teaching	3	FL 205 Conversation	3
Distribution Requirements	3	Ed 200 Educational Psychology	3
Free Electives	6	Free Electives	6
	15		15

Fifth Semester

FL 206 Adv. Grammar, Stylistics & Comp.	3
FL 207 Applied Linguistics	3
Psy 221 Developmental Psychology	3
Free Electives	6
	15

Sixth Semester

FL 208 Culture and Civilization	3
FL 301 Introduction to Literature	3
Ant 102 Cultural Anthropology	3
Free Electives	6
	15

Seventh Semester

FL 302, or 303, or 304 Literature	3
FL 298 Topics	3
FL 397 Seminar	3
Ed 300 Methods in Education	3
Free Electives	2
	14

Eighth Semester

Ed 390A Intern Teaching	15
	15

Recommended Course Sequence for a Five-Year Program: a B.A. Degree with a Major in Foreign Languages (French or Spanish) and a Master of Business Administration Degree

First Semester

FL 101 Elementary I	3
Eng 101 Composition or	4
Distribution Requirement	3
Distribution Requirements	6
FrF 101 Freshman Foundations	3
	15-16

Second Semester

FL 102 Elementary II	3
Eng 101 Composition or	4
Distribution Requirement	3
Distribution Requirements	9
	15-16

Third Semester

FL 203 Intermediate I	3
Ec 101 Economics I*	3
Acc 101 Accounting I*	3
Distribution Requirement	3
Free Elective	3
	15

Fourth Semester

FL 204 Intermediate II	3
FL 205 Conversation	3
Ec 102 Economics II*	3
Acc 102 Accounting II*	3
Free Elective	3
	15

Fifth Semester

FL 206 Adv. Grammar, Stylistics & Comp.	3
FL 207 Applied Linguistics	3
BA 351 Management of Organizations*	3
Free Elective	6
	15

Sixth Semester

FL 208 Culture and Civilization	3
FL 301 Introduction to Literature	3
BA/Ec 319 Business Statistics*	3
Free Elective	6
	15

Seventh Semester

FL 298 Topics	3
FL 302, or 303, or 304 Literature	3
Free Electives	9
	15

Eighth Semester

FL 210 Foreign Language for Business	3
FL 397 Seminar	3
Free Electives	8
	14

*Students must earn a minimum grade of 2.0 in the MBA track.

Receive B.A. Degree with a Major in Foreign Language at end of eighth semester (120 undergraduate credits).

MASTER IN BUSINESS ADMINISTRATION

(Total 36 Credit Hours)

Summer Session

MBA 540 Financial Management	3
MBA 552 Organizational Behaviour	3
MBA Electives	6
	12

9th Semester

MBA 512 Business Research	3
MBA 520 Marketing Management	3
MBA 560 Finance and Managerial Accounting	3
MBA 580 Bus. Issues in a Dynamic Environment	3
	12

10th Semester

MBA 513 Applied Business Models	3
MBA 532 Management Economics	3
MBA 590 Strategic Management	3
MBA Elective	3
	12

Receive M.B.A. Degree following the tenth semester (36 graduate credits).

FRENCH

FR 101-102. ELEMENTARY FRENCH **Three credits each**

Fundamentals of spoken and written French, and introduction to French culture. Emphasis is placed on communicative proficiency. Work in language laboratory required.

FR 203-204. INTERMEDIATE FRENCH **Three credits each**

Continuation of development of communicative skills in French. Includes review and further study of grammar. Oral and written work based upon short cultural and literary texts. Work in language laboratory required.

Prerequisite: Fr 102 or permission of instructor.

FR 205. CONVERSATION **Three credits**

Practice in spoken French, including discussions, oral presentations, and role-playing. Includes written exercises.

Prerequisite: Fr 204 or permission of instructor.

FR 206. ADVANCED GRAMMAR, STYLISTICS, AND COMPOSITION **Three credits**

Practice in written and oral skills with an emphasis on the refinement of grammatical and stylistic abilities.

Prerequisite: Fr 204 or permission of instructor.

FR 207. APPLIED LINGUISTICS **Three credits**
Theoretical discussions and practical exercises in phonetics, phonemics, syntax, intonation, and rhythm. Intensive speaking and listening practice including work in the language laboratory.
Prerequisite: Fr 204 or permission of instructor.

FR 208. CULTURE AND CIVILIZATION **Three credits**
Systematic introduction to the political, social, economic, and cultural characteristics of France and the French-speaking world. Readings from a variety of sources including the French press.
Prerequisite: Fr 204 or permission of instructor.

FR 210. FRENCH FOR BUSINESS **Three credits**
Introduction to language use in the contemporary French business world, including practice in reading, understanding, and writing business communications.
Prerequisite: Fr 204 or permission of instructor.

FR 301. INTRODUCTION TO LITERATURE **Three credits**
An examination of literary language, genre conventions, and critical approaches, as well as an introduction to French literary history.
Prerequisite: Fr 204 or permission of instructor.

FR 302. THE SHORT STORY AND THE NOVEL **Three credits**
An introduction to masterpieces of prose fiction from the seventeenth century to the present. Many include works by Mme de Lafayette, Voltaire, Flaubert, Zola, Proust, Robbe-Grillet, Yourcenar, and Wittig.
Prerequisite: Fr 204 or permission of instructor.

FR 395-396. INDEPENDENT RESEARCH **One to three credits each**
Independent study and research in the field of the major under the direction of a staff member.
Prerequisite: Approval of department chairperson.

FR 399. COOPERATIVE EDUCATION **One to six credits**
Professional cooperative education placement in a private/public organization related to the student's academic objectives and career goals. In addition to their work experience, students are required to submit weekly reaction papers and an academic project to a Faculty Coordinator in the student's discipline. (See page 52 in Bulletin for placement procedures.)
Prerequisites: Sophomore standing, 2.0 cumulative average, consent of academic advisor, approval of placement by department chairperson.

FR 198/298/398. TOPICS **Variable credit**
Examination of a special topic in French language, culture, or literature. Possible topics include Medieval literature; Renaissance literature; the Enlightenment; Realism, Naturalism, and Decadence; African literature and Negritude; the literature and language of Quebec; French feminism, French cinema, scientific French; and literature in translation.

GERMAN

GR 101-102. ELEMENTARY GERMAN **Three credits each**
Fundamentals of spoken and written German, and introduction to German culture. Emphasis is placed on communicative proficiency. Work in language laboratory required.

GR 203-204. INTERMEDIATE GERMAN **Three credits each**
Continuation of development of communicative skills in German. Includes review and further study of grammar. Oral and written work based upon short cultural and literary texts. Work in language laboratory required.
Prerequisite: Gr 102 or permission of instructor.

GR 205. CONVERSATION **Three credits**
Practice in spoken German, including discussions, oral presentation, and role-playing. Includes written exercises.
Prerequisite: Gr 204 or permission of instructor.

GR 206. ADVANCED GRAMMAR, STYLISTICS, AND COMPOSITION **Three credits**
Practice in written and oral skills with an emphasis on the refinement of grammatical and stylistic abilities.
Prerequisite: Gr 204 or permission of instructor.

GR 208. CULTURE AND CIVILIZATION **Three credits**
Systematic introduction to the political, social, economic, and cultural characteristics of Germany. Readings from a variety of sources including the German press.
Prerequisite: Gr 204 or permission of instructor.

GR 303. GOETHE **Three credits**
A study of the life and major works of Goethe.
Prerequisite: Gr 204 or permission of instructor.

GR 304. MODERN GERMAN LITERATURE **Three credits**
An introduction to the major movements and writers from Neo-romanticism, Expressionism, and the postwar period. May include works by Hauptmann, Rilke, Mann, Böll, Grass, Lentz, Kaschnitz, and others.
Prerequisite: Gr 204 or permission of instructor.

GR 395-396. INDEPENDENT RESEARCH **One to three credits each**
Independent study and research in the field of the major under the direction of a staff member.
Prerequisite: Approval of department chairperson.

GR 397. SEMINAR **(Maximum of three credits per student) One to three credits**
Presentations and discussions of selected topics.
Prerequisite: Approval of department chairperson.

GR 399. COOPERATIVE EDUCATION **One to six credits**
Professional cooperative education placement in a private/public organization related to the student's academic objectives and career goals. In addition to their work experience, students are required to submit weekly reaction papers and an academic project to a Faculty Coordinator in the student's discipline. (See page 52 in Bulletin for placement procedures.)
Prerequisites: Sophomore standing, 2.0 cumulative average, consent of academic advisor, approval of placement by department chairperson.

GR 198/298/398. TOPICS **Variable credit**
Examination of a special topic in German language, culture or literature. Possible topics include translation, the German press, film, the arts, German literature in translation, and literature by women writers.

RUSSIAN AND OTHER LANGUAGES

The University offers a two-year program in Russian. Programs in other languages are offered as demand arises and as circumstances permit. Generally, these offerings will be limited to introductory- or intermediate-level courses, though they may include Topics courses. Interested students should contact the department chairperson.

RUS 101-102. ELEMENTARY RUSSIAN **Three credits each**
Fundamentals of spoken and written Russian, and introduction to Russian culture. Emphasis is placed on communicative proficiency. Work in language laboratory required.

RUS 203-204. INTERMEDIATE RUSSIAN **Three credits each**
Continuation of development of communicative skills in Russian. Includes review and further study of grammar. Oral and written work based upon short cultural and literary texts. Works in language laboratory required.
Prerequisite: Rus 102 or permission of instructor.

RUS 208. RUSSIAN AND EAST EUROPEAN CULTURES **Three credits**
The course is designed to introduce students to the culture and civilization of the Russian people and to provide a better understanding of the Russian influence upon and the relationship with its East European neighbors — Poland, Hungary and others. The course focuses on contemporary cultural, social, and political issues of the region.

RUS 198/298. TOPICS **Three credits**
Investigation of an aspect of the Russian language, literature or culture. Possible topics include translation, the news media, film, the arts, Russian literature in translation, and literature by women writers.
Prerequisite: Permission of instructor.

SPANISH

SP 101-102. ELEMENTARY SPANISH **Three credits each**
Fundamentals of spoken and written Spanish, and introduction to Spanish culture. Emphasis is placed on communicative proficiency. Work in language laboratory required.

SP 203-204. INTERMEDIATE SPANISH **Three credits each**
Continuation of development of communicative skills in Spanish. Includes review and further study of grammar. Oral and written work based upon short cultural and literary texts. Work in language laboratory required.
Prerequisite: Sp 102 or permission of instructor.

SP 205. CONVERSATION **Three credits**
Practice in spoken Spanish, including discussions, oral presentation, and role-playing. Includes written exercises.
Prerequisite: Sp 204 or permission of instructor.

SP 206. ADVANCED GRAMMAR, STYLISTICS, AND COMPOSITION **Three credits**
Practice in written and oral skills with an emphasis on the refinement of grammatical and stylistic abilities.
Prerequisite: Sp 204 or permission of instructor.

SP 207. APPLIED LINGUISTICS **Three credits**
Theoretical discussions and practical exercises in phonetics, phonemics, syntax, intonation, and rhythm. Intensive speaking and listening practice including work in the language laboratory.
Prerequisite: Sp 204 or permission of instructor.

SP 208. CULTURE AND CIVILIZATION **Three credits**
Systematic introduction to the political, social, economic, and cultural characteristics of Spain and the Spanish-speaking world. Readings from a variety of sources including the Spanish press.
Prerequisite: Sp 204 or permission of instructor.

SP 209. LATIN AMERICAN CULTURE AND CIVILIZATION **Three credits**
Systematic study of the historical, cultural, economic, and political development of the countries of Latin America (Spanish-speaking countries and Brazil). Pre-Columbian cultures (Maya, Aztec, and Inca) will be examined. Use of audio-visual material and other activities included.
Prerequisite: Sp 204 or permission of instructor.

SP 210. SPANISH FOR BUSINESS **Three credits**
Introduction to language use in the contemporary Spanish business world, including practice in reading, understanding, and writing business communications.
Prerequisite: Sp 204 or permission of instructor.

SP 211. CONVERSATIONAL SPANISH FOR HEALTH AND SOCIAL SERVICES **Three credits**
Designed to provide the students with the basic terminology and conversational skills in Spanish for the health care field, and the social services area. Work on special problems of grammar and idiomatic expression.
Prerequisite: Sp 204 or permission of instructor.

SP 301. INTRODUCTION TO LITERATURE **Three credits**
An examination of literary language, genre conventions, and critical approaches, as well as an introduction to Spanish literary history.
Prerequisite: Sp 204 or permission of instructor.

SP 302. THE NOVEL **Three credits**
An introduction to major novels of the nineteenth and twentieth centuries. May include works by Galdós, Valera, Clarín, *la Generación del* ('98), and Postwar novelists, as well as *novelas de la democracia*.
Prerequisite: Sp 204 or permission of instructor.

SP 303. CERVANTES **Three credits**
The birth of the modern novel with *Don Quijote*. A study of Cervantes' works and their profound effect on later Spanish literature.
Prerequisite: Sp 204 or permission of instructor.

SP 304. THE GOLDEN AGE **Three credits**
A study of masterpieces of the Baroque period, including the theater of Lope de Yega and Tirso de Molina, the poetry of Góngora and Quevedo, and works by Gracián and Calderón de la Barca.
Prerequisite: Sp 204 or permission of instructor.

SP 305. THE REPRESENTATIVE LATIN AMERICAN NOVEL **Three credits**
A survey of significant Latin American novels with a focus on social, political, intellectual, and cultural development from the colonial period to the present.
Prerequisite: Sp 204 or permission of instructor.

SP 395-396. INDEPENDENT RESEARCH **One to three credits each**
Independent study and research in the field of the major under the direction of a staff member.

Prerequisite: Approval of department chairperson.

SP 397. SEMINAR **(Maximum of three credits per student) One to three credits**
Presentations and discussions of selected topics.

Prerequisite: Approval of department chairperson.

SP 399. COOPERATIVE EDUCATION **One to six credits**
Professional cooperative education placement in a private/public organization related to the student's academic objectives and career goals. In addition to their work experience, students are required to submit weekly reaction papers and an academic project to a Faculty Coordinator in the student's discipline. (See page 52 in Bulletin for placement procedures.)

Prerequisites: Sophomore standing, 2.0 cumulative average, consent of academic advisor, approval of placement by department chairperson.

SP 198/298/398. TOPICS **Variable credit**
Examination of a special topic in Spanish language, culture, or literature. Possible topics include literature of exile, the essay in contemporary Spain, pre- and post-Franco theater, literature written by women in the Democracy, peninsular twentieth-century poetry, literature in translation, aspects of bilingualism, problems of Spanish grammar, and history of the Spanish language.

HEALTH SCIENCES

Lester J. Turoczi, Ph.D., Biology, Chemistry and Health Sciences Department Chair
Eileen M. Sharp, M.S., Coordinator for Health Sciences Professional Programs
Debra I. Chapman, M.S., Premedical and Pre-professional Programs Advisor

Adjunct Faculty: Lee Ann Riesenberg, Acting Director of Medical Education, Robert Packer Hospital, Sayre, PA and Richard English, M.D., Program Director, Family Practice Residency Program, and Kenneth Landin, M.D., Wyoming Valley Health Care System, Wilkes-Barre, PA in the premedical programs. Brian D. Spezialetti, Program Director, Medical Technology Program, Robert Packer Hospital; and Joseph King, M.D., Medical Director, Medical Technology Program, Robert Packer Hospital for the medical technology programs.

Health Sciences Committee: (reports to Dr. Bonnie Bedford, Dean of the College of Arts, Sciences and Professional Studies) Lester J. Turoczi, Ph.D., Committee Chair and Professor of Biology; Bonnie Bedford, Ph.D., Dean of the College of Arts, Sciences and Professional Studies; Debra I. Chapman, M.S., Instructor in Biology; Michael Frantz, M.A., Dean of Enrollment Services; Harvey A. Jacobs, Ph.D., Associate Professor of Pharmaceutical Sciences; Dan F. Kopen, M.D., Physician and Member of the Wilkes University Board of Trustees; Roger L. Maxwell, Ph.D., Associate Professor of Physics; Eileen M. Sharp, M.S., Coordinator for Health Sciences Professionl Programs; Michael A. Steele, Ph.D., Associate Professor of Biology; Sharon Telban, Ph.D., Associate Professor of Nursing; and Terese M. Wignot, Ph.D., Associate Professor of Chemistry.

Advisement, Guidelines and Procedures for all Health Sciences Students

Wilkes University offers programs in two areas of the health sciences: premedical and allied health. The premedical programs entail preparation for careers in allopathic and osteopathic medicine, dentistry, optometry, podiatric medicine and veterinary medicine. The allied health programs encompass physical therapy, occupational therapy, medical technology and health information management.

Students must declare a specific academic major and also complete a core for their chosen health profession. Many premedical students major in biology, chemistry or biochemistry. However, students who have majored in the traditional liberal arts, math or engineering have also been successful in gaining admission to medical schools. Health professional schools are generally interested in students who have in-depth training in the sciences along with a broad background in the humanities and social sciences. Many students pursuing one of the allied health areas major in biology, psychology or one of the other traditional science or social science programs.

An important component of the University's health sciences programs is its counseling and advising system. The Wilkes tradition of close student advising permits thorough understanding of the student's aspirations and goals. A faculty advisor is assigned to the student in his or her academic major. This academic advisor is the first point of contact regarding course planning and registration for the student. In addition, the student is counseled on the particulars of premedical and allied health education by the advisors in the Health Sciences Office.

The Health Sciences Office specifically provides information about standards for admission to the various health professions. In addition, time lines for individual programs, admission services for health professional schools, test dates and booklets for professional school admission exams, admission deadlines, and catalogues and videotapes from a variety of professional schools in the health sciences are available.

All students planning to pursue careers in the health sciences must declare their specific interest with the Wilkes Health Sciences Office. Students must complete a **Health Sciences Declaration Form** as soon as they determine their interest and submit a schedule of their classes each semester to that office. The Declaration Form enables the Health Sciences Office to track the student and monitor his or her academic progress.

Premedical Programs

(These programs prepare students for health professional programs in Allopathic Medicine, Osteopathic Medicine, Dentistry, Optometry, Podiatric Medicine and Veterinary Medicine.)

Overview

Wilkes University offers premedical programs which share a fundamental and formative premise—that unprecedented technological and scientific dynamism will characterize the context of medical careers conducted in the next thirty to fifty years. This perspective has important implications for the future physician's baccalaureate studies, including the need to master computer-based information access systems, to reach a level of mastery in the sciences permitting independent judgement and research, and to grow in ethical sensitivity and sophistication. Drawing on the University's strengths in science, information systems, and the humanities, Wilkes has defined an approach to premedical education which produces exceptionally competent and competitive candidates for admission to the nation's leading schools of medicine.

The Wilkes premedical graduate stands out first of all because he or she is not only broadly trained but also has mastered the rapidly evolving medical information technologies. Throughout the science curriculum at Wilkes, students are exposed to and use databases which relate up-to-date information at the cutting edge of research in science fields. Interviews with medical school professors and admissions officers indicate that such information access skills are increasingly relevant and are essential for the medical practitioner. As a comprehensive University, with a full range of bachelor's and master's degree programs in natural sciences, computer science, and engineering, Wilkes provides a sophisticated, research-capable science environment in which students learn how to negotiate the information-rich, highly complex, world of scientific database communications.

The future medical practitioner will also be called upon to assess and implement promising information emerging in the fields of molecular biology, biochemistry, cell biology, and organic chemistry. A general exposure to science at the undergraduate level, typical of liberal arts college premedical studies, will no longer be sufficient to prepare medical students and practitioners to be fully competent as professionals. The Wilkes science-intensive premedical program involves students in research projects and applications activities during their undergraduate years and helps them to gain real mastery as scientists, able to make independent judgments and to conceptualize and conduct independent research. Medicine now makes obsolete the former dichotomous categorization of science and preprofessional studies, in that the superior physician will increasingly have to be a research-capable scientist. Premedical studies at Wilkes have adapted to this trend well in advance of programs at most other institutions.

Database information and scientific dynamism make it necessary to focus attention on the moral and ethical dimensions of premedical studies. Through its General Education Requirements, Wilkes provides the future physician with a highly meaningful learning experience in philosophy, ethics, and social problems. These learning experiences are augmented by the robust atmosphere of intellectual discussion and debate, which has long been one of Wilkes' distinguishing institutional characteristics, as a nondenominational, non-sectarian university at which issues of morality and ethics are taken seriously. In this way Wilkes prepares its premedical students for the real world in which they will function as broadly educated, competent professionals.

The descriptions of courses and curricula, which follow, put into practice what we at Wilkes believe to be a progressive program of premedical studies.

The Wilkes Premedical Core

(Required of all students aspiring to enter programs in Allopathic Medicine, Osteopathic Medicine, Dentistry, Optometry, Podiatric Medicine and Veterinary Medicine.)

A unique feature of the University's premedical education is the premedical core, a sequence of courses designed to prepare students for the challenges and rigors of a medical education. The core was developed after consulting admissions personnel from medical schools regarding undergraduate courses required for admission. The premedical core not only includes the traditional requirements expected by medical schools, but also capitalizes on the University's strengths in science and technology.

The premedical core includes a meaningful research or project experience, a practicum and observation experience provided by local physicians and health professionals, knowledge and utilization of computers

in medicine, and meaningful laboratory background with emphasis on the understanding and use of modern instrumentation.

The Wilkes Premedical Core requires the following courses as a minimum:*

2 courses in Modern Biology (BIO 121-122)

(A third course in Comparative Anatomy, BIO 314, is recommended)

4 courses in Chemistry (CHM 115-116, 231-232)

1 course in Biochemistry (CHM 361 or 362)

1 course in Medical Informatics (CS 265)

2 courses in Physics (PHY 171-174 or 201-202)

2 courses in Mathematics (MTH 105-106 or 111-112)

1 course in Psychology (PSY 101)

1-2 courses in English** (emphasizing writing skills)

Research course or a Special Project ***

*Pre-optometry students are also required to complete statistics (MTH 150), Cellular and Molecular Biology (BIO 226) and Medical Microbiology (BIO 327).

**English course requirements (as well as other prerequisite course requirements) vary from one health professional school to another. It is the student's responsibility to meet the requirements of a particular health professional school.

***Students enrolled in one of the accelerated seven-year programs may elect to be waived from the senior year research course or special project.

All students intending to enter programs in medicine must complete these premedical core courses. Students should work with their academic advisors to integrate this core into the recommended course sequence for their academic major as outlined in this Bulletin.

The goals of the premedical core are to:

A. Help the student develop a useful scientific foundation.

B. Serve as a unique signature, which Wilkes graduates can carry forward as successful professionals.

C. Facilitate the preparation for standardized admissions tests such as the MCAT, OAT, DAT and VCAT.

Letter of Evaluation

Students applying to a professional school may request a letter of evaluation from the Wilkes Health Sciences Committee. In order to receive the Letter of Evaluation from the Committee, students must have a **Declaration Form** on file, successfully complete the premedical core, develop knowledge of and experience in the field of medicine through shadowing and gain experience in the social service field by volunteering their time with community agencies. These types of experiences are required by most health professional schools. The application for the committee letter must be submitted to the Health Sciences Committee by May 15th of the student's junior year.

Placement of Premedical Students

Wilkes enjoys an enviable record of placement of students in medical school with acceptance rates of over 90%. Allopathic medical schools accepting Wilkes students include George Washington, Georgetown, Harvard, Johns Hopkins, MCP-Hahnemann University, Pennsylvania State University-Hershey, Stanford, SUNY Upstate, Temple University, Thomas Jefferson University, Tulane, the University of Pennsylvania, the University of Pittsburgh and Yale. A number of Wilkes students also enter Osteopathic Medical Schools such as Lake Erie College of Osteopathic Medicine, the Philadelphia College of Osteopathic Medicine, Ohio University College of Osteopathic Medicine, and University of Health Sciences College of Osteopathic Medicine in Kansas City.

Wilkes students have attended dental school at the University of Connecticut, Tufts University, the University of Pittsburgh, the University of Buffalo School of Dental Medicine, and Temple University. Preoptometry students have gained admission to institutions such as Illinois College of Optometry, New England College of Optometry, Ohio State University College of Optometry, and Pennsylvania College of Optometry. Podiatric medical schools accepting Wilkes students include California College of Podiatric Medicine, New York College of Podiatric Medicine, Ohio College of Podiatric Medicine, and Temple University School of Podiatric Medicine. Wilkes students have also gained admission to veterinary schools such as the Oklahoma State University School of Veterinary Medicine, the University of Illinois School of Veterinary Medicine, University of Pennsylvania School of Veterinary Medicine, the University of Wisconsin-Madison Veterinary School and the Virginia-Maryland Regional College of Veterinary Medicine.

Affiliated Degree Programs in Medicine

I. Early Admission BS/MD Programs in Allopathic Medicine

Wilkes has developed special early admission joint BS/MD degree programs and established agreements with three major medical schools, which lead to a baccalaureate degree from Wilkes University and the professional degree in medicine upon completion of medical school. Students must be interested in pursuing a career as a primary care physician to be considered for selection to such a program. Once students have been granted acceptance to Wilkes University, they will be required to submit an essay and letters of recommendation from two high school

science teachers and one humanities/English teacher to the Health Sciences Committee and successfully complete three interviews. If ultimately selected for any of the three programs, students must satisfy all requirements as articulated in each specific affiliation agreement. All students in these early assurance programs will spend their 7th or 8th semester in a clinical setting. Willkes University has established special affiliations with the Guthrie Health Care System (GHS), which includes the Robert Packer Medical Center in Sayre, Pennsylvania (Guthrie Scholars) and the Wyoming Valley Health Care System (WVHCS), which includes the Nesbitt Hospital in Kingston, PA (Wyoming Valley Scholars) for students to participate in this clinical experience.

A. Premedical Scholars Programs with MCP-Hahnemann University School of Medicine (MCPHU)

MCP-Hahnemann University School of Medicine (MCPHU) in Philadelphia and Wilkes University offer a special Premedical Scholars Program for outstanding high school seniors from northeastern Pennsylvania and the southern tier of New York State. Students from northeastern Pennsylvania may choose either the Guthrie Scholars or the Wyoming Valley Scholars clinical site. Southern tier New York students will spend their semester at the Guthrie clinical site.

This program allows high school seniors to be assured admission to MCP-Hahnemann University School of Medicine as they enter Wilkes University to do their undergraduate work. Details of this program are as follows:

1. Program Admission

A. To be considered for selection to the MCP-Hahnemann Premedical scholars Program, applicants must meet the following conditions:
- Be accepted into the entering freshman class at Wilkes University.
- Have a minimum combined SAT score of 1270 (with no subset less than 560).
- Have a high GPA.
- Rank in the top 10% of their high school graduating class.
- Have satisfactorily passed the following high school prerequisite courses or equivalents: four (4) years of mathematics, four (4) years of English, three (3) years of science (at least one semester each of biology, chemistry and physics).

B. Up to six (6) Premedical Scholars may be selected to the program each year.

C. Once students have been accepted to Wilkes University, the Wilkes Health Sciences Office will notify students who meet minimal qualification criteria for selection to this early assurance program. To be selected, students are required to successfully complete interviews at Wilkes, at either the Robert Packer Medical Center of the Guthrie

Health Care System or the Nesbitt Hospital of the Wyoming Valley Health Care System, and at MCP-Hahnemann University School of Medicine.

D. Emphasis in recruiting will be placed on students from northeastern Pennsylvania and the lower tier of New York for the Guthrie Scholars program and northeastern Pennsylvania for the WVHCS Scholars program.

E. Students must apply and be accepted to Wilkes University by December 1, 2001 to be considered for selection to this program.

F. Successful applicants should expect to be interviewed at Wilkes prior to December 20, 2001. Finalists from this interview will be called to subsequent interviews in early January of 2002.

G. Final selection for this program is at the discretion of the medical school at which a student interviews.

2. Program Format

A. Four (4) years of successful undergraduate study at Wilkes University, which includes completion of an academic major and the premedical core. Students must maintain a minimum overall GPA of 3.3 during their first three (3) years at Wilkes without repeating a course. Students who receive a grade below a 2.0 in any course will be automatically disqualified from the program. Students must score at least 24 [wth no score less than an eight (8)] on the MCAT by the end of their junior year at Wilkes to complete the medical school admission requirements. Additional requirements are specified in the acceptance letter from the medical school.

B. The off-campus semester requires a total of 15 credits of course work, including Cooperative Education in Clinical Observation (6), Senior and/or Independent Research (3), Lectures in Biomedicine (3) and Discussions on Medical Ethics and Alternative Therapies (3). Faculty advisors can elaborate on how this impacts on course requirements in each academic department.

Students in the Guthrie Program will spend the 7th or 8th semester of undergraduate study at the Robert Packer Medical Center in Sayre, Pennsylvania, doing clinical and basic science research, and studying the rural and semi-rural Health Care Delivery System of northeastern Pennsylvania and the lower tier of New York. **In return for Guthrie's investment in them, students in the Guthrie Scholars Program must spend part of the 3rd and 4th years in medical school doing required and elective clinical rotations at the Robert Packer Medical Center.**

Students in the WVHCS Program will spend the 7th or 8th semester of undergraduate study at the Wyoming Valley Health Care System in Kingston, Pennsylvania doing clinical research and studying the semi-rural Health Care Delivery System of northeastern Pennsylvania. **In return for Wyoming Valley's investment in them, students in the WVHCS Scholars Program must spend part of the 3rd and 4th years in medical school doing required and elective clinical rotations at the Wyoming Valley Health Care System.**

C. Four (4) years of medical school study at MCP-Hahnemann University.

B. The Premedical Scholars Program with the Pennsylvania State University College of Medicine at Hershey

The Pennsylvania State University College of Medicine at Hershey (Penn State Hershey) and Wilkes University offer a special Premedical Scholars Program for outstanding high school seniors from rural and/or medically underserved areas of Pennsylvania. This program allows students to select either the Guthrie Scholars clinical site or the Wyoming Valley Scholars clinical site for their senior year clinical experience.

The program allows high school seniors to be assured admission to the Pennsylvania State University College of Medicine at Hershey as they enter Wilkes University to do their undergraduate work. Details of this program are as follows:

1. Program Admission

A. To be considered for selection to the Penn State Hershey Premedical Scholars Program, applicants must meet the following conditions:
- Be accepted into the entering freshman class at Wilkes University
- Have a minimum combined SAT score of 1250.
- Have a high GPA.
- Rank in the top 10% of their high school graduating class.
- Have satisfactorily completed three (3) years of natural sciences, including biology, chemistry and physics, and Mathematics through trigonometry (calculus is recommended).

B. Two Premedical Scholars may be selected to the program each year.

C. Once students have been accepted to Wilkes University, the Wilkes Health Sciences Office will notify students who meet minimum qualification criteria for selection to this early assurance program. To be selected, students are required to successfully complete interviews at Wilkes, at either the Robert Packer Medical Center of the Guthrie Health Care System or the Nesbitt Hospital of the Wyoming Valley Health Care System, and at the Pennsylvania State University College of Medicine.

D. Emphasis in recruiting will be placed on students from rural and/or medically underserved areas of Pennsylvania who wish to pursue a career in primary care medicine.

E. Students must apply and be accepted to Wilkes University by December 1, 2001 to be considered for selection to this program.

F. Successful applicants should expect to be interviewed at Wilkes prior to December 20, 2001. Finalists from this interview will be called to subsequent interviews in early January of 2002.

G. Final selection for this program is at the discretion of the medical school at which a student interviews.

2. Program Format

A. Four years of successful undergraduate premedical study at Wilkes University. Student must maintain a minimum GPA of 3.5 in biology, chemistry and physics and an overall GPA of at least 3.5 by the end of their junior year at Wilkes. Specific criteria by year are as follows.

Freshman Year
- Minimum GPA of 3.3

Sophomore Year
- Minimum GPA of 3.4
- Shadowing experience with a primary care physician
- Meet with the Associate Dean for Admissions and Student Affairs of the Penn State College of Medicine

Junior Year
- Minimum GPA in biology, chemistry and physics of 3.5 and a minimum overall GPA of 3.5
- A second shadowing experience with a primary care physician
- A Letter of Evaluation from the Health Sciences Committee at Wilkes University
- Completion of the MCAT
- Completion of the AMCAS application

Senior Year
- Maintain a high level of academic achievement and complete the Wilkes University premedical core of courses
- Participate in the clinical site experience during the 7th or 8th semester
- Meet with the Associate Dean for Admissions and Student Affairs of the Penn State College of Medicine

B. The off-campus semester requires a total of 15 credits of course work, including Cooperative Education in Clinical Observation (6), Senior and/or Independent Research (3), Lectures in Biomedicine (3), and Discussions on Medical Ethics and Alternative Therapies (3). Faculty advisors can elaborate on how this impacts on course requirements in each academic department.

Students must complete their 7th or 8th semester in college at either the Robert Packer Hospital or the Nesbitt Hospital. **In return for Guthrie's or Wyoming Valley's investment in them, students must spend parts of the 3rd and 4th years in medical school doing required and elective clinical rotations at either Robert Packer Medical Center or Nesbitt Hospital (dependent on which location they spent their 7th or 8th semester at Wilkes).**

C. Completion of the MCAT examination is required for admission to the Pennsylvania State University College of Medicine. The exam should be taken during April of the junior year at Wilkes. Students are expected to perform at or above the mean score in each section when compared with the previous College of Medicine entering class. Additional requirements are specified in the acceptance letter from the medical school.

D. Four (4) years of medical school study at the Pennsylvania State University College of Medicine at Hershey.

C. The Premedical Scholars Program with the State University of New York Upstate Medical College at Syracuse, New York (SUNY Upstate)

The State University of New York Upstate Medical College at Syracuse, New York (SUNY Upstate) and Wilkes University offer a special Premedical Scholars Program for outstanding high school seniors from the southern tier of New York State. Students will spend their clinical semester at the Guthrie Scholars clinical site in Sayre, Pennsylvania.

This program allows high school seniors to be assured admission to SUNY Upstate Medical College as they enter Wilkes University to do their undergraduate work. The program is as follows:

1. Program Admission

A. High school applicants must have a minimum combined SAT score of 1200 to be considered for admission to the SUNY Upstate Premedical Scholars Program.

B. Students admitted to the program, after successful interviews at Wilkes, Robert Packer Medical Center, and SUNY Upstate, will be simultaneously assured admission to medical school at SUNY Upstate Medical College and to Wilkes University.

C. Students must maintain a minimum GPA of 3.5 in biology, chemistry, mathematics and physics (BCMP) during their first three (3) years at Wilkes to complete the medical school admission requriements. [No Medical College Admission Test (MCAT) is required] Additional requirements will be specified in the acceptance letter from the medical school.

D. Emphasis in recruiting for this program will be placed on students from the southern tier of New York State.

E. The deadline for application is December 1, 2001.

F. Successful applicants should expect to be interviewed at Wilkes prior to December 20, 2001. Finalists from this interview will be called to subsequent interviews in early January 2002.

G. Final selection for this program is at the discretion of the medical school at which a student interviews.

2. Program Format

A. Four (4) years of successful undergraduate study at Wilkes University, which includes completion of an academic major and the premedical core.

B. The off-campus semester requires a toal of 15 credits of course work, including Cooperative Education in Clinical Observation (6), Senior and/or Independent Research (3), Lectures in Biomedicine (3) and Discussions of Medical Ethics and Alternative Therapies (3). Faculty advisors can elaborate on how this impacts on course requirements in each department.

Students in the program will spend the 7th or 8th semester of undergraduate study at the Guthrie Scholars clinical site in Sayre, Pennsylvania, doing clinical and basic science research, and studying the rural and semi-rural Health Care Delivery system of New York. **In return for Guthrie's investment in them, students in the SUNY Upstate program must spend part of the 3rd and 4th years in medical school doing required and elective clinical rotations at the Robert Packer Medical Center.**

C. Four (4) years of medical school study at SUNY Upstate School of Medicine.

II. Seven-Year Affiliated Medical Programs

In addition to the traditional four-year premedical undergraduate programs, Wilkes University has developed affiliations with health professional schools in osteopathic medicine, dentistry, optometry, and podiatric medicine. These programs permit students to spend three years at Wilkes in the basic sciences and liberal arts and four years at the affiliated health professional school. The University has developed these seven-year health professional programs with the following institutions:

Philadelphia College of Osteopathic Medicine (PCOM)

Temple University School of Dentistry (TUSD)

Pennsylvania College of Optometry (PCO)

Temple University School of Podiatric Medicine (TUSPM)

State University of New York College of Optometry (SUNY-Optometry)

These programs offer a unique opportunity for outstanding high school students who are fairly certain of the career path they wish to pursue to complete their pre-professional and professional education in seven years. Students should have a high GPA and high rank in their high school graduating class, a combined SAT score of 1250 or better (with no score less than 550) and have completed Honors or AP coursework, especially in the sciences.

In order to qualify for any of these seven-year programs, students must apply and be accepted to Wilkes University by January 1st of their senior year in high school. If minimum prerequisites are met and students are accepted to the University, they will be interviewed by representatives of the Wilkes University Health Sciences Office prior to April 1st of their senior year in high school for final selection. Once students are selected for one of these affiliated programs and begin their undergraduate education, they will receive assistance from the Health Sciences Office in advising them through their accelerated program of study and in the application process to the health professional school. Students will be expected to maintain a high GPA and participate in shadowing experiences and volunteer activities during their three years

at Wilkes in addition to meeting the requirements listed below by each individual health professional institution.

Following successful completion of their first year of basic science education in medical school, Wilkes will transfer thirty-six credits in the basic sciences and confer upon each student the Wilkes University baccalaureate degree.

Wilkes University students must apply for and receive a Health Sciences Committee Letter of Evaluation after their sophomore year in order to apply to any of the affiliated institutions. Only students who have earned a high grade point average by the end of their sophomore year and who have fulfilled appropriate requirements of the Premedical Core and the General Education Requirements will be endorsed and receive a Letter of Evaluation for the seven-year programs. Students whose academic credentials fall beneath the standards set by the Committee will be advised to complete a third year of study at Wilkes before reapplying for a Letter of Evaluation. Decisions for admission to these health professional schools are made by a Joint Admissions Committee from Wilkes University and the affiliated institution. Students must meet all admission requirements as outlined by the health professional schools with the final admission decision determined by the health professional institution.

- **Philadelphia College of Osteopathic Medicine (PCOM)**

PCOM holds up to fifteen (15) seats each year for Wilkes University students who are recommended by the Health Sciences Committee for admission and who meet all of PCOM's admission requirements. Students should consult the Wilkes Health Sciences Office for information regarding PCOM's requirements for a minimum grade point average and MCAT score.

- **Temple University School of Dentistry (TUSD)**

TUSD reserves a minimum of four (4) seats each year for Wilkes students who meet all of Temple University's admission requirements. Wilkes students will be granted an automatic invitation for an interview if they submit their application no later than December 1 of the year prior to matriculation to TUSD and they meet the following minimum requirements as specified by Temple Dentistry:

A. Track as a science major in the Wilkes predental program.

B. Submit application letter to TUSD prior to December 1 of the junior year at Wilkes.

C. Receive a Letter of Evaluation from the Wilkes University Health Sciences Committee.

D. Earn a minimum grade point average of 3.5 by the end of the 5th semester in the Basic Sciences, 3.4 in the Sciences and 3.3 overall.

E. Earn a minimum score of 18 in the Science section and 17 as the academic average on the Dental Admission Test (DAT).

Students who are interviewed will then be evaluated for admission by the Temple University Admission Committee.

- **Pennsylvania College of Optometry (PCO)**
- **State University of New York College of Optometry (SUNY-Optometry)**
- **Temple University School of Podiatric Medicine (TUSPM)**

PCO holds up to four (4) seats, SUNY-Optometry holds up to six (6) seats, and TUSPM holds up to six (6) seats each year for Wilkes University students who are endorsed by the Wilkes Health Sciences Committee for admission and who meet all of the appropriate institution's admission requirements. Students should consult the Wilkes Health Sciences Office for information regarding requirements for a minimum grade point average (GPA) and a minimum score on the appropriate health professional school admission test.

Wilkes Unversity takes pride in having developed these affiliated seven-year medical programs, which have been ongoing since the late nineteen seventies. Currently large numbers of alumni who have graduated from these programs are in successful professional practice. We especially encourage highly motivated and academically gifted students to take advantage of these abbreviated specialized programs and join those already enrolled in this pursuit.

III. State University of New York, State College of Optometry Affiliation Programs

A. Optometry Scholars Program

Wilkes University and the State University of New York, State College of Optometry offer a special academic affiliation in optometric education, the Optometry Scholars Program. Up to six (6) students per year may be selected into a seven-year Bachelor of Arts or Science (B.A. or B.S.) and Doctor of Optometry (O.D.) program. Students chosen for this joint degree program are admitted to a designated, prescribed major at Wilkes University and simultaneously admitted to candidacy to the SUNY College of Optometry's professional program of study.

1. Program Admission

A. High school applicants must have a minimum combined SAT of 1200 (at least 600 math and 550 verbal), a minimum of 93 for their high school grade point average, and to place in the top 10% of their graduating class.

B. Students selected for the SUNY Optometry Scholars Program, after successful interviews at Wilkes and SUNY College of Optometry, will be simultaneously admitted to candidacy in the Optometry School at State University of New York, College of Optometry and to Wilkes University.

C. Students in this program must maintain a GPA of 3.3 overall and a 3.3 in the required science and math portion of the joint degree track curriculum, with no grade lower than a 2.0 in each individual science and math prerequisite course. Students must also attain a total science score above 330 on the Optometry Admissions Test (OAT) with no score in any one area below 310.

D. Students must receive a positive Letter of Evaluation from the Wilkes Health Sciences Committee, pass reasonable personal interview standards and submit all required application materials during their junior year at Wilkes.

2. Program format

A. Three (3) years of successful undergraduate study at Wilkes University, which includes course work in an academic major and in the premedical core.

B. Students in this program must also visit and shadow three different professional optometric offices in order to become more fully acquainted with the profession of optometry during their undergraduate study at Wilkes University.

C. Four (4) years of Optometry School study at SUNY College of Optometry. At the end of their first year of Optometry school, Wilkes will grant the baccalaurate degree.

B. Early Assurance Program

Wilkes University and SUNY Optometry also offer an Early Assurance program to which Wilkes sophomores who are interested in a career in optometry may apply.

To be considered, each applicant must:

- Have completed two (2) years of undergraduate study (approximately 60 hours) and at least 70% of SUNY's prerequisite courses.
- Maintain throughout the four years a total GPA of 3.3 and a 3.3 GPA in the SUNY prerequisite science and math courses, with no grade lower than a 2.0 (C) in any of the SUNY prerequisite courses.
- Demonstrate a basic knowledge of and a motivation for a career in optometry.
- Take the Optometry Admission Test (OAT) in their junior or senior year and attain a total science score above 330 with no score below 310.
- Provide high school and college transcripts and SAT scores to SUNY Optometry.
- Receive a positive Letter of Evaluation from the Wilkes University Health Sciences Committee.
- During their senior year at Wilkes University, be interviewed at SUNY Optometry.

Applications are due by June 1 following the sophomore year. After the submission and review of all written materials, each applicant receiving serious consideration for admission to the Early Assurance Program will be offered an opportunity to interview at the SUNY College of Optometry. Candidates will be notified of committee action in writing prior to August 31st.

C. Traditional Admission Program

SUNY Optometry also welcomes applications from Wilkes University juniors interested in a career in optometry who wish to apply to the professional program by the traditional method.

IV. Transfer Medical Degree Program

Typically, four (4) years of undergraduate study are required to qualify for the bachelor's degree. Wilkes University makes an exception to this requirement in special circumstances for doctoral students in allopathic and osteopathic medicine, dentistry, optometry, podiatric medicine and veterinary medicine.

These students may, with the approval of the Wilkes Academic Standards Committee, satisfy the requirements for the bachelor's degree by completing three years of an academic major, at least the last two of which must be at Wilkes, and by requesting credit toward the degree for their first two years of work in professional school. Students in these programs must, however, satisfy the General Education Requirements at Wilkes University to be considered for a bachelor's degree from the University.

Such students must also petition the Academic Standards Committee for permission to graduate, submit official transcripts from the professional school, and pay the usual graduation fees. In all cases, the final approval for the granting of the baccalaureate degree rests with the Academic Standards Committee of Wilkes University.

The transfer program is similar to our Seven-Year Affiliated Degree programs. However, instead of choosing this 3+4 track before entering Wilkes University as a freshman (as in the 3+4 programs), a student may elect this path during their tenure as an undergraduate student.

Allied Health Programs

Wilkes University has developed programs that prepare students for admission to Physical Therapy and Occupational Therapy schools, as well as programs in Medical Technology and Health Information Management.

Overview

With career opportunities expanding in the allied health fields known as physical therapy, occupational therapy, medical technology and health information management, admission to programs in these areas has become increasingly competitive. Wilkes University has defined an approach to pre-allied health education to produce competitive, noteworthy candidates for admission.

The University has structured a program of study emphasizing the basic sciences and social sciences to provide students with the appropriate background knowledge to enter occupational and physical therapy programs. The curriculum is complemented by an advisement system that closely monitors the student's academic progress and their application process to a professional program.

Students interested in allied health fields must meet with their academic advisors and advisors from the Health Sciences Office early in their freshman year to work out an individualized course of study. Students may plan to apply to an undergraduate program in physical therapy, occupational therapy, medical technology, or health information management after two or three years of course-work at Wilkes. Students may also plan to complete an undergraduate degree at Wilkes and apply to an entry-level allied health master's or doctoral degree program. Both career plans affect course selection and must be reviewed with the academic and health sciences advisors.

I. Physical Therapy

Physical Therapy is a profession concerned with restoration of physical function and the prevention of disability following disease, injury, or loss of body parts. The goal of physical therapy is to help the patient reach maximum potential and to assume a place in society while learning to live within the limits of his/her capabilities.

Physical therapists are qualified to utilize such physical agents as therapeutic heat, light, electricity, water, exercise, or massage in treating patients. Treatment may consist of teaching the patient an exercise regimen to increase muscle power or improve coordination, or teaching the patient to walk with prostheses, braces, or other ambulatory aids. Appropriate psychological and sociological principles are applied in motivating and instructing the patient, his or her family, and others. Physical therapists may delegate selected forms of treatment to supportive personnel with assumption of the responsibilities for the care of the patient and the continuing supervision of the supportive personnel.

Career opportunities exist for physical therapists in hospitals, rehabilitation centers, pediatric facilities, private practice, research, industry, sports medicine, school systems, nursing homes and other health care settings.

The Wilkes Pre-Physical Therapy Core

In addition to completing an academic major, each student must also complete the Wilkes University Pre-Physical Therapy Core, which provides a base from which students can structure their classes. The pre-physical therapy core includes a sequence of courses that are common

prerequisites at most physical therapy schools. It must be emphasized that there are no universal prerequisite courses for all physical therapy programs.

The Wilkes Pre-Physical Therapy Core (Minimum Requirements per the MCP-Hahnemann University Doctor of Physical Therapy Degree Program)

A. The Pre-Physical Therapy Core

- Five (5) courses in Biology for a total of 19-20 credits to include the following:

  Principles of Modern Biology I & II (BIO 121 & 122)

  Medical Anatomy and Physiology I & II (BIO 331 & 332)*

  One of the following upper level Biology courses:

  Funtional Histology (BIO 323)

  Molecular Biology (BIO 324)

  Immunology and Immunochemistry (BIO 326)

  Medical Microbiology (BIO 327)

  Genetics (BIO 345) or

  Senior Research Projects (BIO 391, 392) OR Independent Research (BIO 395, 396) OR Independent Research (PSY 395, 396)

  * Please note that Cellular and Molecular Biology (BIO 226) is highly recommended as a course to precede the 300-level biology courses.
- Two courses in General Chemisty with laboratory for a total of 8 credits (For example: CHM 115 & 116)
- Two courses in Physics with laboratory for a total of 8 credits (For example: PHY 171 & 174)
- Two courses in Psychology for a total of 6 credits: General Psychology (PSY 101 and Developmental Psychology (PSY 221)
- One course in Statistics for a total of 3 credits (For example: PSY 200 or MTH 150)
- Mathematics (as per the requirements of professional school(s)
- Five courses in the Humanities and Social Sciences for a total of 15 credits. For example: courses that satisfy Areas I and III of the distribution requirement of the Wilkes University core.

B. Volunteer Experience in Physical Therapy

Each institution has varied prerequisites and all professional schools generally require a certain number of volunteer hours in physical therapy. Some or all of those hours may be fulfilled by the cooperative education or internship experience available through the Wilkes Cooperative Education Office.

C. Letters of Evaluation

One composite letter from the Wilkes University Health Sciences Committee and one letter from a physical therapitst.

In addition to completing this minimum pre-physical therapy core, students must consult prerequisite guidelines published by the particular institutions from which they wish to gain admission.

Affiliated Programs in Physical Therapy

A. Affiliated Program with MCP-Hahnemann University Department of Rehabilitation Sciences: Doctor of Physical Therapy Degree Program

The affiliated physical therapy program requires four (4) years of study at Wilkes University leading to the Bachelor's Degree and three (3) years of study at MCP-Hahnemann University leading to the Doctoral Degree in Physical Therapy. Early admission to the MCP-Hahnemann University graduate program is granted to up to five (5) Wilkes students, who have satisfied all requirements for admission, per year.

Students should consult the previous section of the Bulletin for the prerequisite courses required for admission to MCP-Hahnemann University's Affiliated Physical Therapy Program.

Wilkes students applying to MCP-Hahnemann University must meet the criteria for admission outlined here:

- A cumulative grade point average at the end of six full semesters of 3.25 or above, as noted in the curricular outline.
- Completion of prerequisite science courses with a cumulative grade point average of 3.25 or above.
- Minimum Graduate Record Examination (GRE) scores of 550 verbal, 600 quantitative, 600 analytical.
- Volunteer experience in physical therapy for at least one summer or its equivalent in practicum or work experience.
- Petition to the Wilkes University Health Sciences Committee for a Letter of Evaluation to accompany their application. This request must be made in writing to the Committee by May 15th of the student's junior year.
- Obtain a Letter of Evaluation/Recommendation from a licensed physical therapist.

Students who meet the guidelines of this program will be automatically granted an interview with the MCP-Hahnemann Physical Therapy Committee on Admissions. The decision to offer acceptance to students into this program shall be made by the Program in Physical Therapy Committee on Admissions of MCP-Hahnemann University. In addition, students must also complete all requirements for a bachelor's degree from Wilkes University prior to matriculation at MCP-Hahnemann University.

B. Affiliated Program with Temple University College of Allied Health Professions: Doctor of Physical Therapy

This affiliated physical therapy program requires four (4) years of study at Wilkes University and three (3) years of professional study at Temple University, leading to the Doctor of Physical Therapy degree following successful completion of the three years at Temple.

The affiliated physical therapy program with Temple University requires students to complete a series of prerequisite courses as part of their four years of study at Wilkes. A listing of these courses is available in the Wilkes Health Sciences Office or through the Temple University Department of Physical Therapy.

Candidates must also complete the Graduate Record Exam (GRE) in the fall semester of their fourth year of study at Wilkes. To qualify for admission at Temple, students must earn a minimum of a 3.0 GPA while at Wilkes and score above the fiftieth percentile on the GRE. Wilkes students who meet the standards of this affiliated program will be given special consideration for admission by Temple.

II. Occupational Therapy

Occupational therapists work with members of the community who encounter difficulties with tasks of living. These difficulties may be from developmental deficits, the aging process, physical illness or injury, economic stress, cultural differences, or psychological problems which present barriers for an individual to function in life. The Occupational Therapist bases service on a rapidly growing field of knowledge to enhance the individual's abilities to function and prevent areas of dysfunction. The therapist uses selected, goal-directed activities to encourage learning, re-education, growth and strength, and to promote general health. Occupational Therapists provide services along with other health professionals in a number of different settings ranging from hospitals and clinics to schools to reach a wide population of all ages.

The Wilkes Pre-Occupational Therapy Core

In addition to completing an academic major, each student must also complete the Wilkes University Pre-Occupational Therapy Core. The Pre-Occupational Therapy Core provides a base from which students can structure their classes. The Pre-Occupational Therapy Core includes a sequence of courses identified by the American Association of Occupational Therapy Schools as common prerequisites at most occupational therapy schools. It must be emphasized that there are no universal prerequisite courses for all existing occupational therapy programs.

The Wilkes Pre-Occupational Therapy Core requires as a minimum:

Two Courses in Modern Biology (BIO 121-122)

Two Courses in Anatomy and Physiology (BIO 115-116 or BIO 331-332)

One Course in Chemistry (CHM 115)
One Course in Mathematics (MTH 100, 101 or 105)
Four Courses in Psychology (PSY 101, 200, 221 and 222)
One Course in Sociology (SOC 101)
(An additional course, SOC 251, is also recommended)
Cooperative Education or Internship

In addition to completing the core, students must consult prerequisite guidelines published by the particular institutions from which they wish to gain admission. Institutions have varied prerequisites and generally require a certain number of volunteer hours in occupational therapy. Some or all of those hours may be fulfilled by the cooperative education or internship experience available through the Wilkes Cooperative Education Office.

Affiliated Program in Occupational Therapy at Temple University College of Allied Health Professions: Masters in Occupational Therapy

Wilkes University offers a specilized, affiliated program in Occupational Therapy with Temple University that requires four (4) years of study at Wilkes and two (2) years of study at Temple University, leading to a master's degree in Occupational Therapy..

The affiliated occupational therapy program with Temple University requires students to complete a series of prerequisite courses as part of their four years of study at Wilkes. A list of these courses is available in the Wilkes Health Sciences Office or through the Temple University Department of Occupational Therapy.

Placement of Pre-Physical Therapy and Pre-Occupational Therapy Students

Wilkes University graduates have been accepted to a number of physical therapy and occupational therapy schools including: Columbia University College of Physicians and Surgeons, MCP-Hahnemann University School of the Health Sciences, Tufts Graduate School of Arts and Sciences, Thomas Jefferson University Program in Occupational Therapy, Temple University Health Sciences Center, Allegheny University, and Universtiy of Pittsburgh School of Health and Rehabilitation Sciences.

III. Medical Technology

The National Accrediting Agency for Clinical Laboratory Science recommends certain requirements for a program of training leading to a B.S. Degree. The curriculum offered at Wilkes University follows these recommendations and is presented below.

At the completion of three years, the student may be accepted by an affiliated program of medical technology for a period of twelve months

of clinical training. Folowing graduation from the programs, the students will receive the B.S. degree in medical technology from Wilkes University and will be eligible for certification as a medical technologist by the Board of Registry of Medical Technology or as a Clinical Laboratory Scientist by the National Certification Agency for Medical Laboratory Personnel.

Wilkes University has established a formal affiliation with the Robert Packer Hospital in Sayre, PA. Fulfillment of the fourth year requirement at non-affiliated hospitals requires special permission of the department chairperson and the Wilkes Academic Standards Committee.

RECOMMENDED COURSE SEQUENCE FOR A MAJOR IN MEDICAL TECHNOLOGY

FIRST SEMESTER

Bio 121 Principles of Modern Biology I	4
Chm 115 Elements and Compounds	4
Fr. F 101 Freshman Foundations	3
Mth 105 or 111 Calculus I	4
	15

SECOND SEMESTER

Bio 122 Principles of Modern Bio II	4
Chm 116 The Chemical Reaction	4
Eng 101 Composition	4
Mth 106 or 112 Calculus II	4
	16

THIRD SEMESTER

Bio 225 Population and Evolutionary Biology I	4
Chm 231 Organic Chemistry I	4
Distribution Requirements	9
	17

FOURTH SEMESTER

Bio 226 Cellular and Molecular Biology	4
Chm 232 Organic Chemistry II	4
Distribution Requirements	9
	17

FIFTH SEMESTER

Bio 327 Medical Microbiology	4
Phy 171 Classical and Modern Physics	4
Distribution Requirement	3
Computer Science Elective	3
	14

SIXTH SEMESTER

Bio 326 Immunology and Immunochemistry	4
Bio 397 Professional Prep. Techniques	2
Chm 244 Instrumental Analysis	3
Mth 150 Elementary Statistics	3
Distribution Requirements	3
	15

SEVENTH AND EIGHTH SEMESTERS

MEDICAL TECHNOLOGY PROFESSIONAL STUDY YEAR

The 30 credits supplied by the twelve months of clinical training are divided into the following courses:

Bio 371 Clinical Microbiology	7
Bio 372 Clinical Chemistry	8
Bio 373 Clinical Hematology/Coagulation	5
Bio 374 Clinical Immunohematology	4
Bio 375 Clinical Immunology/Serology	3
Bio 376 Clinical Seminar	3
	30

The toal minimum number of credits required for a major in Medical Technology leading to the B.S. degree is 124.

IV. Health Information Management

In addition to completing an academic major, students may also take courses which will qualify them for admission into a program in Health Information Management. Health Information professional have expertise in health informatics, clinical medicine, the computer-based patient record, health care database administration, computerized clinical information systems, coding and classification systems, quality and human resource management, and legal, regulatory, and accreditation requirements. As a vital member of the health care team frequently unseen by the patient or the family, the health information manager works closely with all other health professionals to gather and make available the information needed by them to provide high-quality patient care.

As in all allied health fields, there are opportunities for qualified health information managers. There are many employment sites to choose from. They include information management professionals in health care systems (hospitals, nursing homes, managed and ambulatory care settings, hospice and psychiatric facilities); in facilities that utilize clinical information (such as clinical data repositories in research, pharmaceutical, insurance and government agencies); as consultants; and as educators at associate, baccalaureate and graduate degree programs.

Affiliated Program in Health Information Management

Wilkes University offers an affiliated program in Health Information Management with Temple University. The Temple University program is accredited by the American Health Information Management Association. Following satisfactory completion of all course requirements, the student is awarded the Bachelor of Science Degree in Health Information Management. Students must meet Temple's admission and prerequisite core requirements as well as the following program prerequisites,

Prerequisites Course

Quantitative Reasoning:
- College Mathematics
- Statistical Methods and Concepts

Science and Technology:
- Human Anatomy and Physiology (I & II)
- Computer and Information Sciences

The final decision for admission to the program is determined by Temple University. Students should consult with Temple University to be certain that courses taken at Wilkes University satisfy Temple's prerequisite core requirements.

Other Professions

Information on academic programs in related health fields, such as Nursing, Prepharmacy and Pharmacy (Pharm. D. Degree), may be found in the appropriately labeled sections of this Bulletin.

HISTORY

Associate Professor Fields, Chairperson; Professor Emeritus Shao; Assistant Profess… Emeriti Berg, Meyers; Professors Berlatsky, Cox, Rodechko; Associate Profess… Hupchick; Assistant Professor Hepp.

Total minimum number of credits required for a major in History lea… ing to the B.A. degree — 120.

Total minimum number of credits required for a minor — 18.

Wilkes University requires 120 credit hours for the B.A. degree in hi… tory. These include 43 credit hours in distribution courses and 33 credi… hours in history. History 101-102, History 207-208, History 391 and 1… credit hours in history courses numbered 300 and above are required… The 300-level courses must include a minimum of six hours each in… American and non-American topics. It is recommended that students… who major in History take a foreign language, especially those students… who plan to continue their studies at the graduate level.

A variety of career options are open to history majors. Since history… is a synthesis of the life experience that examines past economic, social… political, scientific, and religious conditions, a careful selection of history… courses and elective credit hours will allow students to pursue career… interests in business, government, teaching, communications, law, and… social service. The history major includes a considerable number of elec… tive credit hours that students may use to develop career interests. The… Department also has a 5-year program leading to a B.A. in History and… a Masters in Business Administration, which allows a student to com… plete the MBA in one calendar year plus two summers following gradu… ation with a B.A. degree in history.

A minor in history shall consist of 18 credit hours in courses offered… by the department. These should include the 101-102 sequence and at… least one course in American History.

Students majoring in history may receive a Pennsylvania Teaching… Certificate for teaching elementary school or social studies in grades 7-… 12. Please see the requirements listed in the education section of this… **Bulletin**.

Recommended Course Sequence for a Major in History

First Semester		Second Semester	
Hst 101 Modern World	3	Hst 102 Europe Before 1600	3
Eng 101 Composition or	4	Eng 101 Composition or	4
Distribution Requirement	3	Distribution Requirement	3
Distribution Requirements	6	Distribution Requirements	9
Fr. F 101 Freshman Foundations	3		
	15-16		15-16

Third Semester		Fourth Semester	
Hst 207 American History I	3	Hst 208 American History II	3
Distribution Requirements	6	Distribution Requirements	9
Free Electives	6	Free Elective*	3
	15		15
Fifth Semester		**Sixth Semester**	
Major Electives	6	Major Electives**	6
Free Electives*	9	Free Electives*	9
	15		15
Seventh Semester		**Eighth Semester**	
Major Elective	3	Hst 391 Historiography & Research**	3
Free Electives*	12	Major Elective	3
		Free Electives*	8
	15		14

*Sufficient elective credits are available to allow students to complete a minor in most fields. See Wilkes **Bulletin** for minor requirements.

**Hst 391 in the sixth semester for students planning to student teach in the eighth semester.

Recommended Course Sequence for a Major in History (B.A. Degree) and a Master of Business Administration Degree (Five Year Program)

First Semester		Second Semester	
Eng 101 Composition or	4	Eng 101 Composition or	4
Distribution Requirement	3	Distribution Requirement	3
Hst 101 Modern World	3	Hst 102 Europe Before 1600	3
Distribution Requirements	6	Distribution Requirements	9
FrF 101 Freshman Foundations	3		
	15-16		15-16
Third Semester		**Fourth Semester**	
Hst 207 American History I	3	Hst 208 American History II	3
Acc 101 Financial Accounting**	3	Acc 102 Managerial Accounting**	3
Ec 101 Economics I**	3	Ec 102 Economics II**	3
Distribution Requirement	3	Distribution Requirement	3
Free Elective*	3	Free Elective*	3
	15		15
Fifth Semester		**Sixth Semester**	
Major Electives	6	Major Electives	6
Distribution Requirement	3	BA/Ec 319 Business Statistics**	3
Free Electives*	6	Free Electives*	6
	15		15

Seventh Semester		Eighth Semester	
Major Electives	6	Hst 391 Historiography and Research	3
BA 351 Management of Organizations**	3	Free Electives*	11
Free Electives*	6		
	15		14

*Sufficient elective credits are available to allow students to complete a minor in most fields offering a minor. See Wilkes undergraduate Bulletin for minor requirements.

**Students must earn a minimum grade of 2.0 in the MBA track .

Receive B.A. Degree with a Major in History at end of eighth semester (120 undergraduate credits).

MASTER OF BUSINESS ADMINISTRATION (MBA) DEGREE

(Total 36 Credit Hours)

Summer Session	
MBA 540 Financial Management	3
MBA 552 Organizational Behaviour	3
MBA Electives	6
	12

9th Semester		10th Semester	
MBA 512 Business Research	3	MBA 513 Applied Business Models	3
MBA 520 Marketing Management	3	MBA 532 Management Economics	3
MBA 560 Finance and Managerial Accounting	3	MBA 590 Strategic Management	3
MBA 580 Bus. Issues in a Dynamic Environment	3	MBA Elective	3
	12		12

Receive M.B.A. Degree following the tenth semester (36 graduate credits).

HST 101. THE HISTORICAL FOUNDATIONS OF THE MODERN WORLD **Three credits**
A thematic survey of the forces shaping the modern world. Topics studied include: world religions, science, rationalism, industrial capitalism, liberalism, socialism, global discovery, imperialism, nationalism and totalitarianism.

HST 102. EUROPE BEFORE 1600 **Three credits**
A survey of European history from Ancient times through the Reformation.

HST 105. HUMANS AND MACHINES: TECHNOLOGY AND HISTORY **Three credits**
An examination of technological changes and the manner in which they have affected the modern world, particularly the contemporary United States. Topics considered include society, envrionment, communications media and transportation, the city, the home, and the changing role of women in a mature industrial society.

HST 207-208. AMERICAN HISTORY **Three credits each**
A general survey of American history from colonial times to the present.

HST 316. READINGS IN ANCIENT HISTORY: THE CLASSICAL WORLD **Three credits**
Selected readings on the history of Greece and Rome, with emphasis on primary sources. Conferences with instructor and paper.

HST 321. AMERICAN SOCIAL HISTORY **Three credits**
This course entails a consideration of the development of American society from the colonial period until present time. Attention will especially focus on the rise of industrialism and its impact on society in the late nineteenth and twentieth centuries.

HST 322. AMERICAN INTELLECTUAL HISTORY **Three credits**
This course is a survey of the formative ideas which seem most to have influenced American perceptions of the individual, society, and the drift of human affairs. The focus is upon the late nineteenth and early twentieth centuries because this period is the time when seminal ideas were articulated in America.

HST 324. AMERICAN ECONOMIC HISTORY **Three credits**
A survey of the evolution of the American economy from colonial dependency to modern industrial maturity. Emphasis will be placed upon the development of the United States as an industrial world power since about 1850.

HST 325. AMERICAN ETHNIC HISTORY **Three credits**
A study of the institutions and problems that have characterized various immigrant, black, and Indian communities from colonial times to the present.

HST 328. HISTORY OF THE FOREIGN POLICY OF THE UNITED STATES **Three credits**
A selective treatment of major themes in American foreign policy from the founding of the Republic to the present.

HST 331. COLONIAL AMERICA **Three credits**
Discovery, exploration, and settlement; development of social, political, religious, and intellectual institutions; independence and political reorganization.

HST 332. THE NATIONAL PERIOD **Three credits**
A study of the political and economic history of the United States from 1783 to 1865. Special attention will be given to the evolution of sectional differences and the culmination of these differences in intersectional warfare.

HST 333. THE AGE OF BIG BUSINESS, 1865-1914 **Three credits**
A study of the political and economic history of the United States from 1865 to 1914. Special attention will be paid to the period of congressional dominance and the restoration of presidential power at the turn of the century; the economic, social, and political consequences of the industrial revolution; and the rise of urban America.

HST 334. THE UNITED STATES, 1900-1945 **Three credits**
The emergence of the United States as a world power and the corresponding development of its political, economic, social, and religious institutions.

HST 335. THE UNITED STATES SINCE 1945 **Three credits**
An examination of the political, social, and economic changes in the United States since World War II. Special attention is paid to America's dominant role in the immediate postwar world and how changing conditions over the past forty years have altered this role.

HST 341-342. HISTORY OF GREAT BRITAIN AND THE BRITISH EMPIRE AND COMMONWEALTH **Three credits each**
A study of British history from the Neolithic period to present times. The first semester will cover social, economic, and political developments to 1783, including expansion overseas. The second semester will cover the consequences of the industrial revolution and the evolution of the Empire into the Commonwealth.

HST 345. HISTORY OF EASTERN EUROPE **Three credits**
A study of the cultural, political and intellectual history of the Poles, Czechs, Slovaks, Croats, Slovenes and Hungarians, who occupy the northern tier of Eastern Europe. Special attention is given to the roles of the Habsburg and Russian empires in shaping the historical destinies of these peoples, and to the roots and consequences of the forces of nationalism in the region.
Prerequisite: Hst 101-102.

HST 346. HISTORY OF THE BALKANS **Three credits**
A study of the cultural, political and intellectual history of the Bulgarians, Serbs, Croats, Slovenes, Albanians, Greeks, Romanians and Turks, who occupy the southern, or Balkan, tier of Eastern Europe. Special attention is given to the roles of the Ottoman Turkish, Habsburg and Russian empires in shaping the historical destinies of these peoples, and to the roots and consequences in the region of such forces as Christian-Muslim cultural interrelationships and nationalism.
Prerequisite: Hst 101-102.

HST 348. HISTORY OF RUSSIA **Three credits**
A study of the political, social, and intellectual history of Russia. Emphasis is placed upon the emergence of Russia as a major power after 1700.

HST 352. THE RENAISSANCE AND REFORMATION **Three credits**
Within the political and economic framework of the period, study will be made of the culture of the Renaissance, the religious reforms and conflicts resulting from the crisis in the sixteenth century.

HST 353. AGE OF ABSOLUTISM **Three credits**
The political, social, economic, intellectual, and cultural development of Europe and dependencies from 1600 to about 1750.

HST 354. THE ERA OF THE FRENCH REVOLUTION AND NAPOLEON **Three credits**
A study of the structure of the Ancien Regime and an examination of the causes, events, and consequences of the French Revolution culminating in the Napoleonic Empire.

HST 355. EUROPE IN THE NINETEENTH CENTURY **Three credits**
A study of the political, social, and cultural development of Europe from the Congress of Vienna to World War I.

HST 356. EUROPE IN THE TWENTIETH CENTURY **Three credits**
Against a background of the internal and international developments of the leading powers, students will study the origins and results of the two World Wars.

HST 361-362. HISTORY OF THE FAR EAST **Three credits each**
A study of the history of the civilizations developed in India, China, and Japan with emphasis on their interrelations and distinctive characteristics and on their trnasformation in response to the penetration of western civilization from the sixteenth century onward. Some attention will be given to similar developments and changes among the countries of Southeast Asia. Fall semester: to c. 1760. Spring semester: 1760 to present.

HST 363. HISTORY OF MODERN CHINA **Three credits**
A study of Chinese history since 1840 with special emphasis on social, political, economic, and intellectual developments.

HST 367. HISTORY OF MODERN INDIA **Three credits**
A study of the political, social, and economic development of the Indian sub-continent since 1500.

HST 376. WORLD WAR II **Three credits**
Consideration of the causes of the war, military strategy and tactics, diplomatic interests of the participants, and resulting cold war problems.

Three credits

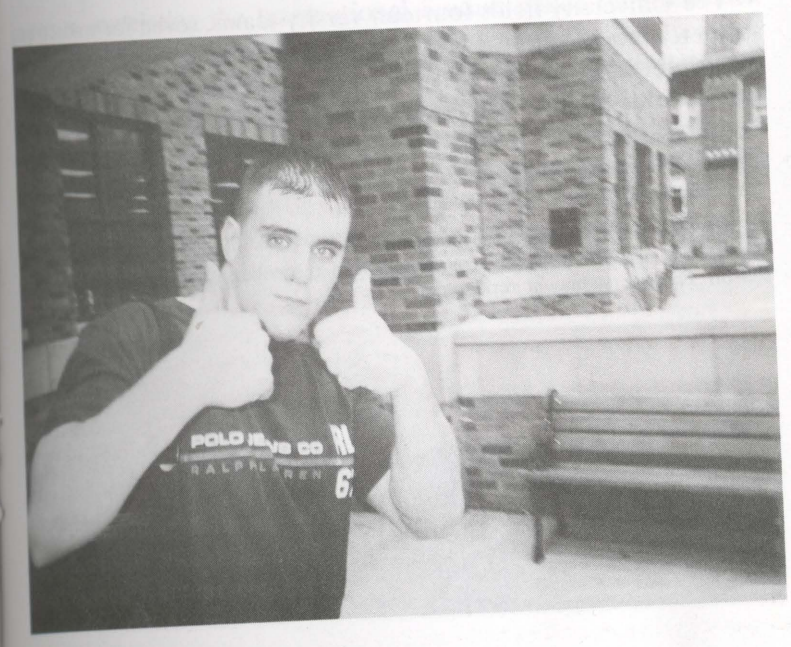
HST 391. HISTORIOGRAPHY AND RESEARCH **Three credits**
An introduction to historical research and writing. The writings and ideas of major historians of the past and present are examined. The student is exposed to research methods, particularly in the area of primary sources, and to the construction and criticism of the historical monograph.
Prerequisite: Approval of instructor.

HST 395-396. INDEPENDENT RESEARCH **One to three credits**
Independent study and research for advanced students in the field of the major under the direction of a staff member. A research paper at a level significantly beyond a term paper is required.
Prerequisite: Approval of department chairperson.

HST 397. SEMINAR **(Maximum of three credits per student) One to three credits**
Presentations and discussions of selected topics.
Prerequisite: Approval of instructor is required.

HST 399. COOPERATIVE EDUCATION **One to six credits**
Professional cooperative education placement in a private/public organization related to the student's academic objectives and career goals. In addition to their work experience, students are required to submit weekly reaction papers and an academic project to a Faculty Coordinator in the student's discipline. (See page 52 in Bulletin for placement procedures.)
Prerequisites: Sophomore standing, 2.0 cumulative average, consent of academic advisor, approval of placement by department chairperson.

HST 198/298/398. TOPICS **Variable credit**
Special topics in history. This course will be offered from time to time when interest and demand justify it.



INDIVIDUALIZED STUDIES

This program is designed for those capable and motivated students who wish to undertake a course of study that cannot be provided for under any of the normal B.A., B.S. degree programs. The student will be responsible for generating a coherent proposal for a program of studies. This proposal must be selected by the student, approved by an advisor, and then by the Individualized Studies Committee. The program of studies may include courses offered by all departments at Wilkes University. In addition, credit may be assigned for appropriate off-campus study, work, and/or travel. Credits may be granted for knowledge or experience obtained prior to enrollment, with approval of the appropriate department and the Individualized Studies Committee.

Degree Requirements

The basic requirement for the degree in Individualized Studies is the accumulation of 120 credits. Although there are no specific course requirements, the spirit of the Wilkes University General Education Requirements is to be respected.

INTERCOLLEGIATE ATHLETICS

Adelene Malatesta, Athletic Director.

The University fields fourteen varsity teams, seven for women and seven for men. Consult page 32 of this Bulletin for a complete listing of these intercollegiate varsity sports as well as a description of conference and national athletic affiliations. Consult the roster of coaches on page 312 of this Bulletin to identify the appropriate coach to contact for information on a particular sport.

IA 101. INTERCOLLEGIATE ATHLETICS **No credit**
This course is limited to students participating in intercollegiate athletics during their sport season. This course may be repeated.

INTERNATIONAL STUDIES

See Dr. Baldino for International Studies advising.

Total minimum number of credits required for a major in International Studies leading to the B.A. degree — 120.

The interdisciplinary major in International Studies (I.S.) provides an excellent liberal arts preparation for a variety of careers and professions. The major is structured to permit concentration in fields leading to specific careers in business, government, international organizations, the military, teaching, or any technical or arts field. It is also structured to permit a period of study abroad with easy transfer of credits to the major.

The total number of hours required for graduation with an International Studies major is 120, of which 43 are the General Education requirements and 33 are major requirements. For the International Studies major, the following courses at the introductory level are required, some of which can be counted in the Distribution of Studies requirements: History 101-102; Economics 101-102; Political Science 141; Anthropology 101; and Foreign Language at 204 competence. Students are also required to take 6 hours of advanced Foreign Language beyond the 204 level. In addition, students must complete 2 courses from among Anthropology 102, Political Science 251, and Economics 301, plus either Economics 310 or 340.

Before completing the International Studies major requirements, students should select the area of concentration in which 12 more credits are required. Options for this concentration are one of several culture areas (Asia, East European and Russian Studies, Third World, or Western Europe), or International Economics, or International Politics, or Language. Specific courses contributing to one of these concentrations and the I.S. requirements will be worked out with the International Studies Advisor and may include courses taken while studying abroad at another institution. Major electives in the areas of concentration are listed below.

Culture Areas:

Asia
- Anthropology 102, 213, 321, and/or 352
- Economics 301, 310, 312, and/or 340
- History 361, 362, 363, and/or 367
- Political Science 253, 342

East European and Russian Studies
- Four courses (12 credits) from those listed under the East European and Russian Studies minor

Third World
- Anthropology 102, 213, 214, 321, 352, and/or 353
- Economics 310, 312, and/or 340
- History 363, 367
- Political Science 253, 342
- Spanish 209 and/or 305

Western Europe
- Economics 301, 310, and/or 311
- French 208, 298, and/or 302, 303, or 304
- German 208, 298, and/or 302, 303, or 304
- History 342, 356, and/or 376
- Political Science 251, 342, 351
- Spanish 208, 298, and/or 302, 303, 304, or 305

(**NOTE:** No more than six hours may be taken in any one discipline listed under individual area concentrations.)

International Economics:
Economics 301, 310, 311, 312, and/or 340

International Politics:
History 328, 348, and/or 376
Political Science 251, 253, 342, and/or 351
(**NOTE:** No more than 6 hours in History may be taken in this concentration.)

Modern Foreign Language:
12 hours of advanced foreign language courses beyond International Studies core

Except in unusual circumstances, it is expected that International Studies majors will spend a summer, semester, or year abroad in a suitable program of academic study arranged through the Wilkes Study Abroad Program Coordinator. Credits earned abroad may be applied towards satisfying International Studies major requirements.

Students in the International Studies major have 37-41 credit hours of free electives. Students are urged to take additional language credits to constitute a language minor or major. It is also possible to use electives to constitute a second major in a discipline such as Economics, History, or Political Science.

Recommended Course Sequence for International Studies Major

First Semester		Second Semester	
Eng 101 Composition or	4	Eng 101 Composition or	4
Distribution Requirement	3	Distribution Requirement	3
Ec 101 Principles of Economics I	3	Hst 102 Europe Before 1600	3
Ant 101 Intro. to Anthropology	3	Ec 102 Principles of Economics II	3
Foreign Language*	3	PS 141 Introduction to International Politics	3
FrF 101 Freshman Foundations	3	Foreign Language*	3
	15-16		15-16
Third Semester		**Fourth Semester**	
Hst 101 Modern World	3	Ec 310 Economic Development and/or	
Ant 102 Cultural Anthropology and/or		Ec 340 International Trade	3
Ec 301 Comparative		Foreign Language*	3
Economic Systems*	3-6	Distribution Requirements	6
Foreign Language*	3	Major Elective	3
Distribution Requirement	3		15
	12-15		
Fifth Semester		**Sixth Semester**	
Study Abroad**			15
	15		
Seventh Semester		**Eighth Semester**	
Foreign Language	3	Foreign Language	3
Major Electives	6	Major Elective	3
Distribution Requirements	6	Distribution Requirement	3
		Senior Seminar*	3
		Free Elective	3
	15		15

*These courses are required for all International Studies Majors.

**Students may elect to spend their junior year on campus. Courses will be selected in consultation with the International Studies Advisor.

MATERIALS ENGINEERING

Associate Professor Maxwell, Chairperson; Professor Orehotsky; Associate Professor Ghorieshi, Kalim, Razavi; Assistant Professor Janecek; Technical Support Staff: Lennox, Sickler, Wilk.

Introductory Materials Engineering courses are provided in support of majors in various science and engineering programs. Select upper-division Materials Engineering courses are offered from time to time as interest and need dictate. Students may find these courses helpful as electives in any of the programs offered by the University. Students who are planning to transfer to institutions which offer a major in Materials Engineering or any number of closely related disciplines will find these upper-division course offerings to be especially helpful. For information on courses, course availability, or using Materials Engineering course work to strengthen your major or to enhance your transfer prospects, contact the Department of Engineering and Physics.

MAE 200. INTRODUCTION TO MATERIALS SCIENCE AND ENGINEERING **Three credits**
Application of materials properties to engineering design. Introduction to atomic arrangements, crystal structures, imperfection, phase diagrams, and structure-property relations. Fundamentals of iron, steel, and non-ferrous materials. The behavior of materials in environmental conditions. Three hours lecture a week. (same as Phy 260)
Corequisites: Phy 201 or Phy 171.

MAE 311. CERAMICS **Three credits**
Structure and properties of ceramic materials and glasses. Structural imperfections, defect equilibria, atom movement, interfaces, ceramic phase diagrams, and microstructure development. Design and processing of glass-based and ceramic-based products. Three hours lecture a week.
Prerequisites: MAE 200, ME 232 and 324.
Offered in the fall semester of even years.

MAE 312. POLYMERS AND COMPOSITES **Three credits**
Introduction to high polymers as an engineering material. The mechanical, electrical, and optical properties of polymers and polymer applications. Two hours lecture and two hours laboratory a week. Fee: $35.
Prerequisites: MAE 200 and Chm 231.
Offered in the spring semester of even years.

MAE 313. PHYSICAL BEHAVIOR OF METALS **Three credits**
Properties of pure metals. Constitution, structure, and properties of alloys. Mechanical and thermal treatments of metals and alloys. Influence of microstructures on properties of metals and alloys. Interaction between properties and engineering design. Three hours lecture a week.
Prerequisite: MAE 200.
Offered in fall semester of odd years.

MAE 327. THIN FILM PROCESSING **Three credits**
Nucleation and growth theory: crystalline, amorphous, epitaxial growth morphology. Deposition techniques like DC, RF, magnetron sputtering, ion beam sputtering, evaporation, chemical vapor deposition, physical vapor deposition. Structure, properties and applications for specific thin film processing techniques. Two hours lecture and two hours laboratory a week. Fee: $40.
Prerequisites: MAE 200, Phy 203.

MAE 332. MECHANICAL BEHAVIOR OF MATERIALS **Three credits**
The mechanical properties of materials including: elasticity, anelasticity, viscoelasticity, dislocation theory, fracture, fatigue and deformation of single crystal and polycrystalline materials. Testing and deformation processing of materials. Mechanical properties and engineering design parameters. Two hours lecture and two hours laboratory a week. Fee: $40.
Prerequisite: MAE 200.
Offered in the spring semester of even years.

MAE 395-396. INDEPENDENT RESEARCH **One to three credits each**
Independent study and research for advanced students under the direction of a staff member. A research paper at a level significantly beyond a term paper is required.
Prerequisite: Approval of department chairperson is required.

MAE 298/398. TOPICS IN MATERIALS ENGINEERING **Variable credit**
Selected topics in the field of materials engineering. These may include one or more of the following: X-ray diffraction, structure analysis, phase equilibria, metallurgy, ceramics, physical, mechanical, or electrical properties of materials. May be repeated for credit. Three hours lecture a week.
Prerequisite: Junior or senior engineering standing.

MATHEMATICS

Professor Tillman, Chairperson; Professor Emeritus Earl; Associate Professor Emerita DeCosmo; Professors Berard, Koch, Merrill, Wong; Associate Professors Harrison, Lee Sullivan; Assistant Professors Bracken, Kapolka.

Total minimum number of credits required for a major in Mathematics leading to the B.A. degree — 128.

Total minimum number of credits required for a major in Mathematics leading to the B.S. degree — 130.

Total minimum number of credits required for a minor in Mathematics — 21.

Total minimum number of credits required for a minor in Statistics — 21.

Programs of study leading to the B.A. or B.S. degree with a **major or minor in mathematics along with a minor in statistics** are offered by the Department of Mathematics and Computer Science. Also available are the M.S. degree in Mathematics and the M.S. degree in Education with a concentration in mathematics. Graduate programs in Mathematics are described in a separate graduate bulletin.

The Department of Mathematics and Computer Science also offers B.A. and B.S. programs in Computer Science and a B.S. program in Computer Information Systems. (See separate listings in this bulletin.)

Major in Mathematics

The Department offers two tracks through which the baccalaureate degree requirements in mathematics may be met: the standard mathematics track and the teacher certification track. The teacher certification track provides preparation for secondary school teaching. The program in standard mathematics prepares students for graduate study and research in mathematics, or for careers in industry or government, depending on the upper-level electives chosen in consultation with the faculty advisor. The standard track, when combined with an appropriate second major or minor, can also provide an excellent foundation for professions in business and management; economics; law; medicine; actuarial, computing, engineering, environmental and physical sciences. Both tracks share a common core of study in modern algebra, analysis, probability, statistics and computer programming. Through participation in Senior Seminar, students synthesize the mathematical knowledge they have acquired in their course and apply that knowledge to investigate a topic of special interest.

In both tracks a student may opt for either a Bachelor of Arts or Bachelor of Science degree. The B.A. degree is intended for those who wish to elect more humanities and social science courses, whereas the B.S. degree requires greater concentration in the natural and physical sciences. Required courses for each of these various options are indicated in the semester-by-semester "Recommended Course Sequence" given in the next several pages.

With the approval of the department, a student may earn credits in a maximum of five mathematics or computer science courses by passing special challenge examinations in them. Interested students may obtain further details and application forms from the department chairperson.

Minor in Mathematics

	credit hours
Required Courses:	
Mth 111-112 and Mth 202	12
Electives:	
One of the following courses:	
Mth 211, 212, 214, 231	3-4
Two of the following courses:	
Mth 311, 331, 343, 351, 361, 414	6-8
Minimum Total Required	21-24

Minor in Statistics

In a wide range of sciences, both natural and social, statistical analysis is of major importance both in conducting research and in understanding its findings. Likewise, in governmental planning and industrial management, statistical methods are a necessary tool and constitute a major application of mathematics and computing. The minor in statistics is intended to support work in a major either in another mathematical science or in a number of other disciplines.

	credit hours
Required Courses:	
Mth 105-106 or Mth 111-112	8
CS 125	4
Mth 351-352; and Mth 354	9
Minimum Total Required	21

Recommended Course Sequence for Standard Mathematics Tracks

First Semester

	B.A.	B.S.
Mth 111 Calculus I	4	4
Eng 101 Composition or	4	4
Distribution Requirement	3	3
CS 125 Computer Science I	4	4
Distribution Requirements	3	3
FrF 101 Freshman Foundations	3	3
	17-18	17-18

Second Semester

	B.A.	B.S.
Mth 112 Calculus II	4	4
Eng 101 Composition or	4	4
Distribution Requirement	3	3
Distribution Requirements	9	6
Phy 201 General Physics I	—	4
	16-17	17-18

Third Semester

	B.A.	B.S.
Mth 202 Set Theory and Logic	4	4
Mth 211 Intro. to Ordinary Differential Equations	4	4
Science Elective[1]	3	4
Distribution Requirements	3	6
Free Elective	3	0
	17	18

Fourth Semester

	B.A.	B.S.
Mth 212 Multivariable Calculus	4	4
Mth 214 Linear Algebra	3	3
Science Elective[1]	3	3
Free Electives	6	6
	16	16

Fifth Semester

	B.A.	B.S.
Mth 311 Functions of a Real Variable	4	4
Mth 351 Probability and Mathematical Statistics I	3	3
Free Electives	9	9
	16	16

Sixth Semester

	B.A.	B.S.
Mth/CS Elective[2]	6	6
Free Electives	9	9
	15	15

Seventh Semester

	B.A.	B.S.
Mth 391 Senior Seminar	1	1
Mth 331 Intro. to Abstract Algebra I	4	4
Mth/CS Electives[2]	—	3
Free Electives	12	9
	17	17

Eighth Semester

	B.A.	B.S.
Mth 392 Senior Seminar	2	2
Mth/CS Elective[2]	3	3
Free Electives	9	9
	14	14

[1]See below for the Department's requirements regarding science electives.

[2]See below for the Department's requirements regarding Mth/CS electives.

Recommended Course Sequence for Teacher Certification Mathematics Track

First Semester

	B.A.	B.S.
Mth 111 Calculus I	4	4
Eng 101 Composition or	4	4
Distribution Requirement	3	3
CS 125 Computer Science I	4	4
Distribution Requirements	3	3
FrF 101 Freshman Foundations	3	3
	17-18	17-18

Second Semester

	B.A.	B.S.
Mth 112 Calculus II	4	4
Eng 101 Composition or	4	4
Distribution Requirement	3	3
Psy 101 General Psychology	3	3
Distribution Requirements	6	3
Phy 201 General Physics I	—	4
	16-17	17-18

Third Semester

	B.A.	B.S.
Mth 202 Set Theory and Logic	4	4
Ed 190 Effective Teaching	3	3
Science Elective[1]	3	4
Distribution Requirements	6	6
	16	17

Fourth Semester

	B.A.	B.S.
Mth 212 Multivariable Calculus	4	4
Mth 214 Linear Algebra	3	3
Ed 200 Educational Psychology	3	3
Science Elective[1]	3	3
Distribution Requirement	—	3
Free Elective	3	—
	16	16

Fifth Semester

	B.A.	B.S.
Mth 311** Functions of a Real Variable	4	4
Mth 343* Intro. to Geometry	3	3
Free Electives	4	–
Ed 210 Multicultural Education	2	2
	16	15

Sixth Semester

	B.A.	B.S.
Mth/CS Electives[2]	3	9
Ed 380 Content Area Reading	2	2
Free Electives	9	4
	14	15

Seventh Semester

	B.A.	B.S.
Mth 303* The Teaching of Mathematics in Secondary School	4	4
Mth 331** Intro to Abstract Algebra I	4	4
Mth 351 Probability and Mathematical Statistics I	3	3
Mth 391 Senior Seminar	1	1
Free Electives	6	6
	18	18

Eighth Semester

	B.A.	B.S.
Ed 390A Intern Teaching	15	15
	15	15

[1]See below for the Department's requirements regarding science electives.

[2]See below for the Department's requirements regarding Mth/CS electives.

*Mth 303 and Mth 343 are offered in alternate years; one of them should be taken in the junior year, the other in the senior year.

**Mth 311 and Mth 331 are offered in alternate years; one of them should be taken in the junior year, the other in the senior year.

Science Electives for Mathematics Majors:

B.A. candidates: See General Education Requirements.

B.S. candidates: Physics 201 and a two-semester sequence in Biology, Chemistry, Earth and Environmental Sciences, or Physics

or

Physics 201-202 and at least three credits in Biology, Chemistry, Earth and Environmental Sciences, Physics, Philosophy 250 or Philosophy 322, EE 241 or EE 342 or any Engineering course not cross-listed in Computer Science. (All eleven credits must be in courses numbered above 200 except that Bio 121, 122, Chm 115, 116, or 118 are also acceptable in this requirement.)

Mathematics/Computer Science Electives for Mathematics Majors:

Standard Mathematics Track:

Any two Mth courses numbered above 300*; and for

B.A. candidates: Mth 231, CS 227, or any Mth or CS course numbered above 300*

B.S. candidates: Two of the following: Mth 231, CS 227, or any Mth or CS course numbered above 300*

Teacher Certification Mathematics Track:

Any one Mth course numbered above 300*; and for

B.S. candidates: Two of the following courses: Mth 211, Mth 231, CS 227, or any Mth or CS course numbered above 300*

*Mth 303 is not counted in this requirement.

Summary of Minimum Credit Distribution:

General and Applied Mathematics Tracks	B.A.	B.S.
Mth 111, 112, 202, 211, 212, 214, 311, 331, 351, 391, and 392	37	37
Mth/CS Electives	9	12
CS 125	4	4
Phy 201	—	4
Science Electives	6	7
Eng 101	4	4
Distribution Requirements	24	24
Free Electives	44	38
Total	128	130

Teacher Certification Mathematics Track	B.A.	B.S.
Mth 111, 112, 202, 212, 214, 303, 311, 331, 343, 351, and 391	38	38
Mth/CS Electives	3	9
CS 125	4	4
Phy 201	—	4
Science Electives	6	7
Eng 101	4	4
Ed 190, 200, 210, 380 and 390A	25	25
Proficiency Examination	—	—
Psy 101	3	3
Distribution Requirements	21	21
Free Electives	24	15
Total	128	130

MTH 84. COLLEGE PREPARATORY MATHEMATICS **Three credits***

Designed for students who need to review basic mathematics skills before taking Mth 94, 101 or 103. Topics include a review of arithmetic, introductory algebra, and quantitative reasoning. Only P (passed) or F (failed) grades are given.

*Credits in this course will not be counted toward the graduation requirement in any degree program at Wilkes.

Offered every fall and summer.

MTH 94. COLLEGE ALGEBRA **Three credits**

Designed for students who need to review basic algebra before taking Mth 100 or Mth 150. Topics include polynomials, solution of equations and inequalities, exponents and radicals, graphing, and solution of systems of equations.

Offered every fall and summer.

MTH 100. PRECALCULUS **Three credits**

A course in advanced algebra and trigonometry designed to prepare students for calculus. Topics include functions, inverse functions, logarithms, exponentials, and trigonometry.

Prerequisite: Mth 94 or two years of secondary school mathematics in algebra and geometry.

Offered every fall, spring, and summer.

MTH 101. SOLVING PROBLEMS USING MATHEMATICS **Three credits**

An introduction to the methodology of mathematical modeling as a technique in working towards the solution to real world problems. In an effort for the nonspecialist to gain an appreciation of the use of mathematics in our society, topics are selected from among the following: basic voting theory, fair division schemes, routing problems, population growth, and descriptive statistics and probability.

Offered every fall, spring, and summer.

MTH 103. MATHEMATICS FOR ELEMENTARY SCHOOL TEACHERS I **Three credits**

A study of the theory of arithmetic, structure of the number systems, and other topics relevant to the teaching of mathematics in elementary schools.

Prerequisite: Admission to the Teacher Education Program or consent of instructor.

Offered every fall and summer.

MTH 104. MATHEMATICS FOR ELEMENTARY SCHOOL TEACHERS II **Three credits**

A continuation of Mth 103. Topics include elementary probability, statistics, and geometry.

Prerequisite: Mth 103.

Offered every spring and summer.

MTH 105. CALCULUS FOR LIFE, MANAGERIAL, AND SOCIAL SCIENCES I **Four credits**
Topics include: algebra review, limits, differentiation, and integration. Not open to students with credits in Mth 111.
Prerequisites: Mth 100 or at least three years of secondary school mathematics, including Geometry and Algebra II.
Offered every fall, spring, and summer.

MTH 106. CALCULUS FOR LIFE, MANAGERIAL, AND SOCIAL SCIENCES II **Four credits**
A continuation of Mth 105. Topics include: partial differentiation, differential equations, and probability. Not open to students with credits in Mth 112.
Prerequisite: Mth 105.
Offered every spring and summer.

MTH 107. BUSINESS MATHEMATICS **Three credits**
Designed for business and accounting majors. Emphasis on mathematical modeling in the business environment. Topics include algebraic functions; mathematics of finance; systems of linear equations; linear programming; average and instantaneous rates of change.
Prerequisite: Mth 94 or two years of secondary school mathematics in algebra and geometry.

MTH 111. CALCULUS I **Four credits**
Calculus of functions of one variable. Topics include: functions, limits and continuity, derivatives and their applications, and definite integrals. Not open to students with credits in Mth 105.
Prerequisites: Mth 100 or at least three years of secondary school mathematics including Geometry, Algebra II, and topics in Trigonometry.
Offered every fall, spring, and summer.

MTH 112. CALCULUS II **Four credits**
A continuation of Mth 111. Topics include inverse functions, techniques of integration, applications of the integral, and infinite sequences and series. Not open to students with credit in Mth 106.
Prerequisite: Mth 111.
Offered every fall, spring, and summer.

MTH 150. ELEMENTARY STATISTICS **Three credits**
Elementary statistical inference, with an emphasis on ideas, techniques, and applications in the life, physical, and social sciences. Topics include descriptive statistics, confidence intervals, hypothesis testing, contingency tables, multiple regression, and analysis of variance. Not open to mathematics majors or students with credit in Mth 351.
Prerequisite: Mth 94 or two years of high school algebra.
Offered every fall, spring, and summer.

MTH 202. SET THEORY AND LOGIC **Four credits**
Provides a foundation in logic and set theory for upper-level courses in mathematics and computer science. Topics include the logic and language of proofs, the axiomatic method, sets, relations, and functions.
Prerequisite: Mth 106 or Mth 112 or consent of instructor.
Offered every fall.

MTH 211. INTRODUCTION TO ORDINARY DIFFERENTIAL EQUATIONS **Four credits**
First-order and linear higher-order differential equations; matrices, determinants, and systems of differential equations; numerical and power series methods of solution; the Laplace transform.
Prerequisite: Mth 112.
Offered every fall and summer.

MTH 212. MULTIVARIABLE CALCULUS **Four credits**
Differential and integral calculus of real and vector valued functions. Topics include continuity, partial differentiation, implicit functions, Taylor's Theorem, gradient, curl, line, surface and multiple integrals, inverse functions, theorems of Green and Stokes.
Prerequisite: Mth 112.
Offered every spring and summer.

MTH 214. LINEAR ALGEBRA **Three credits**
An axiomatic approach to vector spaces, linear transformations, systems of linear equations, eigenvalues and eigenvectors.
Prerequisite: Mth 112 or consent of instructor.
Offered in spring of even years.

MTH 231. DISCRETE MATHEMATICS **Three credits**
Designed to provide background in discrete mathematics for upper-level courses in computer science. Topics include: basic counting principles; introduction to recurrence relations and their application in analyzing algorithms; basic properties of graphs, trees, and networks; AND, OR, and NOT gates and designing combinatorial circuits, finite-state automata, transducers and Turing machines
Prerequisites: Mth 202 and CS 125
Offered every spring.

MTH 303. THE TEACHING OF MATHEMATICS IN SECONDARY SCHOOLS **Four credits**
This course deals with educational perspectives which pertain to the teaching of mathematics at the secondary level (grades 7 through 12). Topics of discussion include recommendations by the National Council of Teachers of Mathematics (NCTM) regarding instructional methods, assessment techniques, and curricular issues. 30 hours practicum. (same as ED 303G)
Prerequisites: Junior standing in mathematics and admission to the Teacher Education Program.
Offered in the fall semester of odd years.

MTH 311. REAL ANALYSIS **Four credits**
A rigorous study of the topology of the real line, limits, continuity, differentiation, integration, and series of functions.
Prerequisite: Mth 202 or consent of instructor.
Offered in the fall semester of even years.

MTH 331. ABSTRACT ALGEBRA I **Four credits**
A rigorous study of elementary number theory, groups, rings, and fields.
Prerequisite: Mth 202 or consent of instructor.
Offered in the fall semester of odd years.

MTH 343. GEOMETRY **Three credits**
A study of selected topics from Euclidean and non-Euclidean geometry.
Prerequisite: Mth 202 or consent of instructor.
Offered in the fall semester of even years.

MTH 351. PROBABILITY AND MATHEMATICAL STATISTICS I **Three credits**
Random variables, probability distributions, expectation and limit theorems, introduction to confidence intervals and hypothesis testing.
Prerequisite: Mth 106 or 112 or consent of instructor.
Offered every fall.

MTH 352. PROBABILITY AND MATHEMATICAL STATISTICS II **Three credits**
Hypothesis testing, non-parametric methods, multivariate distributions, introduction to linear models.
Prerequisite: Mth 351 or consent of instructor.
Offered in the spring semester of odd years.

MTH 354. STATISTICAL METHODOLOGY **Three credits**
This course emphasizes applications, using statistical computer packages (such as BMDP, SPSS, and JMP) and real data sets from a variety of fields. Topics include estimation and testing; stepwise regression; analysis of variance and covariance; design of experiments; contingency tables; and multivariate techniques, including logistic regression.
Prerequisite: Mth 150 or Mth 351 or consent of instructor.
Offered in the spring semester of even years.

MTH 360. LINEAR PROGRAMMING **Three credits**
Graphical linear programming, simplex algorithm and sensitivity analysis. Special L.P. models such as the transportation problem, transshipment problem, and assignment problem. May include integer programming, branch and bound algorithm, geometric programming, goal programming. (same as CS 360)
Prerequisites: Mth 106 or Mth 112; CS 123 or CS 125.
Offered in the fall semester of even years.

MTH 361. APPLIED MATHEMATICS I **Three credits**
Intended for physical science and engineering students. Topics include inner product spaces, operator algebra, eigenvalue problems, Sturm-Liouville theory, Fourier series and partial differential equations. (same as PHY 301)
Prerequisites: Mth 211 and 212.
Offered in the fall semester of odd years.

MTH 362. APPLIED MATHEMATICS II **Three credits**
Intended for physical science and engineering students. Topics include systems of linear differential equations, nonlinear differential equations; qualitative, numerical, and finite difference methods; theorems of Green and Stokes and the Divergence Theorem.
Prerequisites: Mth 211 and 212. (same as PHY 302)
Offered in the spring semester of even years.

MTH 363. OPERATIONS RESEARCH **Three credits**
A survey of operations research topics such as decision analysis, inventory models, queueing models, dynamic programming, network models, heuristic models, and non-linear programming. (same as CS 363)
Prerequisites: CS 123 or CS 125; Mth 106 or Mth 112.
Offered in spring of odd years.

MTH 391-392. SENIOR SEMINAR **One credit, two credits**
Presentations and discussions of selected topics in mathematics, conducted by students and faculty.
Prerequisite: Senior standing in mathematics or approval of department chairperson.
Offered every fall and spring.

MTH 395-396. INDEPENDENT STUDY IN MATHEMATICS **Variable credit**
Individual study in a chosen area of mathematics under the supervision of a faculty member. May be repeated for credit.
Prerequisite: Approval of department chairperson.

MTH 397. SEMINAR **One to three credits**
Presentations and discussions of selected topics.
Prerequisite: Approval of department chairperson.

MTH 399. COOPERATIVE EDUCATION **One to six credits**
Professional cooperative education placement in a private/public organization related to the student's academic objectives and career goals. In addition to their work experience, students are required to submit weekly reaction papers and an academic project to a Faculty Coordinator in the student's discipline. (See page 52 in Bulletin for placement procedures.)
Prerequisites: Sophomore standing, 2.0 cumulative average, consent of academic advisor, approval of placement by department chairperson.

MTH 413. FUNCTIONS OF SEVERAL VARIABLES **Three credits**
A modern treatment of calculus of functions of several real variables. Topics include: Euclidean spaces, differentiation, integration on manifolds leading to the classical theorems of Green and Stokes.
Prerequisites: Mth 214 and 311.
Offered when demand warrants.

MTH 414. COMPLEX ANALYSIS **Three credits**
Complex functions, limit, continuity, analytic functions, power series, contour integration, Laurent expansion, singularities and residues.
Prerequisite: Mth 212 or consent of instructor.
Offered when demand warrants.

MTH 432. ABSTRACT ALGEBRA II **Three credits**
A continuation of Mth 331. Polynomial rings, ideals, field extensions, and Galois Theory.
Prerequisite: Mth 331.
Offered when demand warrants.

MTH 442. TOPOLOGY **Three credits**
Metric spaces, topological spaces, countability and separation axioms, compactness, connectedness, product spaces.
Prerequisite: Mth 311 or consent of instructor.
Offered when demand warrants.

MTH 464. NUMERICAL ANALYSIS **Three credits**
Numerical methods of differentiation, integration, solution of equations and of differential equations with emphasis on problems that lend themselves to solution using computers (same as CS 364).
Prerequisites: Mth 112, and CS 123 or CS 125, or consent of instructor.
Offered in the spring semester of odd years.

MTH 470. READING COURSE **One to three credits**
Advanced study of special topics under the supervision of a faculty member. Designed for students who have completed a substantial amount of course work in mathematics. May be repeated for credit.
Prerequisites: Senior standing and approval of department chairperson.

MTH 198/298/398/498. TOPICS IN MATHEMATICS **Variable credits**
A study of topics of special interest. It may be a continuation and intensive study of topics begun in the upper-level courses in analysis, topology, algebra, and probability. May be repeated for credit.
Prerequisite: Varies with topics studied.

Additional 500-level graduate courses in mathematics are open to qualified mathematics majors. See the graduate bulletin for complete listing.

MECHANICAL ENGINEERING

Associate Professor Maxwell, Chairperson; Professor Orehotski; Associate Professors Ghorieshi, Kalim, Razavi; Assistant Professor Janecek; Technical Support Staff: Lennox, Sickler, Wilk.

Total minimum number of credits required for a major in Mechanical Engineering leading to the B.S. degree — 130.

Mission Statement

Engineering is the profession of creative problem solving. The Wilkes engineering programs provide the student with the knowledge and the investigative skills, both theoretical and experimental, to responsibly address professional and societal needs through modern curricula. Hands-on experience and a personalized education environment.

The mission of the Mechanical Engineering program is to enhance the ability of the student to integrate knowledge and apply it effectively and responsibly in solving problems through a dynamic curriculum characterized by its fast response to new developments, opportunities for design and industrial experience, availability of modern laboratories, the use of computer simulations, and team building. Thermal sciences, fluid and solid mechanics, and manufacturing are the technological cornerstones of this program.

The Engineering and Physics Department offers a four-year degree program in Mechanical Engineering. This program provides strong engineering and scientific experience with advanced techniques heavily integrated into the curriculum. Students intending to major in engineering are encouraged to be well prepared in the sciences and mathematics. The first three semesters of course-work are common for all engineering programs.

The four-year program of Mechanical Engineering leading to the Bachelor of Science degree offers various concentrations. The student can choose to specialize within this program in feedback and controls, manufacturing, solid mechanics, or thermal sciences.

Cooperative education provides applied professional training to Wilkes engineering students that is often valued by prospective employers. The electrical engineering curriculum includes an optional six-credit cooperative education assignment in the sixth semester. The assignment may continue into the summer preceding the seventh semester. Since all students may not be willing or able to elect such a cooperative educational assignment as an option, the student may complete six credits of technical electives.

The student chapters of the Society of Women Engineers (S.W.E.), the Pennsylvania Society of Professional Engineers (P.S.P.E.) and the American Society of Mechanical Engineers (A.S.M.E.), in conjunction with the Department, periodically offer seminars on subjects of a timely nature. Attending these seminars and taking the E.I.T. (Engineering-In-Training) exam are mandatory for the completion of the degree. Students are also highly encouraged to participate in the activities of other on-campus organizations such as the Engineering Club.

In 1979, the Technology Transfer Program (TTP) was initiated to enable the community to draw upon the department's technical expertise and advanced facilities in Northeastern Pennsylvania. This effort is directed to assist in the development and expansion of industries, and the establishment of high technology facilities in Northeastern Pennsylvania.

Honors Programs in Engineering

Upon the recommendation and approval of the engineering faculty, honor students in Engineering will be recognized upon completion of the following requirements: achieving an overall grade point average of 3.25 or better; receiving grades of 3.00 or better in all engineering courses of his or her discipline; pursuing independent research or special projects in engineering; and presenting the results at meetings, conferences, or through publication of a paper. The distinction "Honors in Engineering" will be recorded on the student's transcript upon graduation.

Recommended Course Sequence for a B.S. Degree in Mechanical Engineering

First Semester	
Chm 115 Elements and Compounds	4
Mth 111 Calculus I	4
FrF 101 Freshman Foundations	3
ME 180 CADD Lab	1
Eng 101 Composition	4
	16

Second Semester	
MAE 200 Materials Engineering or GES 202 Biogeochemistry	3
Mth 112 Calculus II	4
EE 145 Computer Science I or EGR 140 Computer Utilization	4
Phy 201 General Physics I	3
Distribution Requirement	3
	17-18

Third Semester	
Mth 211 Intro. to Differential Equations	4
EE 211 Circuit Theory I	3
EE 283 Electrical Measurements Lab	1
ME 231 Statics & Dynamics I	3
Phy 202 General Physics II	4
Distribution Requirement	3
	18

Fourth Semester	
ME 222 Mechatronics	3
ME 232 Strength of Materials	3
ME 234 Statics & Dynamics II	3
ME 322 Egr. Thermodynamics	3
EGR 214 Linear Systems	3
	15

Fifth Semester	
ME 321 Fluid Mechanics	3
ME 323 Fluid Mechanics Lab	1
ME 211 Intro. to Manufacturing	4
ME 332 Mechanics of Vibration	3
ME 335 Egr. Modeling and Analysis	3
Distribution Requirements	3
	17

Sixth Semester	
ME 399 Cooperative Education or	6
Technical Electives	6
EGR 201 Professionalism and Ethics	1
Distribution Requirements	6
EGM 320 Engr. Project Analysis	3
	16

Seventh Semester	
ME 324 Heat and Maxx Transfer	3
ME 326 Heat & Mass Transfer Lab	1
ME 384 Mechanical Design Lab.	3
ME 391 Senior Projects I	1
Technical Elective	3
EE 314 Control Systems	3
Distribution Requirement	3
	17

Eighth Semester	
Technical Elective	6
ME 392 Senior Projects II	2
ME 333 Machine Design	3
Free Elective	3
	14

Technical Electives may be chosen from any advisor-approved science or engineering course numbered 200 or above to satisfy a concentration requirement. Advisor-approved Free Electives are selected to enhance program focus and interest. Students consult with Co-op advisor for availability and proper scheduling of Cooperative Education.

ME 180. CADD LAB **One credit**
An introduction to the symbolic and visual languages used in the various engineering fields. The use of the computer in design and drafting, and familiarization with various software packages in the CADD (Computer Aided Design and Drafting) laboratory. Blueprint reading and printed circuit layouts. Emphasis will also be placed on the representation and interpretation of data in graphical form as well as the fundamentals of 2-dimensional and 3-dimensional graphic formats. Two hours lecture/laboratory per week. Fee: $20.

Prerequisite: To be taken along with or after SSE 107.

ME 211. INTRODUCTION TO MANUFACTURING **Four credits**
An introduction to manufacturing that examines both the traditional processes of milling, turning, forging, casting, etc., and processes associated with advanced technology. Also considered are, dimensioning, tolerances, process plans, accuracy, repeatability quality assurance and quality control. Three hours lecture and one hour of laboratory a week. Fee: $40.

Prerequisite: Junior standing in engineering or consent of instructor.

ME 213. FACTORY SIMULATION **Three credits**
Introduction to system analysis and simulation, principles of manufacturing and analysis of discrete computer simulation models. Associated laboratory experiments consider commercially available simulation packages and the design and control of a factory simulation. Two hours lecture and two hours laboratory a week. Fee: $40.

Prerequisite: Junior/senior standing in ME.

ME 214. FLEXIBLE MANUFACTURING SYSTEMS **Three credits**
Flexible Manufacturing Systems (FMS), Computer Aided Manufacturing (CAM) and manufacturing control by computer, involving Numerical Control, Computer Numerical Control, Direct Numerical Control (NC/CNC/DNC), programmable controllers, robotics, automation and visual inspection. Associated laboratory experiments consider the operation of CNC machines, robots, programmable controllers and FMS. Two hour lecture and two hour laboratory a week. Fee: $40.

Prerequisite: Concurrent with or after ME 211.

ME 222. MECHATRONICS **Three credits**
Introduction to mechatronics system design with emphasis on using sensors to convert engineering system information into an electrical domain, signal conditioning and hardware integration, programming, and using actuators to effect system changes. Two one-hour lectures and one three-hour laboratory per week. (Same as EE 222.) Fee: $35.

Prerequisites: EGR 140 or EE 145, EE 283.

ME 231. STATICS AND DYNAMICS I Three credits
Statics of particles; including resolution of forces into components, vector sums, concurrent force systems. Statics of rigid bodies and the study of moments. Equilibrium of bodies in two and three dimensions and determination of reactions. Analysis of trusses and frames. Determination of centroids and moments of inertia. Kinematics of particles; including displacement; velocity; and acceleration. Three hours lecture a week. (same as Phy 211)

Prerequisite: Phy 201, Mth 112.

ME 232. STRENGTH OF MATERIALS **Three credits**
Analysis of statically determinate and indeterminate structural systems; computation of reactions, shears, moments, and deflections of beams, trusses, and frames. Bending and torsion of slender bars; buckling and plastic behavior. Three hours lecture a week.

Prerequisite: ME 231.

ME 234. STATICS AND DYNAMICS II **Three credits**
This course continues the development of Newtonian mechanics with application to the motion of free bodies and mechanisms. Topics include: rectilinear motion, vector calculus, particle motion, inertial and rotating reference frames, rigid body motion, rotational dynamics, linear and rotational momentum, work and kinetic energy, virtual work and collision. Three hours lecture a week.

Prerequisite: ME 231.

ME 298. TOPICS IN MECHANICAL ENGINEERING **One to three credits**
Selected topics in the field of mechanical engineering.

Prerequisite: Sophomore or junior standing or permission of instructor.

ME 312. MANUFACTURING SYSTEM ENGINEERING **Three credits**
Fundamentals of manufacturing processes and systems. Analytical models of manufacturing processes including: metal removal rate, tool wear, setup and tool change times. Analysis and optimization of manufacturing productivity and throughput. Automation and computer control of manufacturing processes. Three hours lecture a week.

Prerequisite: Junior or senior standing in ME.

ME 315. COMPUTER INTEGRATED MANUFACTURING **Three credits**
The essentials of Computer Integrated Manufacturing (CIM) for data and manufacturing operations integration. Topics include the components of CIM: Computer Aided Design (CAD), Process Planning (CAPP), Manufacturing (CAM), and Quality Assurance (CAQ). Implementation of CIM into concurrent engineering, axiomatic design, strategy development and prototype evaluation. Also discussed are statistical quality control, networking and integration technology. Three hours lecture a week.

Prerequisite: Senior standing in ME.

ME 316. EXPERT SYSTEMS IN MANUFACTURING **Three credits**
Examination of a variety of computer models to enhance decision making, forecasting, production planning, process planning, material requirement planning and goal planning. Combination of these models into prototype expert system for planning and control of manufacturing processes. Two hours lecture and two hours laboratory a week. Fee: $40.

Prerequisite: Junior/senior standing in ME.

ME 317. ROBOTICS **Three credits**
The analysis and design of robots. Class covers the mechanical principles which govern the kinematics of robotics. Course topics include forward kinematics and the determination of the closed form kinematic inversion, as well as workspace and trajectory generation. Class

also covers the formation and computation of the manipulator Jacobian matrix. Three hours lecture a week.

Prerequisites: Senior standing in ME.

ME 318. QUALITY CONTROL ENGINEERING **Three credits**

Quality control in the manufacturing environment, statistical methods used in quality assurance, statistical process control. Three hours lecture a week. (same as EgM 318)

Prerequisite: Mth 150 or consent of instructor.

ME 321. FLUID MECHANICS **Three credits**

Thermodynamics and dynamic principles applied to fluid behavior and to ideal, viscous, and compressible fluids under internal and external flow conditions. Three hours lecture a week.(same as Phy 213)

Prerequisite: ME 231.

Corequisite: ME 322.

ME 322. ENGINEERING THERMODYNAMICS **Three credits**

The fundamental concepts and laws of thermodynamics, thermodynamic properties of perfect and real gases, vapors, solids and liquids. Applications of thermodynamics to power and refrigeration cycles, and flow processes. Development of thermodynamic relationships and equations of state. Review of the first and second laws. Reversibility and irreversibility. Three hours lecture a week.

Prerequisites: Phy 174 or 202 and Mth 211 or 212.

ME 323. FLUID MECHANICS LABORATORY **One credit**

Experiments with and analysis of basic fluid phenomena, hydrostatic pressure, Bernoulli theorem, laminar and turbulent flow, pipe friction, and drag coefficient. One three-hour lab a week. Fee: $40.

Prerequisite: Concurrent with or after ME 321.

ME 324. HEAT AND MASS TRANSFER **Three credits**

Fundamental principles of heat transmission by conduction, convection and radiation; application of the laws of thermodynamics; mass transfer; application of these principles to the solution of engineering problems. Three hours lecture a week.

Prerequisites: ME 321-322 and Mth 211.

ME 325. ENERGY SYSTEMS **Three credits**

Fundamental principles of energy transmission and energy conversion. Comprehension of the physical systems in which the conversion of energy is accomplished. Primary factors necessary in the design and performance analysis of energy systems. Three hours lecture a week.

Prerequisites: ME 322, ME 324.

ME 326. HEAT TRANSFER LABORATORY **One credit**

Basic heat transfer modes are demonstrated experimentally. This includes conduction, convection, and radiation of heat as well as fin and heat exchanger. One two-hour lab a week. Fee: $40.

Prerequisite: Concurrent with or after ME 324.

ME 328. COMBUSTION ENGINES **Three credits**

Investigation and analysis of internal and external combustion engines with respect to automotive applications. Consideration of fuels, carburetion, combustion, detonation, design factors, exhaust emissions, and alternative power plants. Three hours lecture a week.

Prerequisite: ME 322.

ME 331. STRUCTURAL ANALYSIS AND DESIGN **Three credits**

Stress tensor and analysis of strain. Laws of conservation and basic equations of elastic and viscoelastic bodies. Plane stress and plane strain, theory of extension, torsion and flexure of beams. Introduction to energy methods and elastic stability. Three hours lecture a week.

Prerequisite: ME 232.

ME 332. VIBRATION OF DYNAMIC SYSTEMS **Three credits**

An introductory course in mechanical vibration dealing with free and forced vibration of single and multi-degrees of freedom for linear and nonlinear systems. Three hours lecture a week.

Prerequisites: Mth 211, ME 231.

ME 333. MACHINE DESIGN **Three credits**

A first course in the design of machine elements dealing with theories of failure, strength and endurance limit, fluctuating stresses, fatigue and design under torsional and combined stresses. Design of bolted connections, fasteners, welds, springs, balled roller bearings, gears, clutches, brakes, belts, and chains. Three hours lecture a week.

Prerequisites: ME 232, ME 332.

ME 334. KINEMATICS **Three credits**

Analysis of planar mechanisms, specifically 4-bar, slider, and multi-link mechanisms. Displacement, velocity, and acceleration of mechanisms are covered through graphical, numerical, and computational methods. Two-position synthesis of the 4-bar mechanism. Basics of the involute gear and standard and nonstandard gears, as well as compound and epicyclic gear trains. Displacement, velocity, and acceleration in the basic design and analysis of cams and followers. Three hours lecture a week.

Prerequisite: ME 231.

ME 335. ENGINEERING MODELING AND ANALYSIS **Three credits**

Introduction to finite element method for static and dynamic modeling and analysis of engineering systems. Finite element formulation and computer modeling techniques for stress, plane strain, beams, axisymmetric solids, heat conduction, and fluid flow problems. Solution of finite element equation and post processing of results for further use in the design problem. Three hours lecture a week.

Prerequisites: EE 144 or EE 145, ME 232.

ME 336. CAE IN MECHANICAL DESIGN **Three credits**

Computer techniques for the design of mechanical systems and components. Engineering software development including computer graphics. System design of individual applications of mechanical and thermal components. Two hours lecture and two hours laboratory a week. Fee: $40.

Prerequisites: ME 232, ME 324.

ME 384. MECHANICAL DESIGN LABORATORY **Three credits**

Advanced open-ended laboratory simulating R&D environment. Emphasis on experimental performance, evaluations, and design. Topics include mechanical system, thermo/fluids, manufacturing processes, and mechanics. One hour lecture, six hours lab a week. Fee: $50.

Prerequisite: Senior standing in mechanical engineering.

ME 390. INDUSTRIAL TRAINING **One to six credits**

Industrial and/or research experience gained through assignments or jobs with the community, government, business, or industry.

Prerequisite: Approval of the Mechanical and Materials Engineering Department.

ME 391. SENIOR PROJECTS I **One credit**

Design and development of selected projects in the field of mechanical engineering under the direction of a staff member. Technical as well as economic factors will be considered in the design. A detailed progress report is required.

Prerequisite: Senior standing in mechanical engineering.

ME 392. SENIOR PROJECTS II **Two credits**

Design and development of selected projects in the various fields of mechanical engineering under the direction of a staff member. Technical as well as economic factors will be considered in the design. A professional paper and detailed progress reports are required.

This is a continuation of ME 391. An open-forum presentation and discussion of the professional paper is required.
Prerequisite: ME 391.

ME 395-396. INDEPENDENT RESEARCH **One to three credits**
Independent study and research for advanced students in the field of mechanical engineering under the direction of a staff member. A research paper at a level significantly beyond a term paper is required.
Prerequisite: Senior standing and approval of department chairperson is required.

ME 397. SEMINAR **One to three credits**
Presentations and discussions of selected topics.
Prerequisite: Senior standing or by special departmental permission.

ME 398. TOPICS IN MECHANICAL ENGINEERING **One to three credits**
Selected topics in the field of mechanical engineering. These may include one or more of the following: control systems, automation, robotics, manufacturing systems, solid mechanics, energy systems, fluid flow, acoustics, computer systems, bio-mechanics. May be repeated for credit.
Prerequisite: Junior or senior engineering standing.

ME 399. COOPERATIVE EDUCATION **One to six credits**
Professional cooperative education placement in a private/public organization related to the student's academic objectives and career goals. In addition to their work experience, students are required to submit weekly reaction papers and an academic project to a Faculty Coordinator in the student's discipline. (See page 52 in Bulletin for placement procedures.)
Prerequisites: Sophomore standing, 2.0 cumulative average, consent of academic advisor, approval of placement by department chairperson.

MEDICAL TECHNOLOGY

(See page 204)

MILITARY SCIENCE (Army ROTC)

Lieutenant Colonel Poling, Chairperson.

The primary objective of the ROTC program is to develop leadership capabilities and to train future officers for both the active and reserve components of the United States Army. ROTC is a totally flexible program that can be tailored to any individual student, especially those in their freshman and sophomore years.

Military Science instruction for Wilkes University students is offered on campus at King's College or the University of Scranton pursuant to an agreement with the Military Science Department at the University of Scranton. The King's College classes are about a 5 minute walk from the Wilkes University Campus. Two-year and four-year programs are offered, both of which lead to a commission as an officer in the United States Army. To obtain this commission, qualified male and female students must successfully pass a physical examination, and complete either the two- or four-year program of approved Military Science courses.

Most students take one course per semester of the basic course program (freshman and sophomore years), and one course per semester of the advanced course (junior and senior years). All contracted students in the Advanced Course will receive a $250–$400 per month subsistence allowance. Uniforms, equipment, and textbooks required for Army ROTC will be supplied by the Military Science Department. Students may also participate on a voluntary basis in many ROTC related activities. There is physical fitness training and hands-on equipment training during the week. Each semester, there is a social event and at least one weekend of training which includes marksmanship, orienteering, rappelling, and confidence courses. During vacations students can volunteer for regular army training in parachuting and helicopter operations. All activities are free of cost and cadets are paid to attend some of the training.

The college ROTC Program consists of two courses. The BASIC COURSE consists of the classes given during freshman and sophomore years (MS211, MS212, MS22l, MS222). The ADVANCED COURSE consists of the classes given during the junior and senior years (MS231, MS232, MS241, MS242, MS351). Graduate students enrolled in a two-year program can participate in the Advanced Course. Students in the Basic Courses can compress the training and finish in less than two years; the Advanced Course is a two-year program and cannot be compressed.

To receive an Army Commision, cadets must complete the Advanced Course. Students qualify for advanced ROTC courses (2-year program) in three ways:

(1) **On Campus Basic Courses** — most students take introductory military science courses on campus during their freshman and sophomore years. These courses allow them to learn about the Army and the opportunities and responsibilities of an officer without incurring an obligation. This "basic" program generally involves one course per school term, although students may arrange to compress more than one of the required courses into a single term.

(2) **Summer Programs** — students may also qualify through a paid, five-week, no -obligation summer "Basic Camp" which provides military training at Fort Knox, Kentucky. The training is educational as well as fun, exciting, and rewarding.

(3) **Advanced Placement** — students who have completed Basic Training in any U.S. service (Army, Navy, Marines, Air Force, Coast Guard) qualify for advanced placement.

Two-Year Program

Available to qualified students having a minimum of two academic years remaining to degree completion, and meeting criteria set forth in paragraphs (2) or (3) above. Application for this program must be made prior to the end of the Spring Semester of the sophomore year for those not enrolled in previous Military Science instruction. Also available for accepted graduate students.

Four-Year Program

Consists of all eight Military Science courses (commencing no later than the sophomore year). Enrollment in the first four courses of Military Science is accomplished in the same manner as any other college course and carries no military obligation. Application to enroll in the Advanced Military Science courses must be made while enrolled in Military Science 222.

Summer Training

While enrolled in the Advanced Courses, each student must attend a five-week leadership assessment training course at an Army Base in the Seattle, Washington Area. This is usually done between the junior and senior years. Transportation, food, lodging, medical and dental care are provided, and the cadet is paid a military salary. The purpose of the camp is to access the cadet's leadership ability and potential.

Financial Incentives

While enrolled in the Advanced Courses, students will receive $350–$400 per month subsistence allowance. Freshman and sophomore students may apply for scholarships. Freshmen can receive 3-year scholarships: sophomores, 2-year. Scholarships pay up to $17,000 in tuition plus $600 a year for books. Scholarship students also get the $250–$400 per month allowance. Also, the ROTC program with its commission as a second lieutenant in the Army can lead to a paying job. The starting salary is nearly $30,000 plus full medical and dental, with 30 days annual leave and assignments at world-wide locations. The salary increases to nearly $50,000 after four years.

Transcript Credits:

The 12 credits earned in Military Science classes can be used as electives; completion of two semesters of MS100 fulfills the requirement for physical education at the University.

Military Science Courses

MS 100. PHYSICAL FITNESS TRAINING — **No credit**

A modern up-to-date program of fitness and health training. The one hour sessions are conducted before classes on Mondays, Wednesdays and Fridays at King's College each week school is in session. The routine consists of stretching and warm-ups, followed by strengthening exercises, concluding with an aerobic workout. Safety is a prime concern and all sessions are supervised by senior military sergeants and officers. This course is requred of all students in the Advanced Course and is to be counted toward the four credit MS PE requirement. Note: MS 100 may be substituded for the PE 100 series.

MS 211-212. CONCEPTS OF LEADERSHIP I & II — **One credit each**

Instruction is designed to provide a very basic understanding of military knowlege while concentrating on the leadership skills and civic responsibilities important to all citizens. Students may elect to participate in many activities that produce expertise in rappelling, orienteering, first aid, swimming and marksmanship. 1 hour per week for 2 semesters.

MS 221-222. DYNAMICS OF LEADERSHIP I & II — **Two credits each**

Instruction designed to familiarize the student with basic military operations and the principles of leadership. Students experience hands-on training with navigation and topographic equipment, first-aid procedures and military weapons. 2 hours per week for 2 semesters.

MS 231-232. MILITARY LEADERSHIP I & II — **Two credits, one credit**

Instruction is designed to continue the development of leadership qualities and technical skills required in the military. Students teach freshmen and sophomores to use equipment and are graded in positions of responsibility and leadership. Students learn to plan, resource, and execute effective training. The goal of this junior year is to prepare the student to excel at the leadership assessment camp prior to their senior year.

Prerequisite: Advanced Course placement credit.

MS 241-242. ADVANCED MILITARY LEADERSHIP 1 & II **Two credits, one credit**

Instruction is designed to prepare students to function as members of a military staff and concurrently continues leadership development. The Professor of Military Science teaches this course and mentors students prior to their first military assignment. The course covers briefing techniques, effective writing, army training systems, and the logistical and administrative support of military operations.

MS 251. LEADERSHIP APPLICATION LABORATORY **No credit**

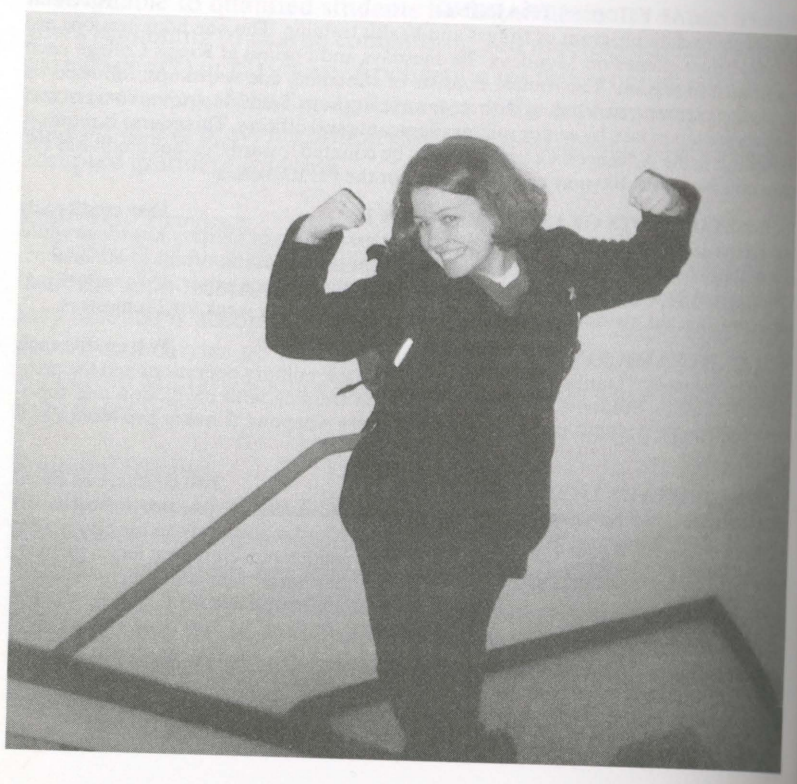
Freshmen and Sophomores are encouraged to participate in this elective each semester. "Hands-on" instruction is designed to reinforce classroom training on weapons, first aid, tactics, leadership and military drill. Advanced Course Students instruct under the Supervisor of Military cadre.

NOTE: Candidates for an Army commission through Military Science are required by regulation to complete academic courses in the areas of written communication skills, human behavior, military history, computer literacy, and math reasoning. Generally, these requirements will be met by satisfying the General Education Requirements. Contact the Professor of Military Science for specific requirements.

Students can contact the counselors in the Military Science Department at:

Tel: **(570) 941-7457**
Fax: **(570) 941-4340**
E-mail: **ROTC@UofS.edu**

Students can also visit our HOME PAGE in the academic section of:
http://www.UofS.edu/ROTC



MUSIC

Professor Zipay, Chairperson; Professor Emeritus Chapline; Associate Professor Emeritus Garber; Associate Professor Flint; Visiting Assistant Professors Thomas, Turner; Adjunct Faculty Driscoll, Greenwald, Harrington, Heinze, Maillet, Marino, Millington, Minsavage, Nowak, Pryor, Sapadin, Shablousky, Sprengelmeyer, Teubner, Thesen.

Total minimum number of credits required for a major in Music leading to the B.M. degree — number varies with program.

Total minimum number of credits required for a minor — 18.

Purposes

The Department of Visual and Performing Arts offers Bachelor of Music degree programs in applied performance and in music education; students who successfully complete the requirements for the B.M. in Music Education are candidates for teacher certification in music, K-12. The degree programs in music

1. offer students a comprehensive exposure to all aspects of musical training relative to the area of degree specialization;
2. prepare students for a wide variety of contemporary careers in music; and
3. offer substantive preparation for graduate studies in music.

Objectives

The Music major is a professional academic program for students who, by virtue of their musical aptitude and achievements and general academic background, are qualified to pursue work at the university level.

Certain criteria are recognized as basic to any curriculum in music and are addressed by way of a comprehensive program of critical and evaluative studies. A command of basic skills widely recognized as attributes of the musician is a major part of this curriculum. These skills have relevance to long-term personal and professional goals. Curricula have been designed to meet the competency-based and performance-oriented technical demands of the craft of music. A major portion of the study will be devoted to the development of the student's potential as a performing musician, with simultaneous attention given to one's specialization as a teacher or scholar. Men and women should be able to express themselves clearly in their language — both in speech and writing, and in the grammar of music. To this end, students should develop skills which demand evidence of critical investigation, analytical thought, and clarity of organization. They should be able to rehearse, perform, criticize, discuss, and analyze music which will provide them a basic command of components considered requisite to success in any part of the field. They should develop familiarity with their musical heritage through constant contact with varied types and styles of literature,

and should use this knowledge to illuminate their interpretations. Likewise, all students should have contact with less familiar musical styles and means of music-making, especially 20th century repertoire and practices. It is strongly recommended that students who major in Music take a foreign language. Students majoring in Music will pay additional fees for the major and for applied performance courses.

Minor in Music

The music programs at Wilkes offer studies in applied performance; music theory and musicianship skills; and the history of music, in addition to participation in performance ensembles – woodwind ensemble, chorus, chamber singers, and jazz ensemble. The minor in music, which requires a minimum of 18 credits, includes a menu of these performance-based courses, skill courses, knowledge and conceptually based courses, as well as private study. Course levels will be determined by placement examinations. Students who earn a Bachelor of Music degree are not eligible to earn a music minor.

The required courses for the minor in music are as follows:

Courses	Credits	Courses	Credits
MUS 100-200	4	Mus 105-206*	3
MUS 101	3	MUS 121 or 125	2
MUS 102	3	MUS 126 or 128**	1
MUS 103-204*	2		

*Level to be determined by placement exam.
**Section to be determined by student's performance medium.

Recommended Course Sequence for Bachelor of Music — Applied Voice Major

Program completed with 127 semester credits.

First Semester		Second Semester	
Mus 000 Recital Attendance	0	Mus 000 Recital Attendance	0
Med 010 Functional Piano	0	Med 010 Functional Piano	0
Mus 100 Applied Performance	2	Mus 100 Applied Performance	2
Mus 103 Comp. Musicianship I	2	Mus 104 Comp. Musicianship II	2
Mus 105 Harmonic Foundations I	3	Mus 106 Harmonic Foundations II	3
Mus 101 Introduction to Music	3	Mus 108 Historical Analysis of Music II	3
Mus 121 or 131 Ensemble (Minor)	1/2	Mus 121 or 131 Ensemble (Minor)	1/2
Mus 125 Ensemble (Major)	1/2	Mus 125 Ensemble (Major)	1/2
Eng 101 Composition or	4	Eng 101 Composition or	4
Distribution Requirement	3	Distribution Requirement	3
FrF 101 Freshman Foundations	3	Distribution Requirements	3
	17-18		17-18

Third Semester	
Mus 000 Recital Attendance	0
Mus 121 or 131 Ensemble (Minor)	1/2
Mus 125 Ensemble (Major)	1/2
Mus 200 Applied Performance	2
Mus 203 Comp. Musicianship III	2
Mus 205 Harmonic Foundations III	3
Mus 207 Historical Analysis of Music III	3
Mus 258 Vocal Methods	2
Foreign Language	3
	16

Fifth Semester	
Mus 000 Recital Attendance	0
Mus 125 Ensemble	1/2
Mus 128 Chamber Performance	1
Mus 260 Conducting I	2
Mus 300 Applied Performance	2
Mus 305 Composition/Orchestration	2
Mus 307 Pedagogy (Vocal)	3
Psy 101 General Psychology	3
Foreign Language	3
	161/2

Seventh Semester	
Mus 000 Recital Attendance	0
Mus 125 Ensemble	1/2
Mus 128 Chamber Performance	1
Mus 400 Applied Performance	2
Mus 407 Music Literature (Voice)	3
Free Elective	3
Distribution Requirements	6
	151/2

Fourth Semester	
Mus 000 Recital Attendance	0
Mus 121 or 131 Ensemble (Minor)	1/2
Mus 125 Ensemble (Major)	1/2
Mus 200 Applied Performance	2
Mus 204 Comp. Musicianship IV	2
Mus 206 Harmonic Foundations IV	3
Mus 208 Historical Analysis of Music IV	3
Mus 259 Voice Diction	2
Foreign Language	3
	16

Sixth Semester	
Mus 000 Recital Attendance	0
Mus 125 Ensemble	1/2
Mus 128 Chamber Performance	1
Mus 261 Choral Conducting II	2
Mus 300 Applied Performance	2
Mus 301 Recital	0
Mus 306 20th Century Theory	2
Distribution Requirement	3
Foreign Language	3
	131/2

Eighth Semester	
Mus 000 Recital Attendance	0
Mus 125 Ensemble	1/2
Mus 400 Applied Performance	2
Mus 401 Recital	0
Mus 410 Chamber Literature	3
Free Electives	7
Distribution Requirements	3
	151/2

Recommended Course Sequence for Bachelor of Music — All Applied Instrument Majors

Except Voice and Keyboard

Program completed with 128 semester credits.

First Semester	
Mus 000 Recital Attendance	0
Med 010 Functional Piano	0
Mus 100 Applied Performance	2
Mus 103 Comp. Musicianship I	2
Mus 105 Harmonic Foundations I	3
Mus 101 Introduction to Music	3
Mus 121 or 131 Ensemble (Major)	1/2
Mus 125 Ensemble (Minor)	1/2
Eng 101 Composition or Distribution Requirement	4 / 3
Distribution Requirement	3
	17-18

Second Semester	
Mus 000 Recital Attendance	0
Med 010 Functional Piano	0
Mus 100 Applied Performance	2
Mus 104 Comp. Musicianship II	2
Mus 106 Harmonic Foundations II	3
Mus 108 Historical Analysis of Music II	3
Mus 121 or 131 Ensemble (Major)	1/2
Mus 125 Ensemble (Minor)	1/2
Eng 101 Composition or Distribution Requirement	4 / 3
Distribution Requirement	3
	17-18

Third Semester	
Mus 000 Recital Attendance	0
Mus 121 or 131 Ensemble (Major)	1/2
Mus 125 Ensemble (Minor)	1/2
Mus 200 Applied Performance	2
Mus 203 Comp. Musicianship III	2
Mus 205 Harmonic Foundations III	3
Mus 207 Historical Analysis of Music III	3
Mus 260 Conducting I	2
Psy 101 General Psychology	3
	16

Fourth Semester	
Mus 000 Recital Attendance	0
Mus 121 or 131 Ensemble (Major)	1/2
Mus 125 Ensemble (Minor)	1/2
Mus 200 Applied Performance	2
Mus 204 Comp. Musicianship IV	2
Mus 206 Harmonic Foundations IV	3
Mus 208 Historical Analysis of Music IV	3
Mus 261 or 262 Conducting II	2
Distribution Requirement	3
	16

Fifth Semester	
Mus 000 Recital Attendance	0
Mus 121 or 131 Ensemble	1/2
Mus 128 Chamber Performance	1
Mus 300 Applied Performance	2
Mus 305 Composition/Orchestration	2
Mus 311-316 Pedagogy	3
Free Elective	9
	171/2

Sixth Semester	
Mus 000 Recital Attendance	0
Mus 121 or 131 Ensemble	1/2
Mus 128 Chamber Performance	1
Mus 300 Applied Performance	2
Mus 301 Recital	0
Mus 306 20th Century Theory	2
Mus 411 Music Literature (Orchestra)	3
Distribution Requirements	6
	141/2

Seventh Semester	
Mus 000 Recital Attendance	0
Mus 121 or 131 Ensemble	1/2
Mus 128 Chamber Performance	1
Mus 400 Applied Performance	2
Mus 407-415 Music Literature (major idiom)	3
Free Electives	9
	151/2

Eighth Semester	
Mus 000 Recital Attendance	0
Mus 121 or 131 Ensemble	1/2
Mus 400 Applied Performance	2
Mus 401 Recital	0
Mus 407-415 Music Literature (Chamber Literature)	3
Free Electives	9
	141/2

Recommended Course Sequence for Bachelor of Music — Applied Keyboard Major

Program completed with 127 semester credits.

First Semester	
Mus 000 Recital Attendance	0
Mus 100 Applied Performance	2
Mus 103 Comp. Musicianship I	2
Mus 105 Harmonic Foundations I	3
Mus 101 Introduction to Music	3
Mus 121 or 131 Ensemble (Minor)	1/2
Mus 125 Ensemble (Major)	1/2
Eng 101 Composition or Distribution Requirement	4 / 3
FrF 101 Freshman Foundations	3
	17-18

Second Semester	
Mus 000 Recital Attendance	0
Mus 100 Applied Performance	2
Mus 104 Comp. Musicianship II	2
Mus 106 Harmonic Foundations II	3
Mus 108 Historical Analysis of Music II	3
Mus 121 or 131 Ensemble (Minor)	1/2
Mus 125 Ensemble (Major)	1/2
Eng 101 Composition or Distribution Requirement	4 / 3
Distribution Requirement	3
	17-18

Third Semester	
Mus 000 Recital Attendance	0
Mus 121 or 131 Ensemble (Minor)	1/2
Mus 125 Ensemble (Major)	1/2
Mus 200 Applied Performance	2
Mus 203 Comp. Musicianship III	2
Mus 205 Harmonic Foundations III	3
Mus 207 Historical Analysis of Music III	3
Mus 212 Keyboard Accompanying	2
Mus 260 Conducting I	2
Psy 101 General Psychology	3
	18

Fourth Semester	
Mus 000 Recital Attendance	0
Mus 121 or 131 Ensemble (Minor)	1/2
Mus 125 Ensemble (Major)	1/2
Mus 200 Applied Performance	2
Mus 204 Comp. Musicianship IV	2
Mus 206 Harmonic Foundations IV	3
Mus 208 Historical Analysis of Music IV	3
Mus 213 Accompanying Practicum	1
Distribution Requirement	3
	15

Fifth Semester

Mus 000 Recital Attendance	0
Mus 125 Ensemble	1/2
Mus 128 Chamber Performance	1
Mus 214 Accompanying Practicum	1
Mus 261 or 262 Conducting II	2
Mus 300 Applied Performance	2
Mus 305 Composition & Orchestration	2
Mus 309 Pedagogy (Piano)	3
Free Elective	3
	14 1/2

Sixth Semester

Mus 000 Recital Attendance	0
Mus 125 Ensemble	1/2
Mus 128 Chamber Performance	1
Mus 215 Accompanying Practicum	1
Mus 261 or 262 Conducting II	2
Mus 300 Applied Performance	2
Mus 301 Recital	0
Mus 306 20th Century Theory	2
Distribution Requirements	9
	17 1/2

Seventh Semester

Mus 000 Recital Attendance	0
Mus 125 Ensemble	1/2
Mus 128 Chamber Performance	1
Mus 400 Applied Performance	2
Mus 409 Keyboard Literature	3
Free Electives	7
	13 1/2

Eighth Semester

Mus 000 Recital Attendance	0
Mus 125 Ensemble	1/2
Mus 400 Applied Performance	2
Mus 401 Recital	0
Mus 410 Chamber Literature	3
Free Electives	8
	13 1/2

Recommended Course Sequence for Bachelor of Music — Music Education Major

Vocal Track (with certification)

Program completed with 137 semester credits.

First Semester

Mus 000 Recital Attendance	0
Med 010 Functional Piano	0
Mus 100 Applied Performance (Major)	2
Mus 103 Comp. Musicianship I	2
Mus 105 Harmonic Foundations I	3
Mus 101 Introduction to Music	3
Mus 121 or 131 Ensemble (Minor)	1/2
Mus 125 Ensemble (Major)	1/2
Eng 101 Composition or Distribution Requirement	4 3
FrF 101 Freshman Foundations	3
	17-18

Second Semester

Mus 000 Recital Attendance	0
Med 010 Functional Piano	0
Mus 100 Applied Performance (Major)	2
Mus 104 Comp. Musicianship II	2
Mus 106 Harmonic Foundations II	3
Mus 108 Historical Analysis of Music II	3
Mus 121 or 131 Ensemble (Minor)	1/2
Mus 125 Ensemble (Major)	1/2
Eng 101 Composition or Distribution Requirement	4 3
Distribution Requirement	3
	17-18

Third Semester

Mus 000 Recital Attendance	0
Mus 121 or 131 Ensemble (Minor)	1/2
Mus 125 Ensemble (Major)	1/2
Mus 200 Applied Performance (Major)	1
Mus 200 Applied Performance (Minor)	1
Mus 203 Comp. Musicianship III	2
Mus 205 Harmonic Foundations III	3
Mus 207 Historical Analysis of Music III	3
Mus 260 Conducting I	2
Med 258 Vocal Methods	2
Psy 101 General Psychology	3
	18

Fifth Semester

Mus 000 Recital Attendance	0
Mus 125 Ensemble (Major)	1/2
Mus 261 Choral Conducting II	2
Mus 300 Applied Performance (Major)	1
Mus 300 Applied Performance (Minor)	1
Med 250 Teaching of Elementary Music	2
Med 254-257 Instrumental Methods	2
Ed 190 Effective Teaching	3
Free Electives	6
	17 1/2

Seventh Semester

Mus 000 Recital Attendance	0
Mus 125 Ensemble (Major)	1/2
Med 351 Teaching of Sec. Choral Music	2
Med 352 Teaching of Sec. Instr. Music	2
Mus 400 Applied Performance (Major)	2
Med 360 Intern Teaching of Music	11
	17 1/2

*Accelerated courses.

Fourth Semester

Mus 000 Recital Attendance	0
Mus 121 or 131 Ensemble (Minor)	1/2
Mus 125 Ensemble (Major)	1/2
Mus 200 Applied Performance (Major)	1
Mus 200 Applied Performance (Minor)	1
Mus 204 Comp. Musicianship IV	2
Mus 206 Harmonic Foundations IV	3
Mus 208 Historical Analysis of Music IV	3
Mus 259 Voice Diction	2
Distribution Requirement	3
	16

Sixth Semester

Mus 000 Recital Attendance	0
Mus 125 Ensemble (Major)	1/2
Mus 300 Applied Performance (Major)	1
Mus 300 Applied Performance (Minor)	1
Med 202 Practicum in Music Education	1
Ed 200 Educational Psychology	3
Distribution Requirements	9
	15 1/2

Eighth Semester

Mus 000 Recital Attendance	0
Mus 125 Ensemble (Major)	1/2
Med 254-257 Instrumental Methods*	2
Mus 400 Applied Performance (Major)	2
Mus 401 Recital	0
Free Elective	12
	16 1/2

Recommended Course Sequence for Bachelor of Music — Music Education Major

Instrumental Track (with certification)

Program completed with 134 semester credits.

First Semester

Mus 000 Recital Attendance	0
Med 010 Functional Piano	0
Mus 100 Applied Performance (Major)	2
Mus 103 Comp. Musicianship I	2
Mus 105 Harmonic Foundations I	3
Mus 101 Introduction to Music	3
Mus 121 or 131 Ensemble (Major)	1/2
Mus 125 Ensemble (Minor)	1/2
Eng 101 Composition or	4
Distribution Requirement	3
FrF 101 Freshman Foundations	3
	17-18

Second Semester

Mus 000 Recital Attendance	0
Med 010 Functional Piano	0
Mus 100 Applied Performance (Major)	2
Mus 104 Comp. Musicianship II	2
Mus 106 Harmonic Foundations II	3
Mus 108 Historical Analysis of Music II	3
Mus 121 or 131 Ensemble (Major)	1/2
Mus 125 Ensemble (Minor)	1/2
Eng 101 Composition or	4
Distribution Requirement	3
Distribution Requirement	3
	17-18

Third Semester

Mus 000 Recital Attendance	0
Mus 121 or 131 Ensemble (Major)	1/2
Mus 125 Ensemble (Minor)	1/2
Mus 200 Applied Performance (Major)	1
Mus 200 Applied Performance (Minor)	1
Mus 203 Comp. Musicianship III	2
Mus 205 Harmonic Foundations III	3
Mus 207 Historical Analysis of Music III	3
Mus 260 Conducting I	2
Med 254 Instrumental Methods	2
Psy 101 General Psychology	3
	18

Fourth Semester

Mus 000 Recital Attendance	0
Mus 121 or 131 Ensemble (Major)	1/2
Mus 125 Ensemble (Minor)	1/2
Mus 200 Applied Performance (Major)	1
Mus 200 Applied Performance (Minor)	1
Mus 204 Comp. Musicianship IV	2
Mus 206 Harmonic Foundations IV	3
Mus 208 Historical Analysis of Music IV	3
Med 255 Instrumental Methods	2
Mus 262 Instrumental Conducting II	2
Distribution Requirement	3
	18

Fifth Semester

Mus 000 Recital Attendance	0
Mus 121 or 131 Ensemble (Major)	1/2
Med 256 Instrumental Methods	2
Mus 300 Applied Performance (Major)	1
Mus 300 Applied Performance (Minor)	1
Med 250 Teaching of Elementary Music	2
Ed 190 Effective Teaching	3
Free Electives	6
	15 1/2

Sixth Semester

Mus 000 Recital Attendance	0
Mus 121 or 131 Ensemble (Major)	1/2
Med 257 Instrumental Methods	2
Mus 300 Applied Performance (Major)	1
Mus 300 Applied Performance (Minor)	1
Med 202 Practicum in Music Education	1
Ed 200 Educational Psychology	3
Distribution Requirements	6
	14 1/2

Seventh Semester

Mus 000 Recital Attendance	0
Mus 121 or 131 Ensemble (Major)	1/2
Mus 400 Applied Performance (Major)	2
Med 351 Teaching of Sec. Choral Music	2
Med 352 Teaching of Sec. Instr. Music	2
Med 360 Intern Teaching in Music	11
	17 1/2

Eighth Semester

Mus 000 Recital Attendance	0
Mus 121 or 131 Ensemble (Major)*	1/2
Mus 400 Applied Performance (Major)	2
Mus 401 Recital	0
Free Elective	9
Distribution Requirement	3
	14 1/2

*Accelerated courses.

Music

MUS 000. RECITAL ATTENDANCE **No credit**

This course is required each semester for all music majors. Degree requirement for graduation.

MUS 100-400. APPLIED PERFORMANCE **One credit or two credits**

Instruction offered in all keyboard, band and orchestral instruments, guitar and voice. Individual instruction. For non-music and music majors. Each area conducts a weekly master class for discussion and performance. Participation is required. Additional fees apply.

Prerequisite: Consent of instructor.

MUS 100. Freshman Level
MUS 200. Sophomore Level
MUS 300. Junior Level
MUS 400. Senior Level
MUS 301. Junior Recital — No credit
MUS 401. Senior Recital — No credit

Section A	Flute	Section I	Voice	Section P	Bass
Section B	Clarinet	Section J	Baritone Horn	Section Q	Percussion
Section C	Oboe	Section K	Trombone	Section R, S, T	Piano
Section D	Bassoon	Section L	Tuba	Section U	Organ
Section F	Saxophone	Section M	Violin	Section V	Guitar
Section G	Trumpet	Section N	Viola	Section X, Y	Voice
Section H	French Horn	Section O	Cello	Section Z	Drum Set

MUS 101. INTRODUCTION TO MUSIC I **Three credits**

The materials of music and their interrelationships. Illustrations are derived from literature of all periods for the purpose of developing understanding and enjoyment through perceptive listening.

MUS 102. INTRODUCTION TO MUSIC II **Three credits**

A survey of performance literature extending from the 17th century to the present. Directed listening of various idioms, forms, and styles characteristic of each period. The purpose is to stimulate critical judgment.

Prerequisite: Mus 101 or consent of instructor.

MUS 103-104, 203-204. COMPREHENSIVE MUSICIANSHIP I-IV **Two credits**

A degree requirement. Intensive training in basic skills through ear-training, rhythmic, melodic and harmonic dictation, keyboard harmony, and aural analysis using modal, tonal and post-tonal compositions. Competency must be demonstrated before entrance into the junior class.

Corequisite: To be taken in sequence with Harmonic Foundations and the Analysis of Music (for all Music majors) or consent of instructor.

MUS 105-106, 205-206. HARMONIC FOUNDATIONS I-IV **Three credits**
A degree requirement. A study of the functions, structures, and elements of music, moda through post-tonal styles. Written exercises and in-depth examination of musical examples.

Corequisite: To be taken in sequence with Comprehensive Musicianship and the Analysis of Music (for all Music majors) or consent of instructor.

MUS 108, 207-208. HISTORICAL ANALYSIS OF MUSIC I-III **Three credits**
A degree requirement. In-depth studies of the historical evolution of musical styles, antiquity to the present, through class lectures, analysis of the literature, and performance practices.

Corequisite: To be taken in sequence with Comprehensive Musicianship and Harmonic Foundations (for all Music majors) or consent of instructor.

MUS 111-112. CLASS PIANO I-II **Two credits**
Class instruction in piano. A two-semester sequence designed to provide non-music majors with a rudimentary study of piano performance. The classes will be divided into small sections according to proficiency level.

Prerequisite: None.

MUS 121. WIND ENSEMBLE **One-half credit**
Open to all members of the University community, by audition. A select organization of wind, brass, and percussion players that performs the best of the traditional Concert Band repertory, along with contemporary music for wind ensemble.

MUS 125. CHORUS **One-half credit**
The Chorus offers students the opportunity to learn and perform a wide range of sacred and secular choral music. Open to all college students. Anyone desiring to sing in the chorus should consult with the director. Participation required of all music majors.

MUS 126. CHAMBER SINGERS **One-half credit**
Membership is limited to a small group of selected singers who learn and perform solo and ensemble pieces from the literature of opera, operetta, and musical theatre.

MUS 127. JAZZ ENSEMBLE **One-half credit**
Open to all members of the University community, by audition. The ensemble rehearses and presents performances of literature encompassing a wide range of jazz styles and techniques.

MUS 128. CHAMBER PERFORMANCE **One credit**
Participation required of all applied performance majors for a minimum of three semesters. Students will study and publicly perform chamber literature appropriate to their instruments. Coaching and supervision by faculty members, as assigned.

Prerequisites: Mus 200, junior standing, or consent of instructor.

MUS 131. UNIVERSITY ORCHESTRA **One-half credit**
Open to all members of the College community, by audition. The orchestra performs concerts throughout the year of chamber and symphonic literature. Participation is required of all string applied performance and string music education majors.

MUS 203-204. See Mus 103-104.

MUS 205-206. See Mus 105-106.

MUS 207-208. See Mus 108.

MUS 212. KEYBOARD ACCOMPANYING **Two credits**
A study of the techniques concerned with solo, chamber, and group accompanying. Required of all keyboard applied performance majors.
Prerequisites: Mus 101, 103-106.

MUS 213-215. ACCOMPANYING PRACTICUM I-III **One credit**
Practical accompanying experience, as assigned. Minimum time allotment is five hours per week of studio, chamber, or group accompanying, plus public performance accompanying when required.

Prerequisite: Mus 212.

MUS 259. VOICE DICTION **Two credits**
An intensive study of the phonics of English, French, German, and Italian languages, based upon the International Phonetic Alphabet. Practical application is achieved through song literature selected from all historical periods. Required of all voice performance and choral music education majors.

MUS 260-262. CONDUCTING I-III **Two credits**
Through class lectures, demonstrations and laboratory performances, students learn and practice the fundamental techniques of conducting. Score reading and preparation, basic conducting patterns, gestures, and rehearsal methodology will be studied. The emphasis will be on actual laboratory experience.

MUS 260. Introduction to Conducting

MUS 261. Choral Conducting II

MUS 262. Instrumental Conducting II

Prerequisites: Mus 103-108, sophomore standing, successful completion of Piano Proficiency Examination or consent of instructor.

MUS 298. TOPICS **Three credits**
A study in topics of special interest not extensively treated in regularly offered courses.

MUS 305. COMPOSITION AND ORCHESTRATION **Two credits**
Practical exercises in composition, orchestration, and arranging for instruments and voices in all combinations, including orchestral, wind, jazz, and chamber ensembles. Required of all Applied Performance majors.

Prerequisites: Mus 206 and 208.

MUS 306. 20th CENTURY THEORY **Two credits**
A survey of twentieth-century theoretical systems emerging from post-romantic and impressionistic to post-serial and avant-garde styles of the contemporary times. Emphasis will be on compositional techniques. Works and writings of Schoenberg, Stravinsky, Hindemith, Babbitt, Sessions, Messaien, Boulez, and others will be examined. Listening and analysis. Required of all Applied Performance majors.

Prerequisites: Mus 204, 206, and 208, junior standing, or consent of instructor.

MUS 307-316. MUSIC PEDAGOGY **Three credits**
A survey of the techniques and methodology concerned with individual teaching of each applied idiom. Required of all applied performance majors. Sections are offered in the following areas:

MUS 307. Voice Pedagogy

MUS 309. Piano Pedagogy

MUS 311. Woodwind Pedagogy

MUS 313. Brass Pedagogy

MUS 315. String Pedagogy

MUS 316. Percussion Pedagogy

Prerequisites: Mus 200, junior standing, or consent of instructor.

MUS 395-396. INDEPENDENT RESEARCH **One to three credits**
Independent study and research for advanced students in music under the direction of a staff member. A research paper at a more substantial level beyond a term paper is required.
Prerequisite: Approval of department chairperson.

MUS 397. SEMINAR **One to three credits**
Presentation and discussion of selected topics.
Prerequisite: Approval of department chairperson.

MUS 399. COOPERATIVE EDUCATION **One to six credits**
Professional cooperative education placement in a private/public organization related to the student's academic objectives and career goals. In addition to their work experience, students are required to submit weekly reaction papers and an academic project to a Faculty Coordinator in the student's discipline. (See page 52 in the Bulletin for placement procedures.)
Prerequisites: Sophomore standing, 2.0 cumulative average, consent of academic advisor, approval of placement by department chairperson.

MUS 407-415. MUSIC LITERATURE **Three credits**
An examination of the literature, its style and technical problems, studied through performance coaching. These courses are designed to give the student a comprehensive knowledge of the literature for each respective major area of performance. They will provide a necessary foundation for performance practice requirements beyond the scope of only a lecture approach. Sections are offered in the following areas:

MUS 407. Voice Literature

MUS 408. Choral Literature

MUS 409. Keyboard Literature

MUS 410. Chamber Literature

MUS 411. Orchestral Literature

MUS 412. Woodwind Literature

MUS 413. Brass Literature

MUS 414. String Literature

MUS 415. Percussion Literature
Prerequisites: Mus 205-208, senior standing in music, or consent of instructor.

Music Education

MED 010. FUNCTIONAL PIANO **No credit**
Class instruction in piano for music majors. Competency must be passed through examination before eligibility to upperclass status. Class meets two hours per week.

MED 011. FUNCTIONAL GUITAR **No credit**
Class instruction in guitar. Required for all choral, elementary, or general music specialists. Competency must be passed through examination before eligibility to upperclass status. Class meets two hours per week.

MED 202. PRACTICUM IN MUSIC EDUCATION **One credit**
MED 202 provides students with field experiences that are specific to the field of music education. This is the student's second practicum.
Prerequisite: Ed 201; junior standing.

MED 250. TEACHING OF ELEMENTARY MUSIC **Two credits**
A study of the newer practices in elementary music — Suzuki, Orff, Kodaly, and Dalcroze. Emphasis on the development of skills and techniques of physical movement, improvisation, solfeggio, tone-bar and mallet technique, recorder playing, folk dancing, composition of suitable materials for classroom use, arranging and adapting existing music for the Orff instrumentarium. A survey and evaluation of appropriate resource materials.
Prerequisite: Successful completion of Piano Proficiency Examination.

MED 254-257. MUSIC METHODS **Two credits**
An examination, discussion and practical application of the methodology necessary for the students to learn the techniques of group performance in the principal instrumental and vocal areas. This sequence of courses provides the student with a minimum competency in the group performance techniques of each instrumental idiom. This exposure reinforces the technical concentration beyond the student's major applied instrument. Required of all music education students.

MED 254. Woodwind Methods

MED 255. Brass Methods

MED 256. String Methods

MED 257. Percussion Methods
Prerequisites: Mus 100, 103-106, sophomore standing, or consent of instructor.

MED 351. TEACHING OF SECONDARY CHORAL MUSIC **Two credits**
An examination of the administration and logistics of a secondary choral music program. A systematic development of teaching and rehearsal techniques, planning, and evaluation.
Prerequisites: Med 250, 252, Mus 260 and 261, junior standing, or consent of instructor.

MED 352. TEACHING OF SECONDARY INSTRUMENTAL MUSIC **Two credits**
An examination of the administration and logistics of a secondary instrumental music program. A systematic development of teaching and rehearsal techniques, planning, and evaluation.
Prerequisites: Med 250, 252, Mus 260 and 262, junior standing, or consent of instructor.

MED 360. INTERN TEACHING IN MUSIC **Eleven credits**
Students are assigned to cooperating teachers in area schools. Students assume responsibilities for teaching under supervision. Observation and evaluation are the responsibility of the University Music Faculty. Students must provide their own transportation. Approval required.
Prerequisites: Minimum cumulative gpa of 2.5; Ed 190 (Effective Teaching) minimum grade of 2.5; Ed 200 (Educational Psychology); and approval of music faculty.

MUSICAL THEATRE

Professor Zipay, Chairperson (See Music, Dance, and Theatre faculty).

Total minimum number of credits required for a major in Musical Theatre leading to the B.A. degree — 121.

The Musical Theatre program at Wilkes University seeks to integrate offerings in Music, Theatre, and Dance in order to prepare students to meet the competitive performance demands of the field. The goal of the progam is to provide foundational and advanced levels of Acting, ear-training, melodic and harmonic dictation, jazz, ballet, and modern dance. The program is a strong preprofessional curriculum requiring 31 credits in Theatre, 21 credits in Music, and 18 credits in Dance.

Recommended Course Sequence for a Major in Musical Theatre

First Semester	
THE 131 Acting I	3
THE 190 Theatre Laboratory	1
MED 010 Functional Piano	0
MUS 103 Comprehensive Musicianship I	2
MUS 100 Applied Performance (Voice)	1
MUS 125 Ensemble (Chorus)	.5
MUS 000 Recital Attendance	0
DAN 250 Classical Ballet I	2
Distribution Requirements	3
FrF 101 Freshman Foundations	3
	15.5

Second Semester	
ENG 101 English Composition	4
THE 191 Department Practicum	1
THE 190 Theatre Laboratory	1
MED 010 Functional Piano	0
MUS 104 Comprehensive Musicianship II	2
MUS 100 Applied Performance (Voice)	1
MUS 125 Ensemble (Chorus)	.5
MUS 000 Recital Attendance	0
Distribution Requirements	6
	15.5

Third Semester	
THE 111 Play Structure and Analysis	3
THE 232 Acting II	3
THE 190 Theatre Laboratory	1
MUS 203 Comprehensive Musicianship III	2
MUS 100 Applied Performance (Voice)	1
MUS 125 Ensemble (Chorus)	.5
MUS 000 Recital Attendance	0
Distribution Requirements	6
	16.5

Fourth Semester	
THE 112 Script Analysis	3
THE 190 Theatre Laboratory	1
THE 191 Department Practicum	1
MUS 303 Comprehensive Musicianship IV	2
MUS 100 Applied Performance (Voice)	1
MUS 125 Ensemble (Chorus)	.5
MUS 000 Recital Attendance	0
Distribution Requirements	6
	14.5

Fifth Semester	
THE 331 Acting III	3
THE 132 Speech For the Stage	3
MUS 100 Applied Performance (Voice)	1
MUS 125 Ensemble (Chorus)	.5
MUS 000 Recital Attendance	0
DAN 130 Introduction to Jazz Dance	2
Free Electives	6
	15.5

Seventh Semester	
THE 431 Acting IV	3
THE 190 Theatre Laboratory	1
DAN 120 Tap Dance	2
DAN 251 Classical Ballet II	2
DAN 211 Modern Dance II	2
MUS 100 Applied Performance (Voice)	1
MUS 125 Ensemble (Chorus)	.5
MUS 000 Recital Attendance	0
THE 211 Theatre History II	3
	14.5

Sixth Semester	
THE 212 Theatre History I	3
THE 191 Department Practicum	1
DAN 110 Introduction to Modern Dance	2
DAN 231 Jazz Dance II	2
MUS 100 Applied Performance (Voice)	1
MUS 125 Ensemble (Chorus)	.5
MUS 000 Recital Attendance	0
Distribution Requirements	3
	12.5

Eighth Semester	
Music or Theatre Electives	6
THE 191 Department Practicum	1
THE 190 Theatre Laboratory	1
MUS 100 Applied Performance (Voice)	1
MUS 125 Ensemble (Chorus)	.5
MUS 000 Recital Attendance	0
DAN 310 Modern Dance III	2
DAN 330 Jazz Dance III	2
Free Elective	3
	16.5

NURSING

Associate Professor Merrigan, Chairperson; Associate Professor Emerita Druffner; Associate Professors Castor, Schreiber, Slusser, Telban; Assistant Professors Zbegner, Zielinski; Visiting Assistant Professor Reishtein; Adjunct Faculty Babcock.

Total minimum number of credits required for a major in Nursing leading to the B.S. degree — 127.

Accreditation

The baccalaureate program in Nursing is approved by the Pennsylvania State Board of Nurse Examiners and is accredited by the National League for Nursing Accrediting Commission (NLNAC) and the Commission on Collegiate Nursing Education (CCNE).

Philosophy and Curriculum

The practice of professional nursing is a deliberative process of assessing, analyzing, planning, implementing, and evaluating care with clients which promotes and restores health and prevents illness. The baccalaureate program prepares a beginning, self-directed practitioner who is capable of initiating, implementing, and revising nursing care.

Professional nursing is based upon the integration of knowledge from the humanities, the physical and social sciences, nursing theories and research. The curriculum is based on the development of the individual throughout the life cycle.

The curriculum flows from the philosophy and covers a four-year academic period. It includes integrated nursing courses, electives and the General Education requirements. Due to the cultural diversity of clients, it is suggested that students consider taking a foreign language. Written agreements with the cooperating hospitals and agencies in Northeastern Pennsylvania ensure clinical facilities for the student's practice, which is concurrent with the classroom theory. Cooperating agencies which are used for student practice are listed in the Nursing Student Handbook. **(STUDENTS ARE RESPONSIBLE FOR THEIR OWN TRANSPORTATION TO ASSIGNED CLINICAL AREAS.)**

In addition, opportunities for learning are provided in the Learning Resource Center, which is equipped with audio-visual and computer-assisted instructional materials. A simulated hospital environment allows the student to practice the psychomotor skills necessary in nursing practice. A faculty member is available to assist the students.

Advanced Placement

The Department of Nursing provides advanced placement for applicants to enter the program at their level of competency. Previous education and/or practical experience which would involve repetitive learning justify advancing the applicant to higher level responsibilities.

Transfer students, registered nurse students and licensed practical nurses are required to have a personal interview with the department chairperson or her designee to plan their program and to determine their placement status before they can be accepted into the Wilkes nursing program.

RN-BS Program

This program is designed for students who are already registered nurses (RNs) and have graduated from AD or diploma nursing programs within the past ten years and have practiced at least 1000 clinical hours in the past three years or students who have graduated in the past three years from an AD or diploma program. This practice is in compliance with the **Pennsylvania Articulation Plan** to promote educational mobility of RNs based on a common core of knowledge that is recognized without special testing. Upon successful completion of NCLEX and Nursing 299 the student is awarded 36 Wilkes nursing credits. Registered nurse students meet the same academic requirements as the basic students with the exception of the total number of credits required (RNs' total number of credits 120, a reduction of seven elective credits).

RN-MS Program

This program is designed for the experienced, practicing professional who plans to earn a master's degree as a clinical nurse specialist. Acceleration through the baccalaureate portion of the program allows this professional to enter into advanced practice efficiently.

For details and enrollment information, contact the Chairperson of the Nursing Department.

Specific Requirements for the Nursing Program

Students majoring in Nursing are required to have completed courses in English (4 units), Social Studies (three units), Mathematics (two units including Algebra), and Science (two units including Biology and Chemistry) during their secondary school program.

The student of nursing assumes all the financial obligations listed in the section on fees in this Bulletin. Additional expenses incurred in the nursing program are listed in the Nursing Student Handbook. A price list for the above items may be obtained at the Department of Nursing.

Students must obtain from the Department Secretary, early each May, the appropriate health examination forms to be completed and returned to the Department of Nursing by August 1st. Failure to have all examinations completed and documented by August 1st results in a $50 late fee.

Clinical nursing courses are introduced in the sophomore year. Satisfactory clinical performance is an essential component of each nursing course. A grade of 2.00 is required in **all** clinical nursing courses to progress through the program. A student may repeat one nursing course

without prejudice. A subsequent failure of any clinical nursing course is deemed sufficient cause for dismissal from the program.

A student may be required to submit, at any time, to a health evaluation by a physician, or nurse practitioner, if evident limitations interfere with the student's practice or learning.

In addition to fulfilling the academic requirements of the University, students majoring in nursing are required to complete comprehensive examinations and required studies as assigned by the Department of Nursing before being eligible to graduate.

License to Practice

Candidates for a license to practice in the health field are required to have "good moral character." The Pennsylvania State Board of Nursing takes into consideration, when deciding on the applications for registration and a license to practice under their jurisdiction, whether candidates have been convicted of any felony or misdemeanor. Candidates are referred to the regulations specified in the Professional Nurse Law (P.L. 317, No. 69).

Additional Nursing Expenses and Fees	Sophomore	Junior	Senior
Uniform Shirt	$22-26		
Uniform Pants	$15-40		
Lab Coat/Scrub Jacket	$20-40		
Scrubs	$20-30		
Uniform Shoes	$40 and up		
Name Pin	$6		
Stethoscope	$10-80		
Bandage Scissors	$6		
Hemostats	$6		
Pen Light	$2-6		
BP Cuff			$20
AHA CPR Certification for Health Care Providers	$16		$16
Physical, Immunizations, and PPD	$100 and up*	$100 and up*	$100 and up*
Liability Insurance	$18**	$18**	$18**
Comprehensive Examinations	$40 per semester**	$40 per semester**	$40 per semester**
NIH Trip			Approx. $100**

*May be covered by student's medical insurance.
**Will be billed by Financial Management Office.

THE DEPARTMENT OF NURSING FACULTY RESERVES THE RIGHT TO REVISE THE NURSING MAJOR REQUIREMENTS AS DEEMED NECESSARY AT ANY TIME TO PREPARE STUDENTS FOR NEW AND EMERGING ROLES IN NURSING.

Recommended Course Sequence for a Major in Nursing

First Semester		Second Semester	
Nsg 171 Health Care Terminology	1	Bio 113 Microbiology	4
Bio 115 Human Anatomy and Physiology I	4	Bio 116 Human Anatomy and Physiology II	4
Eng 101 Composition or	4	Eng 101 Composition or	4
Distribution Requirement	3	Distribution Requirement	3
Psy 101 General Psychology or	3	Psy 101 General Psychology or	3
Soc 101 Intro. to Sociology or		Soc 101 Intro. to Sociology or	
Ant 101 Intro. to Anthropology*		Ant 101 Intro. to Anthropology*	
Fr. F 101 Freshman Foundations	3	Distribution Requirement or Soc 251	3
	14-15		17-18
Third Semester		**Fourth Semester**	
Nsg 200 Principles of Normal Nutrition	3	Nsg 202 Nursing Care of the Growing Family	8
Nsg 201 Principles of Nursing	6	GES 242 Environmental Health	4
Soc 251 Sociology of Minorities or	3	Psy Elective	3
Distribution Requirement			
Phy 170 Concepts in Physics and Chemistry	4		15
	16		
Fifth Semester		**Sixth Semester**	
Nsg 203 Nursing Care of the Adult Client I	8	Nsg 204 Nursing Care of the Adult Client II	8
Mth 150 Elementary Stats**	3	Nsg 272 Pharamacotherapeutics	3
Distribution Requirements	6	Electives	6
	17		17
Seventh Semester		**Eighth Semester**	
Nsg 301 Nursing Care of the Older Adult Client	8	Nsg 302 Senior Practicum	8
Nsg 305 Intro. to Nursing Research	3	Nsg 303 Contemporary Issues in Nursing	3
Electives	5	Electives	3
	16		14

* Please note students must take Eng 101 and both Psy and Soc/Ant 101 during their freshman year.
** Please note: Math 150 is required and prerequisite to Nsg 305.

NSG 171. HEALTH CARE TERMINOLOGY **One credit**
This course is designed to have students study terms common to the health care professions. The emphasis is on analysis and understanding rather than on memorization.

NSG 200. PRINCIPLES OF NORMAL NUTRITION **Three credits**
An introduction of the basic science of human nutrition; principles of normal nutrition, meal planning, computation of diets, physiological, psychosocial, and social effects of food and its constituents; and some contemporary local, national, and international nutrition problems.
Corequisite: Nsg 201.

NSG 201. PRINCIPLES OF NURSING **Six credits**
This course introduces the student to the profession of nursing. Use of the nursing process is emphasized in meeting the basic human needs of clients within their communities. Nursing theory is correlated with clinical practice in the Nursing Learning Resource Center and selected clinical agencies. Hours weekly: 4 hours class, 1 hour discussion, 3 hours clinical practice. Fee: $80.
Prerequisites: Bio 113, Bio 115-116, Psy 101, Soc 101/Anthro 101, Eng 101, Nsg 171.
Corequisites: Nsg 200, Phy 170, Soc 251.

NSG 202. NURSING CARE OF THE GROWING FAMILY **Eight credits**
The nursing process is utilized in assisting families within their communities to meet their human needs. Nursing theory is correlated with clinical practice in a variety of health care settings. Designated Writing Intensive. Hours weekly: 4 hours class, 12 hours clinical practice. Fee: $80.
Prerequisites: Nsg 200, 201.
Corequisites: GES 242.

NSG 203. NURSING CARE OF THE ADULT CLIENT I **Eight credits**
The nursing process is utilized in assisting adults and their families, within their communities, to achieve optimum health and to resolve selected health problems. Nursing theory is correlated with clinical practice in a variety of health care settings. Hours weekly: 4 hours class, 12 hours clinical practice. Fee: $80.
Prerequisite: Nsg 202.

NSG 204. NURSING CARE OF THE ADULT CLIENT II **Eight credits**
The nursing process is utilized in assisting adults and their families, within their community, to achieve optimum health and to resolve selected medical, surgical, and mental health problems. Nursing theory is correlated with clinical practice in a variety of health care settings. Designated Writing Intensive. Hours weekly: 4 hours class, 12 hours clinical practice. Fee: $80.
Prerequisite: Nsg 203.

NSG 270. RECENT TRENDS IN CLINICAL NUTRITION **Three credits**
This elective course is an introduction to diet therapy, with a discussion of the contemporary issues in clinical nutrition. Deals with the popular myths about nutrition and health and substantiates or refutes these claims with research evidence.
Prerequisite: Nsg 200 or RN status.

NSG 272. PHARMACOTHERAPEUTICS AND CLINICAL DECISION-MAKING IN NURSING **Three credits**
This course is designed to assist students to undertand the multidisciplinary science of pharmacology based on human systems. Content includes drug classifications, indications, adverse effects and contraindications, age-related variables, dosages, and nursing implications. Using critical thinking skills related to drug therapy, clinical decision-making is developed.
Prerequisites: Nsg 202 or Registered Nurses.

NSG 273. PHYSICAL ASSESSMENT **Three credits**
This elective course is designed to facilitate the integration of physical assessment skills as an essential element of the nursing process. The components of physical assessment, including the health history and physical examination, are organized to allow the student to proceed from an assessment of the overall functions of a client to the more specific functions of each body system.
Prerequisites: Junior and Senior Nursing majors or Registered Nurses.

NSG 274. DIMENSIONS IN HEALTH AND WELLNESS **Three credits**
This elective course provides a framework for the exploration of the concepts of holistic health, wellness, and alternative health care modalities through experiential exercises, reading, journaling and lectures. During the course the student will assess his/her personal health and wellness status, develop a plan to modify a specified health behavior, implement the plan using a variety of holistic modalities, and evaluate the outcome of the plan. This is a wellness elective appropriate for any student at any level. Lecture, discussion, class participation. No prerequisites. No corequisites. No fees. (same as PE 274).

NSG 299. NURSING FORUM **Seven credits**
This course is designed to facilitate the transition of RN students from other educational routes into baccalaureate nursing education. Use of the nursing process is applied throughout the growth and development of clients. Nursing theory is correlated with clinical practice in community settings. Upon successful completion of N299 (7 credits), 36 additional credits, (N171, N202, N203, N204, N272, N301), will be assigned in recognition of work completed. Designated Writing Intensive. Hours weekly: 5 hours class, 3 hours clinical practice. Fee: $80.
Prerequisites: RN status or NCLEX eligibility, Eng 101.
Corequisites: Nsg 200 or challenge examination.

NSG 301. NURSING CARE OF THE OLDER ADULT CLIENT **Eight credits**
The nursing process is utilized in the care of the older adult clients within their communities in a variety of settings. Nursing theory is correlated with clinical practice. Designated Writing Intensive. Hours weekly: 4 hours class, 12 hours clinical practice. Fee: $80.
Prerequisite: Nsg 204.

NSG 302. SENIOR PRACTICUM **Eight credits**
This course prepares the student for professional role development in emerging health care delivery systems. The student synthesizes knowledge from all previous nursing and supportive courses to manage care in an area of clinical practice consistent with career goals. Designated Writing Intensive. Hours weekly: 2 hours class, 19 hours clinical practice. Fee: $80.
Prerequisite: Nsg 301.

NSG 303. CONTEMPORARY ISSUES AND TRENDS IN NURSING **Three credits**
This seminar course explores current issues and trends in nursing and health care. Designated writing intensive (WI) and oral presentation option (OPO).
Prerequisites: Nsg 204 or RN students who have completed Nsg 299.

NSG 305. INTRODUCTION TO NURSING RESEARCH **Three credits**
The research process is examined in this course. Emphasis is placed on studies in nursing which provide a foundation for critical reflection on research reports and application of findings to practice. Designated oral presentation option (OPO). Offered fall semester only.
Prerequisites: Mth 150 and Nsg 204 or RN students who have completed Nsg 299.

NSG 395-396. INDEPENDENT STUDY **One to three credits**
Independent study for advanced students in nursing under the direction of a staff member.
Prerequisites: By arrangement with an instructor. Candidates for independent study must have a minimum cumulative and nursing G.P.A. of 3.00 and be of senior class standing.

NSG 399. COOPERATIVE EDUCATION **One to six credits**
Professional cooperative education placement in a private/public organization related to the student's academic objectives and career goals. In addition to their work experience, students are required to submit weekly reaction papers and an academic project to a Faculty Coordinator in the student's discipline. (See page 52 in Bulletin for placement procedures.)
Prerequisites: Sophomore standing, 2.0 cumulative average, consent of academic advisor, approval of placement by department chairperson.

NSG 406. HEALTH ASSESSMENT OF THE ELDERLY **Three credits**
This course presents an overview of the health assessment of the older adult client. In most respects the physical assessment of the elderly is no different from the young adult. However, the greater incidence of disease and infirmity in the older adult requires skill on the part of the examiner in separating pathologic process from aging process. Emphasis on multiple aspects of assessment including physical, functional, and cognitive assessment along with transcultural variations, will prepare the student for advanced practice in gerontological nursing.

Prerequisites: Permission of instructor.

NSG 198/298/398. TOPICS IN NURSING **Variable credit**
A study in topics of special interest that are not exclusively treated in regularly offered courses.

PHARMACY

Professor Graham, Dean; Associate Professor Jacobs, Assistant Dean; Professor Kibbe, Chairperson, Department of Pharmaceutical Sciences; Associate Professors Jacobs, MacManus, Witczak; Assistant Professors Culhane, Dey, Maize, Waycaster; Professor Lin, Chairperson, Department of Pharmacy Practice; Associate Professor Foote; Assistant Professors Campomizzi, Conry, Johnson, Malinowski, Somma, Sparano, Trombetta, Wright.

The Nesbitt School of Pharmacy offers a program of professional study leading to the Doctor of Pharmacy (Pharm.D.) degree. The purpose of the program is to prepare graduates for successful pharmacy practice in the health care environment of the twenty-first century. The U.S. health care system has been undergoing rapid, even dramatic, change. This transformation is expected by most observers to continue for some time. Those individuals and organizations responsible for the delivery of pharmaceutical care have not been and will not be sheltered from the forces of change. It becomes necessary, therefore, to provide new practitioners with the necessary knowledge base and skills required in a transformed health care system.

With the rapid transformation of health care delivery, a strong foundation in the basic sciences (e.g., pharmaceutics, pharmacology, medicinal chemistry, anatomy and physiology) remains essential while clinical knowledge (e.g., therapeutics, pharmacokinetics, pathophysiology) and skills (e.g. physical assessment, patient counseling, clinical decision-making) become even more important. Successful practice will demand an improved understanding of the social sciences (e.g., psychology, sociology, economics, health policy, management). Most importantly, the future pharmacy practitioner must have outstanding interpersonal skills. Among these are the ability to communicate effectively and to function in a team environment.

The American Council on Pharmaceutical Education (ACPE) has granted the Doctor of Pharmacy (Pharm.D.) program at Wilkes University full accreditation.

Prepharmacy Program

The two-year, prepharmacy course sequence is intended to prepare the student for the challenges of Wilkes University's four-year Doctor of Pharmacy curriculum. The prepharmacy program at Wilkes University is outlined below. Students electing to complete two years of study at Wilkes and transfer to a pharmacy program at another institution should consult the Health Sciences Office for assistance in identifying prepharmacy requirements for other institutions.

PREPHARMACY MINIMUM ADMISSION REQUIREMENTS:
(Enrollment limit: 80)

To be considered for admission to prepharmacy, the applicant must:

- Be a graduate of, or near graduation from, an accredited high school or academy;
- Rank in the upper 50% of his/her class;
- Attain a combined SAT score of 1000 or greater;
- Complete the Wilkes University School of Pharmacy Prepharmacy Application. (This is separate from the Wilkes University Admissions Application);
- Submit one recommendation from a pharmacist and two recommendations from teachers;
- Successfully complete an interview with the School of Pharmacy.

Students enrolled in the Wilkes University Prepharmacy program who meet the following conditions are automatically admitted to the professional pharmacy program:

- Maintain full-time enrollment at Wilkes University for at least four semesters;
- Complete a majority of the University's General Education requirements;
- Complete all the pharmacy prerequisite courses listed below at Wilkes University by the end of spring semester of the second year of prepharmacy;
- Earn a grade of 2.0 or better in all the pharmacy prerequisite courses listed below;
- At the end of the fall semester of the second year of prepharmacy must have an overall grade point average of 3.0 or better;
- At the end of the fall semester of the second year of prepharmacy must have an overall grade point average of 3.0 or better in the pharmacy prerequisite courses listed below;
- Take the Pharmacy College Admissions Test (PCAT) and earn a composite score at the 25th percentile or better.

Pharmacy prerequisites:

Two semesters (8 credits) of General Chemistry with labs
Two semesters (8 credits) of Organic Chemistry with labs
Two semesters (8 credits) of General Biology with labs
One semester (4 credits) of Calculus
One semester (3 credits) of Statistics
One semester (4 credits) of General Physics with lab
One semester (3 credits) of Microeconomics
One semester (3 credits) of Oral Communications

Students in the Wilkes University Prepharmacy program who do not meet these prerequisites must compete for available seats in the professional program by completing the application described below. These students and other Wilkes University students will be given priority over students from other institutions.

RECOMMENDED COURSE SEQUENCE FOR PREPHARMACY*

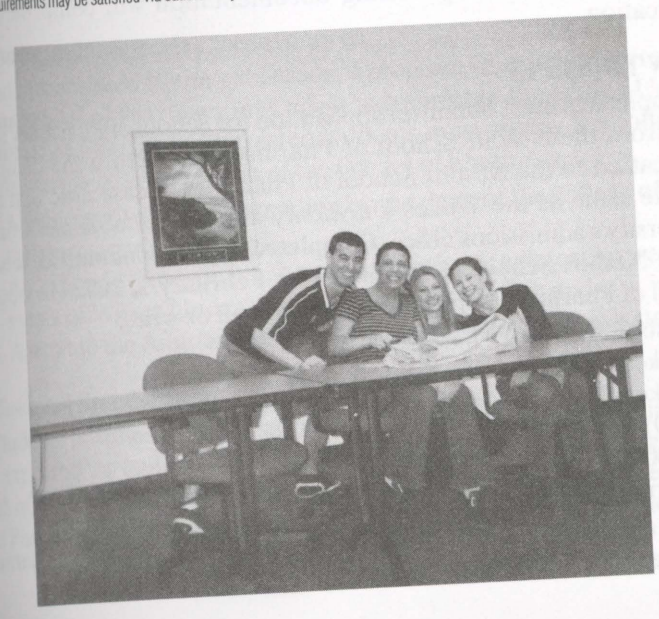
FIRST SEMESTER	
Eng 101 Composition or	4
Distribution Requirement	3
Bio 121 Principles of Modern Biology I	4
Chm 115 Elements and Compounds	4
Ft F. 101 Freshman Foundations	3
Distribution Requirements	3
	17-18

SECOND SEMESTER	
Eng 101 Composition or	4
Distribution Requirement	3
Bio 122 Principles of Modern Bio II	4
Chm 116 The Chemical Reaction	4
Distribution Requirements	6
	17-18

THIRD SEMESTER	
Chm 231 Organic Chemistry I	4
Com 101 Fundamentals of Speech	3
Ec 102 Principles of Economics II	3
Mth 105 Calculus for Life, Managerial, and Social Sciences I	4
Distribution Requirement	3
	17

FOURTH SEMESTER	
Chm 232 Organic Chemistry II	4
Phy 174 Classical and Modern Physics	4
Mth 150 Elementary Statistics	3
Free Electives	6
	17

*Some requirements may be satisfied via satisfactory achievement on advanced placement tests or Wilkes's challenge exams.



PROFESSIONAL PROGRAM

The School of Pharmacy offers a four year professional program leading to the Doctor of Pharmacy (Pharm.D.) degree. Graduates of the program are eligible for state examination to become licensed pharmacists after completing appropriate internship hours. The four years of education consist of three years of in-class (i.e., lecture, laboratory, discussion group) education and one year of experiential education.

ADMISSION INTO THE PROFESSIONAL PROGRAM:

(Enrollment limit: 65)

To be admitted into the professional program of the Nesbitt School of Pharmacy, a student must have either enrolled and successfully completed the ***prepharmacy*** program at Wilkes University as outlined above or have submitted a successful **application** to the Nesbitt School of Pharmacy.

Historically, there have been more applicants than available positions. This requires the faculty to select from among the applicants those who will have the best opportunity to complete the curriculum and have productive professional lives. Admission is based upon the student's academic ability as reflected in prepharmacy courses, PCAT scores, and references, as well as a successful interview. Each spring a select group of applicants are invited for a series of interviews. Selection for interview is based upon complete evaluation of all submitted application materials. Wilkes University students will be given priority over students from other institutions. Any missing documentation will compromise the application.

HOW TO APPLY

Applicants must obtain an application for School of Pharmacy admission from the Nesbitt School of Pharmacy and return the completed application to the Nesbitt School of Pharmacy. Please note that this is not the same as the Wilkes University application obtained from the University's admissions office. **Completed applications must be returned to the Nesbitt School of Pharmacy by February 1, 2002**. To obtain a School of Pharmacy application you may call or write:

Nesbitt School of Pharmacy
Wilkes University
Wilkes-Barre, PA 18766
(570) 408-4280
1-800-WILKESU ext. 4280
pharm@wilkes.edu

The application is also available on the Nesbitt School of Pharmacy homepage: Pharmacy.wilkes.edu

PHARMACY MINIMUM APPLICATION REQUIREMENTS

To be considered for admission to the Nesbitt School of Pharmacy, the applicant must:

- complete a majority of the Wilkes University General Education course requirements or have completed a Baccalaureate Degree;
- complete the ***Pharmacy prerequisite courses*** listed above by the end of the spring 2002 term;
- Wilkes students must have a minimum overall GPA of 2.50 and a minimum GPA of 2.50 in the pharmacy prerequisite courses listed above;
- non-Wilkes students must have a minimum overall GPA of 2.75 and a minimum GPA of 2.75 in the pharmacy prerequisites;
- all applicants must obtain a grade of C (2.0) or better in each of the pharmacy prerequisite courses;
- provide three completed recommendation forms, one of which must be from a pharmacist;
- successfully complete the interview process;
- demonstrate acceptable written communication skills;
- take a standardized test of critical thinking skills; and
- submit scores on the Pharmacy College Admission Test (PCAT) by February 1, 2002.

Note: Priority will be given to those completed applications (including PCAT) received by February 1, 2002. Non-Wilkes students with overall GPA's between 2.5 and 2.75 will be considered for admission on a lower priority.

Admission under Special Circumstances

Students enrolled in the professional program of another accredited College/School of Pharmacy may apply to transfer to the Wilkes University School of Pharmacy. Interested students must supply the following materials to the Assistant Dean of the School of Pharmacy:

- A letter certifying good standing by the dean of the college of pharmacy previously attended;
- An official transcript(s) showing that the prepharmacy requirements of Wilkes University have been completed; and
- A letter to the Assistant Dean requesting evaluation of class standing.

Professional Standards

Students enrolled in the program of the Nesbitt School of Pharmacy are expected to endorse professional standards by subscribing to the Oath of the Pharmacist. Students are also expected to abide by the American Pharmaceutical Association's Code of Ethics of the Profession.

Progression Requirements

All students in the professional program of the School of Pharmacy are required to meet minimum standards for academic progression. Progression requirements include a minimum semester and a cumulative pharmacy GPA of 2.0. In addition, no student shall be allowed more than 8.0 credits of less than 2.0 grades in required professional courses both inside and outside of the School. Any course with a grade of 0 must be repeated. At the end of each semester the progress of each student in the professional program will be reviewed. Students failing to meet minimal academic standards at the end of any semester must petition the Student Review Subcommittee through the Assistant Dean to further progress in the School. Policies adopted within these guidelines are distributed to all students in the professional program.

Experiential Curriculum Component

As the experiential portion of the curriculum begins in the second professional year (P-2), all students are required to possess professional liability insurance, to have documentation of immunizations, to pass a physical examination, and to be certified in Basic Cardiac Life Support and in Basic First Aid upon entering the P-2 year.

The fourth professional year (P-4) of the pharmacy program is devoted entirely to clerkship training in a variety of patient-care sites (e.g. hospitals, clinics, and pharmacies). Each student will be assigned by the School to six clerkships, some of which may be at some distance from the Wilkes campus. Prior to entering clerkships, students must have completed all didactic pharmacy course work. During the clerkships, students are required to complete, at minimum, 40 contact hours per week of practice experience in a variety of health care settings. Since patient care is a continuous activity, off-campus clerkship experiences may be conducted outside the traditional workday (shift work). Note also that some clerkship start and end dates will not adhere strictly to the regular University calendar. The student is responsible for paying all transportation and housing costs.

The Nesbitt School of Pharmacy reserves the right to revise the Pharmacy curriculum at any time in order to prepare students for future practice roles, meet new accreditation requirements and to incorporate innovations in instruction.

THE DOCTOR OF PHARMACY PROGRAM RECOMMENDED COURSE SEQUENCE FOR PROFESSIONAL PROGRAM

P-1 FALL SEMESTER

PHA 301 Found. of Pharm. Practice I	2
PHA 308 Pharm. and Health Care Delivery	3
PHA 311 Pharmaceutics I	4
PHA 313 Pharm. Calculations	1
PHA 327 Medical Microbiology	4
PHA 331 Anatomy/Physiology I	3
PHA 333 Anatomy/Physiology I Lab	1
	18

P-1 SPRING SEMESTER

PHA 302 Pharmaceutical Care Lab I	1
PHA 304 Found. of Pharm. Practice II	2
PHA 310 Clinical Research Design	3
PHA 312 Pharmaceutics II	4
PHA 332 Anatomy & Physiology II	3
PHA 334 Anatomy & Physiology II Lab	1
PHA 365 Medical Biochemsitry	4
	18

P-2 FALL SEMESTER

PHA 401 Pharmaceutical Care Lab II	1
PHA 403 Intro. to Pharmacy Practice Exp.	1
PHA 405 Pharmaceutical Care Systems	2
PHA 411 Biopharm/Clinical Kinetics	4
PHA 421 Pharmacotherapeutics I	2
PHA 423 Pharmacotherapeutics II	2
PHA 425 Pharmacotherapeutics III	3
Professional Elective	3
	18

P-2 SPRING SEMESTER

PHA 402 Pharmaceutical Care Lab III	1
PHA 410 Biotechnology/Immunology	3
PHA 412 Mgt. of Pharm. Operations	3
PHA 426 Pharmacotherapeutics IV	2
PHA 428 Pharmacotherapeutics V	4
PHA 430 Pharmacotherapeutics VI	2
Professional Elective	3
	18

P-3 FALL SEMESTER

PHA 501 Pharmaceutical Care Lab IV	1
PHA 503 Longitudinal Care I	1
PHA 505 Pharmacy Law	2
PHA 509 Economic Evaluation of Pharm.	3
PHA 521 Pharmacotherapeutics VII	2
PHA 523 Pharmacotherapeutics VIII	4
PHA 525 Pharmacotherapeutics IX	2
Professional Elective	3
	18

P-3 SPRING SEMESTER

PHA 502 Pharmaceutical Care Lab V	1
PHA 504 Longitudinal Care II	1
PHA 526 Pharmacotherapeutics X	2
PHA 528 Pharmacotherapeutics XI	2
PHA 530 Pharmacotherapeutics XII	4
PHA 532 Alternative Medicine/Nutrition	3
Professional Elective	3
	16

P-4 CLERKSHIP YEAR

PHA 510 Medicine	6 weeks	6
PHA 511 Ambulatory Care	6 weeks	6
PHA 512 Community Practice	6 weeks	6
PHA 513 Rural Practice	6 weeks	6
Elective Clerkships	2 @ 6 weeks	12
		36

School of Pharmacy Course Descriptions

PHA 301 & PHA 304. FOUNDATIONS OF PHARMACY PRACTICE **Two credits each**

Pharmaceutical care in the health care delivery system of the 21st century is addressed. Topics include the history of pharmacy, pharmaceutical care, health and illness behavior, health care ethics, medical terminology, communication skills, team building and team leadership. Lecture: Two hours per week.

Prerequisite: P-l standing.

PHA 302, 401, 402, 501, 502. PHARMACEUTICAL CARE LAB I - V **One credit each**

A five semester sequence designed to challenge students to apply classroom pharmaceutical knowledge and abilities at increasingly higher levels of sophistication. Many of the exercises will serve as a basis for formal assessment of the student's professional competency. Laboratory: Three hours per week.

Prerequisite: P-l, P-2 or P-3 standing as appropriate for each laboratory.

PHA 308. PHARMACEUTICAL AND HEALTH CARE DELIVERY **Three credits**

Examination of health and pharmaceutical delivery in the U.S. conducted from a societal perspective. Emphasis is on public policy, economic behavior and outcomes. Application will be made to various pharmaceutical sectors (e.g., retail, health systems, manufacturing). Students should gain an understanding of the factors driving transformation of health care delivery and the implications for future pharmacy practice. Lecture: Three hours per week.

Prerequisite: P-l standing or consent of instructor.

PHA 310. CLINICAL RESEARCH AND DESIGN **Three credits**

Application of research design concepts and statistical techniques to design, critically analyze and interpret preclinical, clinical and economic studies of pharmaceuticals and treatment plans. Lecture: Three hours per week.

Prerequisite: MTH 150 or equivalent and P-1 standing or consent of instructor.

PHA 311 & PHA 312. PHARMACEUTICS I & II **Four credits each**

The study and application of physico-chemical principles that are necessary for the design, development and preparation of pharmaceutical dosage forms. The study of quantitative skills necessary for an understanding of the basic and clinical pharmaceutical sciences, including skills in pharmaceutical calculations and extemporaneous preparation of dosage forms. Lecture: Three hours per week. Laboratory/Recitation: Three hours per week. Fee: $40

Prerequisite: P-1 standing or consent of instructor. PHA 311 is a prerequisite for PHA 312.

PHA 313. PHARMACY CALCULATIONS **One credit**

The common mathematical processes that a pharmacist may encounter in professional practice are covered. Interpretation of the prescription, including Latin abbreviations, will be discussed. Medical terminology and the generic name, trade name, manufacturer and classification of the top 100 drugs will also be presented. Lecture one hour per week.

Prerequisite: P-1 standing or consent of instructor.

PHA 327. MEDICAL MICROBIOLOGY **Four credits**

An overview of microbiology with special emphasis on pathogenic microbiology. Lecture: Three hours per week. Laboratory: Three hours per week. Fee: $40. Cross listed with BIO 327.

Prerequisite: P-1 standing or consent of instructor.

PHA 331 & PHA 332. MEDICAL ANATOMY & PHYSIOLOGY I & II **Three credits each**

In-depth principles of human anatomy and physiology as well as an introduction to pathophysiology will be presented. Lecture: Three hours per week. Cross listed with BIO 331 & BIO 332.

Prerequisite: P-1 standing or consent of instructor. PHA 331 is a prerequisite for PHA 332.

PHA 333. ANATOMY AND PHYSIOLOGY LABORATORY I **One credit**

This course is designed to familiarize the students with the anatomy of the skeletomuscular, cardiovascular, pulmonary and renal systems. The students will be using a CD ROM (A.D.A.M) and an atlas to review and recognize anatomical structures. Additional exercises will be given to relate the function to the anatomical structure. The exercises are designed to reinforce the physiological lectures and facilitate learning of the anatomical structures. A minor portion of the course will introduce selected disease states of these organs. Laboratory/Recitation; three hours per week. Fee: $40.

Prerequisite: P-1 standing or permission by instructor.

Corequisite: PHA 331.

PHA 334. ANATOMY AND PHYSIOLOGY LABORATORY II **One Credit**

This course is designed to familiarize students with the anatomy of the gastrointestinal tract, the central and peripheral nervous systems, sensory organs and the reproduction systems. The students will be using a CD ROM (A.D.A.M) and an atlas to review and recognize anatomical structures. Additional exercises will be given to relate the function to the anatomical structure. The exercises are designed to reinforce the physiological lectures and facilitate learning of the anatomical structures. A minor portion of the course will introduce selected disease states of these organs. Laboratory/Recitation; three hours per week. Fee: $40.

Prerequisite: P-1 standing or permission by instructor.

Corequisite: PHA 332.

PHA 365. MEDICAL BIOCHEMISTRY **Four credits**

Introduction to basic biochemistry concepts, focusing on the structure and function of vitamins, proteins, and lipids as well as bioenergetics and major catabolic pathways. The catabolism of carbohydrates, fats and amino acids will be discussed including reactions and regulation. Common metabolic pathways of drugs, enzyme induction and metabolism down regulation will also be presented. Lecture: Four hours per week. Cross listed with CHM 365.

Prerequisite: P-1 standing or consent of instructor.

PHA 403. INTRODUCTORY PHARMACY PRACTICE EXPERIENCE **One credit**

This course will provide introductory practice experiences to students in a variety of practice settings. This early experience is critical to the process of professional socialization which can only develop via interactions with faculty members, practitioners, peers and other health care professionals. Students will spend three hours per week in a structured, supervised learning process in an in-patient or out-patient setting.

Prerequisite: P-2 standing.

PHA 405. PHARMACEUTICAL CARE SYSTEMS: DESIGN & CONTROL **Two credits**

Examines delivery of pharmaceutical products and services from a systems perspective in a variety of patient care settings. Focus is upon effectiveness, efficiency and quality. Covers design of systems, establishment and monitoring of key indicators, total quality management and quality assurance agencies (e.g., JCAHO, NCQA). Lecture: Two hours per week.

Prerequisite: P-2 standing or consent of instructor.

PHA 410. IMMUNOLOGY/BIOTECHNOLOGY **Three credits**
A discussion of nonspecific host defense mechanisms and a detailed description of specific immunity. Products that impart artificial active and passive immunity are presented. The concept of biotechnology is discussed together with the currently available products of genetic engineering that relate to immunology. The various immunological disorders and the immunology of cancer and HIV are discussed. Lecture: Three hours per week.
Prerequisite: PHA 331, 332, 365 and P-2 standing or consent of instructor.

PHA 411. BIOPHARMACEUTICS & CLINICAL PHARMACOKINETICS **Four credits**
The fundamentals of biopharmaceutics and pharmacokinetics are presented. The physical and chemical properties of the drug and dosage form and the impact of the route of administration and patient characteristics and disease state will be related to the absorption, distribution, metabolism and elimination in the body. Individual drugs and patient case histories will be used to familiarize the student to practice. Lecture: Three to four hours per week. Recitation: zero to three hours per week.
Prerequisite: PHA 311, PHA 312 and P-2 standing or consent of instructor.

PHA 412. MANAGEMENT OF PHARMACY OPERATIONS **Three credits**
The principles of management, including personnel and financial management, will be covered as they apply to management of pharmacy operations in a variety of settings (e.g., community, health system, managed care). Lecture: Three hours per week.
Prerequisite: P-3 standing or consent of instructor.

PHA 421, 423, 425, 426, 428, 430, 521, 523, 525, 526, 528, 530 PHARMACOTHERAPEUTICS
A four semester, twelve module sequence (three modules per semester) integrating pharmacology, medicinal chemistry, pathophysiology and therapeutics. Team-taught. Provides an opportunity to learn, observe and apply concepts from these four disciplines in an integrated manner. Builds a foundation for disease management. Topics and associated credits for each module are as follows:
Prerequisite: PHA 310, 327, 331, 332, 365 and P-2 or P-3 standing as appropriate for each module.

PHA 421 Pharmacotherapeutics I: Principles of Pharmacology & Medicinal Chemistry **Two credits**

PHA 423 Pharmacotherapeutics II: Principles of Pathophysiology & Therapeutics **Two credits**
Prerequisite: PHA 421.

PHA 425 Pharmacotherapeutics III: Self-Care and Dermatology* **Three credits**

PHA 426 Pharmacotherapeutics IV: Gastrointestinal Disorders* **Two credits**

PHA 428 Pharmacotherapeutics V: Infectious Diseases* **Four credits**

PHA 430 Pharmacotherapeutics VI: Hematology, Joint Disorders, Surgery* **Two credits**

PHA 521 Pharmacotherapeutics VII: Pulmonary Disorders* **Two credits**

PHA 523 Pharmacotherapeutics VIII: Cardiovascular Disorders* **Four credits**

PHA 525 Pharmacotherapeutics IX: Renal Disorders* **Two credits**

PHA 526 Pharmacotherapeutics X: Endocrine Disorders & Women's Health Issues* **Two credits**

PHA 528 Pharmacotherapeutics XI: Neoplastic Diseases* **Two credits**

PHA 530 Pharmacotherapeutics XII: Central Nervous System Disorders* **Four credits**

** PHA 423 is prerequisite to PHA 425-530.*

PHA 450. NEUROPHARMACOLOGY OF DRUGS OF ABUSE **Three credits**
In-depth analysis of drugs of abuse, including pharmacokinetics, pharmacodynamics, tolerance, sensitization, physical dependence, and effects of drug use during pregnancy. Drug testing and substance abuse treatment strategies will also be discussed. Lecture: Three hours.
Prerequisite: PHA 421 and P-2 standing or consent of instructor

PHA 452. EXTEMPORANEOUS COMPOUNDING **Three credits**
Students will achieve basic and advanced skills in compounding pharmaceutical dosage forms for individualized patient therapy to replace a lack of commercially available products, and enhance therapeutic problem-solving between the pharmacist and physician to enhance patient compliance. Students will work independently on research assignments and compounding preparations. Lecture one hour, laboratory six hours per week. Fee: $40.
Prerequisites: PHA 311 and PHA 312 and permission of instructor.

PHA 455. INTRODUCTION TO THE MANAGEMENT OF THE COMMUNITY PHARMACY **Three credits**
This course is designed to introduce the student to concepts needed to be a successful community pharmacist. The student will be introduced to principles in pharmacy and fiscal management, legal issues relating to pharmacy and entrepreneurship. This course will consist of lectures and projects related to pharmacy management and practice, and legislative issues.
Prerequisites: P-2 standing or permission of instructor.

PHA 503 and PHA 504. LONGITUDINAL CARE LAB I & II **One credit each**
Students will follow a patient or patients over an extended period of time in a medical or home setting. Pharmaceutical knowledge and skills will be applied in communications, health assessment, monitoring of pharmacotherapy, evaluation of both humanistic and clinical outcomes. Issues of health care, cost access and quality as revealed through each patient's interaction with health and pharmaceutical care systems will be addressed. Three hours per week.
Prerequisite: PHA 503 is prerequisite to PHA 504.

PHA 505. PHARMACY LAW **Two credits**
The study of federal and state statutes, regulations and court decisions which control the practice of pharmacy and drug distribution. Civil liability in pharmacy practice and elements of business and contract law will be covered. Lecture: Two hours per week.
Prerequisite: P-3 standing or consent of instructor.

PHA 509 ECONOMIC EVALUATION OF PHARMACEUTICAL PRODUCTS & SERVICES **Three credits**
Introduction to commonly used economic evaluation methods (e.g., cost-minimization, cost-utility, cost-benefit, cost-effectiveness) as applied to pharmaceutical products and services. Quality of life and outcomes research will also be explored. Emphasis is on understanding evaluation methods and research design and interpreting the relevant literature for practice applications. Lecture: Three hours per week.
Prerequisite: P-3 standing, PHA 308, and PHA 310 or consent of instructor.

PHA 510. GENERAL MEDICINE ADVANCED PHARMACY PRACTICE EXPERIENCE **Six credits**
Integration of basic pharmacy related concepts to the delivery of pharmaceutical care in general medicine practice. Clinical practice: Forty hours per week for a total of six weeks.
Prerequisite: P-4 standing.

PHA 511. AMBULATORY CARE ADVANCED PHARMACY PRACTICE EXPERIENCE **Six credits**
Integration of basic pharmacy related concepts to the delivery of pharmaceutical care in ambulatory care settings. Clinical practice: Forty hours per week for a total of six weeks.
Prerequisite: P-4 standing.

PHA 512. COMMUNITY ADVANCED PHARMACY PRACTICE EXPERIENCE
Six credits

Integration of basic pharmacy related concepts to the delivery of pharmaceutical care in community practice settings. Clinical practice: Forty hours per week for a total of six weeks.

Prerequisite: P-4 standing.

PHA 513. RURAL ADVANCED PHARMACY PRACTICE EXPERIENCE **Six credits**

Integration of basic pharmacy related concepts to the delivery of pharmaceutical care in rural practice settings. Clinical practice: Forty hours per week for a total of six weeks.

Prerequisite: P-4 standing.

PHA 532 ALTERNATIVE MEDICINE AND NUTRITION **Three credits**

This course gives an overview of various alternative/contemporary medicine practices: homeopathy, herbal therapy, chiropractic, acupuncture, acupressure, body massage, ayurvedic, and shamanic practices. This course will also give an overview on the concept and practice of nutrition: parenteral and enteral nutrition. Lecture: Three hours.

Prerequisite: PHA 331, 332, 365 and P-3 standing or consent of instructor.

PHA 550. PRINCIPLES OF EXPERIMENTAL PHARMACOLOGY **Three credits**

This course is designed to increase the student's appreciation of the science of pharmacology. The student will be exposed to principles and theories that are currently used to interpret pharmacological data about new drug products and physiological systems in both humans and animals. A series of articles will be used to demonstrate application of pharmacological techniques, and the student will be asked to suggest additional techniques to further clarify published hypotheses. The student will conduct experiments to apply pharmacological theories and techniques and to use the scientific method to gain data to support a hypothesis. Fee: $40.

Prerequisites: P2 standing or higher or permission of instructor.

PHA 551. VETERINARY PRODUCTS **Three credits**

Veterinary Products is designed to introduce pharmacy students to Veterinary Pharmacology and Therapeutics and the role of the pharmacist in the care of animals. The students will evaluate the most commonly used drugs in veterinary care and relate that evaluation to the use of these drugs in humans. The student will learn fundamental concepts that will allow the student to provide pharmaceutical care to animals and assist the veterinarian and owner in the care of pets and domestic animals. There will be a field trip to a zoo on one Saturday during the course.

Prerequisites: PHA 424 and 426.

PHA 554. HISTORY OF PHARMACY AND DRUG DEVELOPMENT
Three credits

The History of Pharmacy and Drug Discovery is designed to provide the student with a general understanding of the development of the profession of pharmacy and its interrelationship with the discovery of critical therapeutic agents. This course will consider the contributions of the ancient Mesopotamian, Egyptian, Chinese, Greek and Roman cultures to the development of Pharmacy. The student will also be exposed to events that lead to the rise of professional pharmacy in Europe during the Renaissance period. Using this as a foundation the course will focus on the development and rise of professional pharmacy within the United States from the 15th century to modern times. An important aspect of this course will be discussions concerning the development of critical therapeutic agents that revolutionized the treatment of disease and how these discoveries affected the profession of pharmacy. Aspects of the scientific process and how it has contributed to these discoveries will also be discussed.

The Doctor of Pharmacy Program For Non-Traditional Students

Recommended Course Sequence for Non-Traditional Students

Students enrolled in the non-traditional program must have graduated from an acredited school of pharmacy and hold a valid pharmacy license. In order to begin the program, the student must have completed ASHP Clinical Skills Series Modules I-V and ASHP Drug Information Series 1-3. In addition, an examination on basic pharmacology and medicinal chemistry will be given. If this is not passed, the remedial work must be completed and a subsequent examination passed before the student may begin Advanced Therapeutics.

First Fall Semester		**First Spring Semester**	
PHA 570 Advanced Therapeutics I	3	PHA 571 Advanced Therapeutics II	3
PHA 578 Advanced Biopharmaceutics & Clinical Pharmacokinetics	3	PHA 576 Research Design & Literature Evaluation	3
First Summer Semester		**Second Fall Semester**	
PHA 572 Advanced Therapeutics III	3	PHA 573 Advanced Therapeutics IV	3
PHA 575 Pharmaceutical Care Skills	3	PHA 577 Pharmacoeconomics & Management of Pharmacy Operations	3
Second Spring Semester		**Second Summer Semester**	
PHA 574 Advanced Therapeutics V	3	PHA 579 Ambulatory Care Clerkship for Practicing Pharmacists †	6
PHA 581 Elective Clerkship*	4	PHA 580 Adult Internal Medicine Clerkship for Practicing Pharmacists †	6
Total Credits	**43**		

*Elective Clerkships can begin but need to check with Pharmacy Practice Department.
† All didactic courses must be completed before the required clerkships can begin.

The non-traditional program must be completed within four (4) calendar years. Students must complete 12 credits per calendar year. Only students enrolled in the non-traditional program may enroll in these courses. Students in the traditional program will not be allowed to take these courses in lieu of courses within the traditional program.

PHA 570-574. ADVANCED THERAPEUTICS I-V **Three credits each**

This five-course sequence is designed to provide returning practitioners with an opportunity to learn, observe and apply concepts of pathophysiology and therapeutics in an integrated manner. The contents of the course sequence will include drugs and therapies necessary to treat disorders of the central and peripheral nervous systems, integumental, gastrointestinal, hematological, muscloskeletal, renal, pulmonary, cardiovascular and endocrine systems. Also included will be drugs and therapies for cancer and infectious diseases.

Prerequisites: PHA 570 for PHA 571, PHA 571 for PHA 572 and PHA 572 for PHA 573 and PHA 574.

PHA 575. PHARMACEUTICAL CARE SKILLS **Three credits**

This laboratory is designed to help the currently practicing pharmacist develop the necessary skills for the provision of direct patient care services. Topics include, but are not limited to, drug information, alternative medicine, interpersonal and intercultural communication, patient counseling, physical assessment, development of drug literature evaluation skills, development of pharmacist care plan and documentation of pharmacists' recommendations. This laboratory utilizes active learning strategies to provide the student with opportunities for application of concepts gained through practice experience and concurrent course work within the curriculum.

PHA 576. RESEARCH DESIGN AND LITERATURE EVALUATION **Three credits**

This course is designed to provide the student with a fundamental understanding of clinical research design, critical analysis of clinical studies and application of study results in the management of specific patients and patient populations. The student will be expected to utilize drug information skills in the retrieval and evaluation of tertiary, secondary and primary literature.

PHA 577. PHARMACOECONOMICS AND MANAGEMENT OF PHARMACY OPERATIONS **Three credits**

Principles of pharmaceutical economics and pharmacy operations management will be addressed. Common pharmaco-evaluations such as cost effectiveness, cost-benefit, cost-utility, cost minimization, and decision analysis will be explored. Contemporary issues of pharmacy operations management as they pertain to a variety or practice settings (community, managed care, hospital, etc.) within the context of health care delivery in the United States will be evaluated.

Prerequisites: PHA 576.

PHA 578. ADVANCED BIOPHARMACEUTICS AND CLINICAL PHARMACOKINETICS **Three credits**

Advanced Biopharmaceutics and Clinical Pharmacokinetics is designed to educate pharmacists in the principles of pharmacokinetics and biopharmaceutics and their clinical applications in dosage regimen design and therapeutic *evaluations*. The impact of the physical and chemical nature of the drug and dosage forms will be reviewed as they relate to absorption, distribution, metabolism and elimination. The physiology of the GI will be related to the absorption of oral medications. The course will also examine the controlled release dosage forms and those that use novel delivery systems to administer drugs. The pharmacokinetics of individual drugs will be assessed for their clinical application based on patients' clinical status. Case study and homework will be emphasized.

PHA 579. AMBULATORY CARE CLERKSHIP FOR PRACTICING PHARMACISTS **Six credits**

PHA 580. ADULT INTERNAL MEDICINE CLERKSHIP FOR PRACTICING PHARMACISTS **Six credits**

PHA 581. ELECTIVE PRACTICE CLERKSHIP FOR PRACTICING PHARMACISTS **Four credits**

The series of three clerkships will provide advanced practice experiences to students in a variety of practice settings. All students are required to complete an internal medicine (1), ambulatory care (1), and an elective rotation (1). These advanced experiences are critical to the continuing professional socialization of students. This is the process by which an individual selectively acquires not only knowledge and skills of the profession, but also the appropriate behaviors, attitudes and values of the profession. Socialization does not occur instantaneously; instead it develops over time. The evolution of this process occurs primarily through social interactions with faculty members, pracititioners, peers and other health care professionals. Secondly, these rotations are a capstone experience that will provide students with the opportunity to design and manage patient-specific drug therapies and population-based care. This capstone experience will enhance the learning process and expand upon the concepts and topics discussed throughout the didactic portion of the curriculum. Preceptors at each of the sites will guide and evaluate students throughout the rotation. The principal preceptor, in all cases, is a faculty member or an affiliated member of the Department of Pharmacy Practice at the Nesbitt School of Pharmacy of Wilkes University. The preceptor is responsible for coordinating the program at the rotation site and the assessment of the students.

The sites to which students are assigned will vary somewhat in the type of experience they can provide. Each student will find his/her rotation experience may vary slightly from students at other sites. However, in order to insure the same learning outcomes are achieved by all students, a standard set of learning objectives and activities and method of evaluation will be utilized by all preceptors. These standards will still provide the necessary flexibility to accommodate for differences in sites and practice settings.

PHILOSOPHY

Associate Professor Fields, Chairperson; Associate Professor Paul; Professor Emeritus Kay.

Total minimum number of credits required for a major in Philosophy leading to the B.A. degree — 120.

Total minimum number of credits required for a minor — 18.

The study of philosophy, whether by those who pursue a major in philosophy or by those who elect only a few courses of special interest, contributes to the development of the most basic skills and habits of mind which are characteristic of educated men and women: clarity of thought, precision in the analysis of conflicting claims, the power to render sound judgments based upon an appreciation of differing perspectives, and the ability to express and defend one's own views with force and imagination. Students who develop these skills through the study of philosophy are prepared for a variety of professional careers in law, medicine, teaching, and the ministry. In addition, they are the beneficiaries of the traditional liberal arts education as a preparation for numerous careers in government, business, and industry. It is recommended that students who major in Philosophy take a foreign language.

Since students may elect to pursue a double major in philosophy and a related area of interest, philosophy majors are invited to design their own majors in consultation with their advisors and with the approval of the department chairperson. The typical program consists of 30 credit hours in philosophy, including Phl 101, Phl 122, and Phl 201.

The minor in philosophy consists of 18 credit hours, including Phl 101 (3 credit hours), Phl 122 (3 credit hours), and either Phl 201 or 202 (3 credit hours).

Recommended Course Sequence for a Major in Philosophy

First Semester		Second Semester	
Eng 101 Composition or	4	Eng 101 Composition or	4
Distribution Requirement	3	Distribution Requirement	3
Phl 101 Introduction to Philosophy	3	Phl 122 Introduction to Logic	3
Distribution Requirements	9	Distribution Requirements	9
	15-16		15-16
Third Semester		**Fourth Semester**	
Major Elective	3	Major Elective	3
Free Electives	12	Free Electives	12
	15		15

Fifth Semester		Sixth Semester	
Major Elective	3	Major Elective	3
Free Electives	12	Free Electives	12
	15		15
Seventh Semester		**Eighth Semester**	
Major Electives	6	Major Electives	6
Free Electives	9	Free Electives	8
	15		14

PHL 101. INTRODUCTION TO PHILOSOPHY **Three credits**
An introduction to the major figures, problems, and concerns of Western philosophical thought. Students in this course typically examine a variety of philosophical questions and problems such as: the existence of God, human nature and the good life, fatalism, freedom, and responsibility, skepticism and the nature of knowledge, and theories of reality.

PHL 110. INTRODUCTION TO ETHICAL PROBLEMS **Three credits**
An exploration of a series of basic ethical problems. Topics to be covered include basic ethical theories, how to evaluate ethical theories and moral arguments, the relationship between religion and ethics, and a selection of current moral problems such as abortion, capital punishment, affirmative action, animal rights, etc. Specific moral problems covered will vary. Other ethical questions such as "How should we live?" may also be covered in the course.

PHL 122. INTRODUCTION TO SYMBOLIC LOGIC **Three credits**
An introduction to the nature of logical systems and deductive reasoning. The study of the syntax and semantics of formal languages; testing arguments for validity; and an examination of other important logical notions, such as proof and consistency.

PHL 201. ORIGINS OF WESTERN THOUGHT **Three credits**
The development of Western philosophical thought from its beginnings in the Greek world to early Christian thought. Philosophers to be studied include the Pre-socratics, Plato, Aristotle, Plotinus, the Stoics, Epicurus, Sextus Empiricus, and St. Augustine.
Prerequiste: Phl 101 or permission of instructor.

PHL 202. MODERN PHILOSOPHY: DESCARTES TO KANT **Three credits**
Western philosophical thought from the Renaissance to the end of the eighteenth century, including the writings of Descartes, Spinoza, Leibniz, Locke, Berkeley, Hume, and Kant.
Prerequisite: Phl 101 or 201 or permission of instructor.

PHL 210. ETHICAL THEORY **Three credits**
A study of classical and contemporary ethical theories, the problems that they raise and the problems they are intended to solve. The theories of Plato, Aristotle, Kant, Hume, and Mill will be examined as well as more recent contributions by Ross, Harman, Moore, Ayer, Stevenson, and Hare. Questions addressing ethical relativism, the relationship of religion to ethics, skepticism, moral realism, egoism, and value judgments will also be discussed.
Prerequisite: Phl 101 or permission of instructor.

PHL 212. BUSINESS ETHICS **Three credits**
An enquiry into the ethical issues that arise in the context of business. Major ethical theories such as those of Bentham, Mill, Kant, and Ross are examined in such areas of concern as discrimination in the work place, testing and employee privacy, consumer deception, and environmental issues. Theories of justice such as those of Nozick and Rawls are used to clarify such problems as corporate responsibility in plant relocation and overall economic justice.
Prerequisite: Phl 101 or permission of instructor.

PHL 214. MEDICAL ETHICS **Three credits**
A selection of important issues facing health care providers, patients and society in general are examined. Topics include euthanasia, abortion, doctor-patient relationships, the use and misuse of information, research on human and non-human animals, informed consent, patients' rights, truthfulness and the right to know, conflicts of obligations, the right to health care, the allocation of resources, mandatory testing for AIDS, and the use of genetic and reproductive technologies.
Prerequisite: Phl 101 or permission of instructor.

PHL 216. PHILOSOPHIES OF NONVIOLENCE **Three credits**
An examination of the concept of nonviolence and arguments supporting nonviolence as a way of life. Historical and modern theories as well as applications of nonviolence will be considered including ideas from the Buddha, Jesus, Gandhi, Tolstoy, Martin Luther King, Jr., Thoreau, the Dalai Lama, Thich Nhat Hanh, and others. Students will be expected to consider the importance and relevance of these ideas for their own lives.
Prerequisite: Phl 101, 110 or permission of instructor.

PHL 217. THE QUESTION OF ANIMAL RIGHTS **Three credits**
An exploration of arguments supporting a wide variety of conclusions regarding our ethical obligations to nonhuman animals. We will examine standard moral theories, theories about the nature of current social practices, the history of our attitudes toward nonhuman animals, feminist arguments that our attitudes toward nonhuman animals are connected to negative views of female humans, and more.
Prerequisite: Phl 101, 110 or permission of instructor.

PHL 218. ENVIRONMENTAL ETHICS **Three credits**
An examination of the central problems of environmental ethics as viewed from the perspectives of science and of philosophy. The value of nature and "natural objects," differing attitudes toward wildlife and the land itself, implications of anthropocentrism, individualism, ecocentrism, and ecofeminism, bases for land and water conservation, and other topics will be examined within a framework of moral and scientific argument. (same as GES 218).
Prerequisite: Phl 101 or GES 240 or permission of instructor.

PHL 230. SOCIAL AND POLITICAL PHILOSOPHY **Three credits**
Social and political institutions as seen by such classic critics as Plato, Aristotle, Hobbes, Locke, Hume, Rousseau, Bentham, and others. More recent views such as those of Marx, Rawls, and Nozick will also be covered. Special attention is paid to the related questions of the role of the state and the relationship between the individual and the state. (Same as PS 263)
Prerequisite: Phl 101 or permission of instructor.

PHL 236. AMERICAN POLITICAL PHILOSOPHY **Three credits**
See description under Political Science Department listing. (Same as PS 262). May not be used to meet Area I of the General Education Requirements.

PHL 240. PHILOSOPHY OF ART **Three credits**
A critical examination of the basic assumptions involved with art. These will include such issues as what constitutes a work of art, what is the purpose of art, the relationship, if any, between art and truth, and what is so-called artistic creativity. A wide range of aesthetic views will be evaluated ranging from those of Plato and Aristotle to the more recent ones of Tolstoy, Bell, Hampshire, and Kennick.
Prerequisite: Phl 101 or permission of instructor.

PHL 250. PHILOSOPHY OF SCIENCE **Three credits**
A critical examination of various issues concerning scientific thought. Topics may include the nature of science, distinguishing science from pseudo-science, the nature of theories, scientific explanation, space and time, causality, the problem of induction, laws of nature, and the reality of theoretical entities.
Prerequisite: Phl 101 or permission of instructor.

PHL 272. PHILOSOPHY OF RELIGION **Three credits**
An examination of various problems that arise when religion is made the object of philosophical reflection: the nature and forms of religious experience, the relationship between faith and reason, arguments for the existence of God, the problem of evil, arguments for immortality, the concepts of worship and miracle, the nature of religious language, and the possibility of religious knowledge.
Prerequisite: Phl 101 or permission of instructor.

PHL 298. TOPICS **Three credits**
The study of a topic of special interest not extensively treated in other courses. Topics chosen according to interest of instructor. Because of its variable content, this course may be repeated for credit.
Prerequisite: Phl 101 or permission of instructor.

PHL 316. MORAL PSYCHOLOGY **Three credits**
An analysis of some current questions in moral psychology, an area of philosophy that addresses normative issues regarding human psychology including especially motives, emotions, psychological reactions, etc. Questions to be addressed include questions about moral luck (whether it is possible for an agent to be caught in a situation, through no fault of her own, in which it is impossible to act rightly), about whether one's moral character may be subject to luck in important ways, about whether there are reasons to act morally if one does not care about reputation or morality, and questions about when judgments of responsibility for actions and character are appropriate.
Prerequisites: Phl 101 or 110 or permission of instructor. Phl 210 is highly recommended.

PHL 322. SYMBOLIC LOGIC **Three credits**
A review of the propositional calculus and a thorough examination of the predicate calculus, including identity, definite descriptions, and relations. Emphasis will be placed upon the concept of a formal system and axiomatization, as well as properties of deductive systems such as consistency, completeness, independence of axioms, and other formal properties.
Prerequisite: Phl 122 or Mth 202 or permission of instructor.

PHL 370. METAPHYSICS **Three credits**
A critical examination of one or more problems concerning the nature of reality, dealt with by classical and/or contemporary philosophers. Problems to be considered may include mind and body, space and time, substance, free will, realism and idealism, the existence of God, causality, and the nature of universals.
Prerequisite: Phl 101 or permission of instructor.

PHL 372. ADVANCED PHILOSOPHY OF RELIGION **Three credits**
An intensive examination of a major problem or figure in the philosophy of religion. Because of its variable content, this course may be repeated for credit.
Prerequisite: Phl 272 or permission of instructor.

PHL 395-396. INDEPENDENT RESEARCH **One to three credits**
Independent study and research for advanced students. A research paper at a level significantly beyond a term paper is required.
Prerequisite: Approval of department chairperson.

PHL 397. SEMINAR **One to three credits**
Presentations and discussions of selected topics.
Prerequisite: Approval of department chairperson is required.

PHL 399. COOPERATIVE EDUCATION **One to six credits**
Professional cooperative education placement in a private/public organization related to the student's academic objectives and career goals. In addition to their work experience, students are required to submit weekly reaction papers and an academic project to a Faculty Coordinator in the student's discipline. (See page 52 in the Bulletin for placement procedures.)
Prerequisites: Sophomore standing, 2.0 cumulative average, consent of academic advisor, approval of placement by department chairperson.

PHYSICS

Associate Professor Maxwell, Chairperson; Professor Orehotsky; Associate Professor Kucirka; Emeriti: Professors Donahoe, Hostler, Placek; Associate Professor Bailey.

Introductory Physics courses are provided in support of majors in Biology, Chemistry, Earth and Environmental Sciences, various Engineering programs and the large number of professional and preprofessional programs that the University provides in the health sciences, including Prepharmacy. Upper-division Physics courses are offered from time to time as interest and need dictate. For information on course availability contact the Department of Engineering and Physics.

PHY 105. CONCEPTS IN PHYSICS **Three credits**
Basic concepts of physical science, including the scientific method, will be studied. Theories, laws, and experiments from mechanics, electricity and magnetism, thermodynamics, optics, and atomic and nuclear physics may be included. Viewpoints will be classical and modern, including quantum and relativistic. Class meets four hours a week: two hours of lecture and one two-hour lab per week. Fee: $50
Prerequisite: No previous background in science or college-level mathematics is required.

PHY 170. CONCEPTS IN PHYSICS AND CHEMISTRY **Four credits**
An overview of Classical Mechanics, Thermodynamics, and the elementary principles of modern physics, including selected topics in basic chemistry and applications to human health. Emphasis is placed on basic physical and chemical principles and on algebraic calculations, scaling, units conversions, Cartesian graphing, acid and base reactions, and numerical problem solving. Four hours of lecture/discussion, one three hour lab per week. Fee: $45.
Prerequisite: Previous courses in Chemistry, Algebra, Geometry.

PHY 171. PRINCIPLES OF CLASSICAL AND MODERN PHYSICS **Four credits**
An introductory course designed to promote an understanding of the more important fundamental laws and methods of mechanics and electricity and magnetism. Laboratory work to emphasize basic principles and to acquaint the student with measuring instruments and their use, as well as the interpretation of experimental data. Demonstration-lecture two hours a week, recitation one hour a week, and laboratory three hours a week. Fee:$45.

PHY 174. APPLICATION OF CLASSICAL AND MODERN PHYSICS **Four credits**
An introductory course designed to promote an understanding of the more important fundamental laws and methods of heat, optics and modern physics. Laboratory work to emphasize basic principles and to acquaint the student with measuring instruments and their use, as well as the interpretation of experimental data. Demonstration-lecture two hours a week, recitation one hour a week, and laboratory three hours a week. Physics 171 is not a prerequisite for this course. Fee:$45.

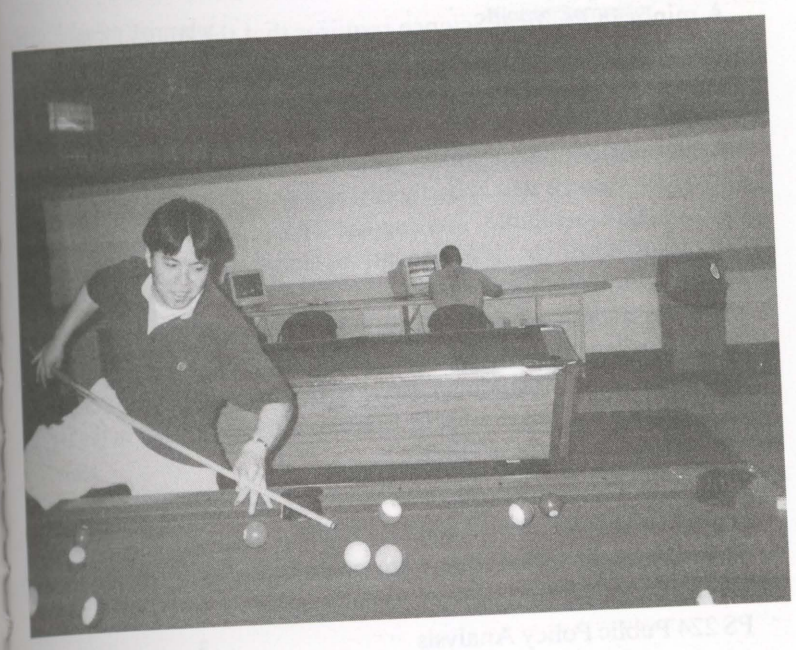
PHY 201. GENERAL PHYSICS I **Four credits**
A thorough grounding in the concepts, principles, and laws of mechanics, thermodynamics, and wave motion. Instruction by demonstration-lecture, recitation, problem solving, and experimental work. Demonstration-lecture two hours a week, recitation one hour a week, and laboratory three hours a week. Fee: $45.
Corequisite: Mth 111.

PHY 202. GENERAL PHYSICS II **Four credits**
Electricity and magnetism, optics and light. Demonstration-lecture two hours a week, recitation one hour a week, and laboratory three hours a week. Fee: $45.
Prerequisite: Phy 171 or 201.
Corequisite: Mth 112.

PHY 203. GENERAL PHYSICS III **Three credits**
Modern physics including the experimental basis, concepts, and principles of atomic and nuclear physics. Demonstration-lecture three hours a week.
Prerequisite: Phy 202.

PHY 395-396. INDEPENDENT RESEARCH **One to three credits**
Independent study and research for advanced students in the field of physics under the direction of a staff member. A research paper at a level significantly beyond a term paper is required.
Prerequisites: Senior standing and approval of department chairperson.

PHY 198/298/398. TOPICS IN PHYSICS **Variable credit**
Selected topics in the field of physics. These may include one or more of the following: astronomy; geophysics; biophysics; nuclear power & waste; relativity; quantum mechanics; semi-conductors; cryogenics; health physics. May be repeated for credit.
Prerequisite: Varies with topic studied.



POLITICAL SCIENCE

Professor Baldino, Chairperson; Assistant Professor Emeritus Tuhy; Assistant Professor Laatikainen, Yoho.

Total minimum number of credits for a major in Political Science leading to a B.A. degree — 120.

Total minimum number of credits for a minor in Policy Studies — 18.

A major in Political Science requires 120 hours. These include 43 hours in the University's General Education requirements and 34 hours in political science. All majors must take the following courses that comprise the Core in political science: PS 111, 141, 260, 261, 350, 381-382, a total of 19 credit hours. Students will then choose an additional 15 credits in political science of which at least 6 credits come from courses at the 300-level or higher. Students must also meet the quantitative applications requirement beyond PS 261 from a list of PS courses provided by the department.

Students majoring in Political Science may receive a Pennsylvania Teaching Certificate for teaching elementary school or Social Studies in grades 7-12. Please see the requirements listed in the Education section of this Bulletin.

A minor in Political Science requires that the student must take the Core in political science described above, except for PS 381-382, and an additional 6 credits: three at the 200- level and three at the 300- level for a total of 21 credits.

As a traditional liberal arts discipline, students who choose to major in political science are broadly trained and so have a wide variety of career options available. Among the most common fields of employment are government, law, education, social services, media, business, and foreign/international service.

A minor in Policy Studies requires that the student take the following 4 Political Science courses and an additional 6 credits in policy courses. These courses may include an offering from outside of the Political Science Department, but it must be approved by an advisor in the Department before the course is taken.

Policy Studies Minor requirements:

PS 111 Introduction to American Politics	3
PS 141 Introduction to International Politics	3
PS 221 Introduction to Public Administration	3
PS 224 Public Policy Analysis	3
PS 298/398 Special Topics (in any policy area)	6

See the Pre-Law section for information on law school advising and admissions.

Recommended Course Sequence for a Major in Political Science

First Semester	
Eng 101 Composition or	4
Distribution Requirement	3
PS 111 Intro. to American Politics	3
Distribution Requirements	9
Fr. F 101 Freshman Foundations	3
	15-16

Second Semester	
Eng 101 Composition or	4
Distribution Requirement	3
PS 141 Intro. to International Politics	3
Distribution Requirements	9
	15-16

Third Semester	
PS 260 Intro. to Political Thinking	3
Free Electives	9
PS 350 Intro to Comparative Politics	3
	15

Fourth Semester	
Major Elective	3
PS 261 Concepts and Methods or	3
Soc 370 Methods	
Free Electives	9
	15

Fifth Semester	
Major Electives	6
(one course must be at 300 level)	
Free Electives	9
	15

Sixth Semester	
Major Electives	9
(one course must be at 300 level)	
Free Electives	6
	15

Seventh Semester	
PS 381 Political Analysis I	2
Major Elective	3
Free Electives	9
	14

Eighth Semester	
PS 382 Political Analysis II	2
Free Electives	13
	15

PS 111. INTRODUCTION TO AMERICAN POLITICS **Three credits**
A descriptive and analytical study of the theory and practice of American government, its constitutional basis, organization, powers, functions, and problems.
Offered every semester.

PS 141. INTRODUCTION TO INTERNATIONAL POLITICS **Three credits**
An introduction to the field of international relations. Attention is given to basic theories of international relations as well as the issues and problems that confront contemporary world politics. Factors that determine a nation's foreign policy are also examined.
Offered every spring.

PS 212. URBAN GOVERNMENT AND POLITICS **Three credits**
An examination of the structure and operation of urban governments. Metropolitan politics is also considered. Special attention is given to the politics and policy problems confronting American cities. (Same as SOC 263)

PS 213. POLITICAL PARTIES AND POLITICAL PARTICIPATION **Three credits**
An introduction to the role and function of political parties in democratic regimes, with particular attention given to the U.S. Extensive discussion of the political activities of the American electorate in forms other than parties, such as interest groups, as well as grass roots movements.

PS 221. INTRODUCTION TO PUBLIC ADMINISTRATION **Three credits**
An introduction to the principles and problems of public administration in an increasingly complex society. Attention to such topics as leadership, informal organizational processes (infrastructure), the relation of administration to its cultural context, and the question of administrative responsibilities. Survey of the technical problems of personnel, finance, and administrative law.

PS 224. PUBLIC POLICY ANALYSIS **Three credits**
This course is an introduction to the study of public policy at the national level. It will examine approaches to public policy and the operation of the "policy process." A range of public policy examples will be employed from social welfare to foreign and defense issues.

PS 232. CRIMINAL LAW **Three credits**
An introduction to the study of criminal law. The principles of criminal law are presented using the case method. The structure and operation of the criminal justice system are also reviewed.

PS 233. LAW AND SOCIETY **Three credits**
An introduction to the study of law and its role in social and political systems. Attention is given to theories of law, and the structure of the legal system. Students are given the opportunity to engage in hypothetical dispute resolutions using common law methods.

PS 242. INTERNATIONAL LAW AND ORGANIZATION **Three credits**
The study of the nature, application, and sources of international law and how it relates to the evolution of global and regional organizations and alliances, including international non-governmental organizations and other non-state factors.
Prerequisite: PS 141 or consent of instructor.

PS 251. EUROPEAN POLITICS **Three credits**
Comparison of the development, institutions, problems and prospects of democratic systems in Europe, both west and east. Attention is given to the European Community and its role in the transformation of Europe as well as to the development of the former communist states in eastern Europe.

PS 253. POLITICS OF DEVELOPING NATIONS **Three credits**
The political process in the non-industrialized areas of the world, including Asia, Africa and Latin America. Examines the problems of economic and political change and the relations of these areas to the Western world and communist nations.

PS 260. INTRODUCTION TO POLITICAL THINKING **Three credits**
An introduction to the study of politics through an examination of the crucial issues with which political scientists grapple: justice, equality, freedom, power, and the good life, to name a few.
Offered every fall.

PS 261. CONCEPTS AND METHODS IN POLITICAL SCIENCE **Three credits**
A survey of the major concepts, theories and methods of political science as a discipline. Preparation of a research design and a review of quantitative methods also included.
Prerequisite: Sophomore standing.
Offered every spring.

PS 262. AMERICAN POLITICAL THOUGHT **Three credits**
The study of the political ideas, ideals and ideologies which contributed to and developed from the American experience. An analysis of the ideas which underlie our political institutions and practices.(Same as PHL 236) May not be used to meet Area I of the General Education Requirements.

PS 263. SURVEY OF POLITICAL PHILOSOPHY **Three credits**
See description under Philosophy Department listing. (Same as PHL 230).
Prerequisite: Phl 101 or permission of instructor.

PS 264. SURVEY RESEARCH METHODS **Three credits**
See description under Sociology Department listing. (Same as SOC 371).

PS 311. THE AMERICAN PRESIDENCY **Three credits**
An exploration and analysis of the development and powers of the American President as political leader, chief executive, and world leader. Special attention is given to the selection process and the effect of the process on the Presidency.
Prerequisite: PS 111 or consent of instructor.

PS 312. LEGISLATIVE BEHAVIOR **Three credits**
An analysis of the theory and practice of representative institutions in political systems with emphasis given to the American Congress. Legislative elections, floor procedures, committee functions, and ethics are all considered as well as their collective impact upon the formation of public policy.
Prerequisite: PS 111 or consent of instructor.

PS 331. THE CONSTITUTION AND THE FEDERAL SYSTEM **Three credits**
The study of the growth and change of the American Constitution through analysis of the leading cases decided by the U.S. Supreme Court. Analysis of the powers of the three branches of government and of the relations between the states and the federal government.
Prerequisite: PS 111 or PS 233, or consent of instructor.

PS 332. CIVIL RIGHTS AND LIBERTIES **Three credits**
Continuation of the study of the meaning of the Constitution as interpreted by the Supreme Court. Analysis of the landmark decisions regarding free speech and press, separation of church and state, rights of persons accused of crimes, equal protection of the laws, voting rights.
Prerequisite: PS 111 or PS 233, or consent of instructor.

PS 350. COMPARATIVE POLITICS: THEORY AND ANALYSIS **Three credits**
This course is an introduction to the study of politics and governments from a comparative perspective. It is not a survey course of the governmental institutions of particular countries, but rather an examination of types of governments and regimes, the transitions that may occur between types of government, and approaches to studying these topics. We will also examine the ways that ethnicity and cultural ideas affect governments and regime transition.
Prerequisite: Sophomore Standing.
Offered every fall semester.

PS 351. POLITICS OF RUSSIA AND COMMONWEALTH OF INDEPENDENT STATES **Three credits**

An analysis of the social and political conditions out of which the communist system of the Soviet Union developed and changed into its current confederated form. Examines the legacy of Marxism and Leninism in the context of current developments and to the problems of coordinating the activities of an ethnically diverse group of sovereign nations.

Prerequisite: PS 141 or consent of instructor.

PS 381. POLITICAL ANALYSIS I **Two credits**

This course is the first half of the capstone senior thesis project that is required of all political science majors. It is a structured independent study rather than a traditional lecture and discussion course. In this course, students will articulate a research question, undertake a literature review, develop a methodology appropriate to the topic, and prepare an outline of the paper to be written in the second semester.

PS 382. POLITICAL ANALYSIS II **Two credits**

This course is the second half of the capstone senior thesis project that is required of all political science majors. It is a structured independent study rather than a traditional lecture and discussion course. In this course, students will complete the research begun in PS 381, that is, collect the data/information, analyze the data/information, write several drafts of the paper, and present the research before faculty and students.

PS 394. PRACTICUM **Three to six credits**

Internship or similar experience in administrative office, community agency, election campaign, or work related to administration or politics.

Prerequisite: At least 4 courses in PS. Student must consult with department chairperson before registering.

Offered every semester.

PS 395-396. INDEPENDENT RESEARCH **One to three credits**

Independent study and research for advanced students in the major under the direction of a staff member. A research paper at a level significantly beyond a term paper is required.

Prerequisite: Approval of department chairperson.

Offered every semester.

PS 399. COOPERATIVE EDUCATION **One to six credits**

Professional cooperative education placement in a private/public organization related to the student's academic objectives and career goals. In addition to their work experience, students are required to submit weekly reaction papers and an academic project to a Faculty Coordinator in the student's discipline. (See page 52 in Bulletin for placement procedures.)

Prerequisites: Sophomore standing, 2.0 cumulative average, consent of academic advisor, approval of placement by department chairperson.

PS 198/298/398. TOPICS IN POLITICAL SCIENCE/ TOPICS IN POLICY ANALYSIS **Variable credit**

A study of topics of special interest not extensively treated in regularly offered courses. Examples of possible topics would be: leadership in Congress; minorities in the political process; women and power; urban design; the First Amendment in law and practice; equality at law in an unequal society; Marxism, etc. May be repeated when topics differ. A topics course in a specific field of public policy, such as Energy, Environmental Science, Mental Health and Retardation, etc., may be offered also.

Prerequisite: Permission of department chairperson, criterion depending on topic.

PRE-LAW STUDIES

Assistant Professor Yoho, Coordinating Advisor.

Wilkes University has developed a carefully designed pre-law advisory program which has proved able to provide exceptionally effective support for students seeking admission to graduate schools of law. The Pre-law Program at Wilkes is based on the principle that admission to, and success in, law school depends upon completion of a rigorous curriculum at the undergraduate level as well as an up-to-date understanding of the law school admission process. One of the greatest strengths of Wilkes University is its ability to provide students from different educational backgrounds with a sound education that prepares them for the challenges of leading professional schools.

Law schools do not prescribe a specific undergraduate major but rather suggest a broadly-based educational program which enhances the student's ability to reason, read analytically, and write effectively. Students interested in law school may major in any field, but the most frequently chosen areas are: political science, English, history and business administration. Majors such as philosophy, sociology, nursing, biology, engineering, computer science, psychology, or earth and environmental science also provide appropriate preparation for legal studies. Indeed, a major in a technical field may be especially useful in particular aspects of legal practice.

Advising

Wilkes students are assigned to faculty advisors in the areas of their majors. These advisors guide them regarding degree requirements in particular fields. Pre-law students also consult with a designated pre-law advisor, who acquaints them with aspects of legal study and practice. The pre-law advisor has available law school catalogs, information on the Law School Admission Test (LSAT) and copies of the Pre-law Handbook, which contains information about preparing for and applying to law school.

Each Wilkes pre-law student is encouraged to join the Pre-law Association and to attend regularly scheduled activities, such as seminars on legal practice, briefings on law school admissions, workshops on application preparation and interviews, and law school visits. We strongly recommend that the LSAT be taken during June between the junior and senior year.

As the senior year approaches, the pre-law advisor can provide suggestions as to which law schools are most likely to admit students with particular academic records and LSAT scores. Most importantly, the pre-law advisor helps to overcome the myths which too often affect student thinking about law schools.

PREPHARMACY

(see Pharmacy p. 263)

PSYCHOLOGY

Associate Professor Polachek, Chairperson; Professors Emeriti Belluci, Riley; Associate Professor Emeritus Stetten; Assistant Professor Emeritus Kanner; Professors Bohlander, Charnetski; Assistant Professors Schicatano, Tindell.

Total minimum number of credits for a major in Psychology leading to the B.A. degree — 120.

Total minimum number of credits for a minor — 18.

The Psychology major at Wilkes University emphasizes a scientific approach to the content, methods, and theories of human and nonhuman behavior. Wilkes students are prepared to pursue professional careers in psychology or related fields such as medicine or law, obtain employment immediately upon graduation, or attend graduate school in psychology.

The psychology major must complete a minimum of 120 credit hours. In additional to satisfying the University's General Education Requirements, the student majoring in psychology completes a minimum of 35 credits in psychology. All students must take PSY 101 (General Psychology), PSY 200 (Statistics in Psychology), PSY 300 (Experimental Psychology), and PSY 400 (Senior Seminar). PSY 101 is a prerequisite to all other psychology courses. PSY 200 should be completed prior to the junior year, PSY 300 prior to the senior year, and PSY 400 during the senior year. The student majoring in psychology must take at least one course each from Content Areas I, II, III, and IV, and at least two courses from Content Area V. The psychology major must also take BIO 105. It is strongly recommended that the student take a foreign language.

Students who elect to minor in psychology must complete 18 credits. This includes PSY 101 and PSY 200, and at least 12 additional credits in psychology.

Students are encouraged to consult the University Bulletin for all information regarding degree requirements. Each student should also meet frequently and work closely with the faculty advisor in order to make the optimal course selections based upon the student's interests and career goals. With numerous free elective credits many psychology majors choose to major or minor in a second discipline.

The Tracking Program within the major assists students in focusing on more specific career and graduate school goals. Tracks exist in Liberal Arts, Professional, Educational Psychology, and Neuroscience/Behavioral Medicine. Students will select a track, in consultation with the advisor, and complete the course requirements of the track in addition to the general requirements of the psychology major. Majors are also encouraged to consider the many credit-bearing cooperative education (internship) and independent study opportunities that are available. These experiences enhance the student's employment potential and graduate school opportunities.

Students majoring in psychology may receive a Pennsylvania Teaching Certificate for teaching elementary school (K–6) or social studies (7–12). Please see the requirements listed in the Education section of the Bulletin. It is recommended that students pursuing certification complete the Educational Psychology track within the major.

The Areas with their corresponding courses are as follows:

Interest Area I — Biological Foundations
Psy 311 Behavioral Neuroscience (4 credits)
Psy 312 Sensory and Perceptual Processes (4 credits)
Interest Area II — Human Development
Psy 221 Developmental Psychology (3 credits)
Psy 222 Adolescent Psychology (3 credits)
Interest Area III — Cognition/Learning
Psy 331 Cognition (3 credits)
Psy 332 Contemporary Psychological Theories (3 credits)
Interest Area IV — Social/Personality
Psy 242 Personality (3 credits)
Psy 341 Social Psychology (3 credits)
Interest Area V — Applied
Psy 351 Behavioral Medicine (3 credits)
Psy 352 Psychopathology (3 credits)
Psy 353 Clinical Methods in Psychology (3 credits)
Psy 354 The Exceptional Individual (3 credits)
Psy 355 Forensic Psychology (3 credits)
Psy 356 Industrial/Organizational (3 credits)
Psy 357 Neuropsychology (3 credits)
Psy 358 Psychological Tests and Measurements (3 credits)
Psy 359 Psychopharmacology (3 credits)

All students majoring in Psychology complete a common set of courses in the major. These courses are as follows:

Course number	Course title	Credits
Psy 101	General Psychology	3
Psy 200	Statistics in Psychology	3
Psy 300	Experimental Psychology	3
Psy 400	Senior Seminar	1

Students majoring in Psychology must also select and complete a Track, a specific area of concentration, within the major. The four Tracks, and the course requirements within each Track, are as follows:

I. Liberal Arts Track

At least one course from each of the following Areas: I, II, III, IV

At least two courses from Area V

Any two psychology elective courses

II. Professional Track

At least one course from each of the following Areas: I, II, III, IV

At least two courses from Area V

PSY 395-396 Independent Reseach (3 credits)

PSY 399 Cooperative Education (3 credits)

III. Educational Psychology Track

Course number	Course title	Credits	Area
PSY 312	Sensory & Perceptual Processes	4	I
PSY 221	Developmental Psychology	3	II
PSY 222	Adolescent Psychology	3	II
PSY 242	Personality	3	IV
PSY 331	Cognition	3	III
PSY 352	Psychopathology	3	V
PSY 354	The Exceptional Individual	3	V
PSY 358	Psych Tests & Measurements	3	V
PSY 399	Cooperative Education*	3	

*Waived through student teaching

IV. Neuropsychology/Behavioral Medicine Track

Course number	Course title	Credits	Area
PSY 311	Behavioral Neuroscience	4	I
PSY 312	Sensory & Perception Processes	4	I
PSY 221	Developmental Psychology	3	II
PSY 242	Personality	3	IV
PSY 331	Cognition	3	III
PSY 351	Behavioral Medicine	3	V
PSY 352	Psychopathology	3	V
PSY 353	Clinical Methods in Psychology	3	V
PSY 354	The Exceptional Individual	3	V
PSY 357	Neuropsychology	3	V
PSY 359	Psychopharmacology	3	V
PSY 395-396	Independent Research	3	
OR			
PSY 399	Cooperative Education	3	

Recommended Course Sequence for a Major in Psychology

First Semester		Second Semester	
Psy 101 General Psychology*	3	Major Elective	3
Eng 101 Composition or	4	Eng 101 Composition or	4
Distribution Requirement	3	Distribution Requirement	3
Bio 105 The Biological World	3	Distribution Requirements	9
Distribution Requirements	3		
Fr. F. 101 Freshman Foundations	3		
	15-16		15-16
Third Semester		**Fourth Semester**	
Major Elective or	3	Major Elective or	3
Psy 200 Statistics in Psychology		Psy 200 Statistics in Psychology	
Distribution Requirements	6	Major Electives	9
Free Electives	6	Free Elective	3
	15		15
Fifth Semester		**Sixth Semester**	
Psy 300 Experimental Psychology	3	Major Electives	6
Major Electives	6	Free Electives	9
Free Electives	6		
	15		15
Seventh Semester		**Eighth Semester**	
Psy 400 Senior Seminar*	1	Psy 400 Senior Seminar*	1
Major Electives	6	Free Electives	13
Free Electives	9		
	15–16		13–14

*Majors must complete only one PSY 400 course.

PSY 101. GENERAL PSYCHOLOGY **Three credits each**

An introduction to the field of psychology with emphasis on objective and systematic methods of inquiry. Extensive treatment of major psychological topics including sensation, perception, learning, motivation, intelligence, personality development, frustration, conflict, and mental health.

PSY 200. STATISTICS IN PSYCHOLOGY **Three credits**

An introduction to the use of statistical procedures in the analysis of psychological data. Topics include descriptive statistics, parametric and non-parametric inferential statistical methods.

Prerequisite: Psy 101.

PSY 221. DEVELOPMENTAL PSYCHOLOGY **Three credits**

The course provides a general view of human growth and development from conception through the life span. It focuses on innate characteristics and the manner in which they are modified by the environment during the developmental process. Psychosocial development as well as physical, language, and intellectual development are presented.

Prerequisite: Psy 101.

PSY 222. ADOLESCENT PSYCHOLOGY **Three credits**
This course is designed as a study of the sdolescent stage of life. Emphasis will be placed on the following areas of development: physical, emotional, cognitive, and social.
Prerequisite: Psy 101.

PSY 242. PERSONALITY **Three credits**
An examination of the major theoretical perspectives on personality development and functioning, with additional emphasis on the assessment of personality and the treatment of disorders of personality.
Prerequisite: Psy 101.

PSY 300. EXPERIMENTAL PSYCHOLOGY **Three credits**
A lecture and laboratory course designed to familiarize the student with the methods and the results of modern psychological research. The course includes a study of several of the famous experiments in the field of psychology. Also included is practice with the older as well as the more recent methods of experimental research. Lecture and laboratory. Fee $40.
Prerequisite: Psy 101, Psy 200.

PSY 311. BEHAVIORAL NEUROSCIENCE **Four credits**
A study of the physiological mechanisms mediating behavior with emphasis on the structure and function of the nervous system and the neurophysiological bases of sensory processes, emotion, abnormal behavior, sleep, learning and memory. Laboratory experience includes brain dissection, small animal experimentation, and demonstrations of neurosurgical technique. Fee: $20.
Prerequisites: Psy 101; junior or senior standing.

PSY 312. SENSORY AND PERCEPTUAL PROCESSES **Four credits**
Principles and phenomena of human sensory and perceptual processes are studied within the visual, auditory, olfactory, gustatory, proprioceptive and cutaneous systems. Students are familiarized with techniques used in the investigation of sensory and perceptual phenomena.
Prerequisite: Psy 101.

PSY 322. CONTEMPORARY PSYCHOLOGICAL THEORIES **Three credits**
An examination of current theories in psychology, with emphasis upon the major systematic and "miniature" learning theories.
Prerequisite: Psy 101.

PSY 331. COGNITION **Three credits**
A survey of human cognitive processes such as attention, pattern recognition, memory, language, and problem solving as well as other selected aspects of human cognition. The course includes historical as well as current perspectives on cognitive issues and an emphasis on the research techniques used.
Prerequisite: Psy 101.

PSY 341. INTRODUCTION TO SOCIAL PSYCHOLOGY **Three credits**
A general survey of the field of social psychology. Social factors in human nature; psychology of individual differences; social interaction; collective behavior, psychology of personality; social pathology.
Prerequisites: Soc 101 or Ant 101 or Psy 101.

PSY 351. BEHAVIORAL MEDICINE **Three credits**
This course provides a survey of the basic theoretical concepts and major issues in Behavioral Medicine. Specifically, this course examines how the areas of health, illness and medicine can be studied from a psychological perspective. Topics of emphasis include: the psychological aspects of wellness and illness, preventive medicine, stress, chronic and terminal diseases (such as cancer and AIDS), and the use of alternative medicine.
Prerequisite: Psy 101.

PSY 352. PSYCHOPATHOLOGY **Three credits**
A general survey of psychological disorders in children and adults with emphasis on symtomatology, etiology, and assessment. Forensic and classification issues are also examined.
Prerequisite: Psy 101, Psy 242.

PSY 353. CLINICAL METHODS IN PSYCHOLOGY **Three credits**
A survey of the clinical method in psychology including therapeutic models and specific clinical techniques. Issues of assessment and diagnosis of psychological disorders are examined.
Prerequisite: Psy 326, Psy 352.

PSY 354. THE EXCEPTIONAL INDIVIDUAL **Three credits**
A study of the psychological, physical, and social problems and needs of exceptional individuals with an emphasis on etiology, assessment, impact and educational interventions.
Prerequisites: Psy 101.

PSY 355. FORENSIC PSYCHOLOGY **Three credits**
A survey of the role that psychology has played in the legal system from issues of mortality and theories of crime, to eyewitness testimony, the evaluation of criminal suspects, and jury selection. The application of the methods and theories of psychology to the legal system will be emphasized.
Prerequisite: Psy 101.

PSY 356. INDUSTRIAL/ORGANIZATIONAL PSYCHOLOGY **Three credits**
A survey of the applied areas of personnel, organizational, human factors, and consumer psychology.
Prerequisite: Psy 101.

PSY 357. NEUROPSYCHOLOGY **Three credits**
A survey of the relationship between nervous system physiology and human behavior with emphasis on neurological disorders, neuropsychological assessment, head injury, cerebral asymmetry, and rehabilitation.
Prerequisite: Psy 101.

PSY 358. PSYCHOLOGICAL TESTS AND MEASURES **Three credits**
A survey of the psychometric properties of various instruments and measures of psychological phenomena (especially intelligence and personality). a variety of group and individual tests are studied as to their reliability, validity and utility.
Prerequisite: Psy 101, Psy 200.

PSY 359. PSYCHOPHARMACOLOGY **Three credits**
A study of the effects and mechanisms of the action of psychoactive drugs on behavior. Focus will be placed on drugs used to treat psychopathological disorders and drugs of abuse. Topics of emphasis include a survey of: stimulants, depressants, antipsychotics, antidepressants, psychedelics, legal drugs such as caffeine, nicotine and alcohol.
Prerequisite: Psy 101.

PSY 361. COMPARATIVE PSYCHOLOGY **Three credits**
A survey of underlying genetic and biological mechanisms influencing human and nonhuman behavior. Emphasis is on the role of evolution and natural selection in the development of behavioral adaptations, and to behavioral comparisons among species. Topics include the fields of ethology, sociobiology, and behavioral genetics.
Prerequisite: Psy 101.

PSY 362. HISTORY OF PSYCHOLOGY — **Three credits**
A study of the philosophic and scientific roots of contemporary psychology, with emphasis on the applicability of past questions and knowledge to current psychological thought.
Prerequisite: Psy 101.

PSY 395-396. INDEPENDENT RESEARCH — **One to three credits**
Independent study and research under the direction of a staff member. A scholarly research paper is required.
Prerequisite: PSY 310; Approval of department chairperson is required.

PSY 198/298/398. TOPICS IN PSYCHOLOGY — **Variable credit**
A study in topics of special interest not extensively treated in regularly offered courses.

PSY 399. COOPERATIVE EDUCATION — **One to six credits**
Professional cooperative education placement in a private/public organization related to the student's academic objectives and career goals. In addition to their work experience, students are required to submit weekly reaction papers and an academic project to a Faculty Coordinator in the student's discipline. (See page 52 in the Bulletin for placement procedures.)
Prerequisites: Sophomore standing, 2.0 cumulative average, consent of academic advisor, approval of placement by department chairperson.

PSY 400. SENIOR SEMINAR — **One credit**
This course is designed to provide a capstone experience for senior Psychology majors. Students are expected to write a formal paper outlining significant work while at Wilkes University and then present their work to an audience of peers and faculty. Topics may include reports of individual research, reports of research with other students, reports of research with faculty, reports of intern or cooperative experiences, or reviews of the literature pertaining to a topic in the field. All topics must be pre-approved by the student's advisor.
Prerequisites: Senior status and permission of the Department chair.

SOCIOLOGY

Professor Baldino, Chairperson; Professor Merryman; Associate Professors Garr, Natzke, Tuttle.

Total minimum number of credits required for a major in Sociology leading to the B.A. degree — 120.

Total minimum number of credits required for a minor — 18.

Obtaining a major in Sociology prepares students for a variety of careers. Students who graduate with a major in Sociology find jobs in social services, criminal justice, business, and education. Students who decide to pursue a graduate education can do so in a variety of fields including sociology, law, social work, business and psychology among others.

A unique feature of the program in Sociology is its flexibility. Students have the opportunity to pursue a full range of academic options beyond the major. For example, utilizing existing programs and courses, it is possible for students to achieve a dual major in Sociology and Psychology, Sociology and Criminal Justice, or to finish an MBA in slightly more than one calendar year after completion of their B.A. degree.

Sociology Major

A major in sociology consists of 30 hours, including Soc 101, either Ant 101 or Ant 102, Soc 341, Soc 371 and Soc 381. All anthropology courses may be taken for credit toward the major or minor in sociology. Also Phl 230 and/or Phl 250 may be taken for credit toward the major. Sociological Analysis 372 and/or Mth 150 Elementary Statistics is strongly recommended for students planning graduate studies in sociology. Courses required in the major such as Soc 101, Ant 101 and/or Ant 102 may also be used to fulfill distribution requirements. The department emphasizes internships in professional settings which integrate academic studies with work experiences such as Soc 393 Practicum and Soc 399 Cooperative Education. The credit hours earned in Soc 393 and Soc 399 may not be applied toward the 30 hours required for the major.

Sociology Minor

A minor in Sociology consists of 18 hours, including Soc 101. At least one of the following courses is required: Social Psychology 341; Sociological Methods 371; Sociological Theory 381.

The department offers Practicum (Soc 393), a supervised practical field experience designed for sociology minors, in a professional setting. The six hours earned in Practicum may not be applied toward the eighteen hours required for the minor.

Social Work/Human Services

Students interested in careers in drug and alcohol counseling, agency counseling, social work, or other human services occupations are urged to take at least three courses in social work (Soc 231, 232, and 233), two courses in psychology, and complete 120 hours of supervised practical field experience in a professional setting (Soc 393 and/or Soc 399). The latter requirement may be completed under the auspices of the Cooperative Education Program (see page 52).

Certification in Education

The teacher education program at Wilkes requires students to major in a discipline other than education. Sociology is one of several options for individuals who seek teacher certification in elementary education or Social Studies certification to teach in grades 7-12. Please see the requirements listed in the Education section of this Bulletin.

Pre-Law

Students interested in law school may major in any field. Sociology provides appropriate preparation for legal studies. See the Pre-Law section in this Bulletin for further details.

Anthropology

Students can choose a concentration in Anthropology. The concentration consists of 12 hours, including Ant 101, Ant 102 and two upper-level courses in Anthropology.

Five-Year Sociology/MBA Program

Students with an interest in business, but who want a well-rounded background desired by business employers, should consider the 5-year Sociology/MBA Program. Students can complete the Sociology major in four years and, with one additional calendar year of schooling, also complete a Masters in Business Administration at Wilkes.

Recommended Course Sequence for a Major in Sociology

First Semester		Second Semester	
Soc 101 Intro. to Sociology	3	Ant 101 Intro. to Anthropology	3
Eng 101 Composition or	4	Eng 101 Composition or	4
Distribution Requirement	3	Distribution Requirement	3
Distribution Requirements	6	Distribution Requirements	9
FrF 101 Freshman Foundations	3		
	15-16		15-16
Third Semester		**Fourth Semester**	
Major Elective	3	Major Elective	3
Free Electives	12	Free Electives	12
	15		15
Fifth Semester		**Sixth Semester**	
Soc 341 Social Psychology	3	Soc 371 Methods of Research	3
Major Elective	3	Major Electives	6
Free Electives	9	Free Electives	6
	15		15
Seventh Semester		**Eighth Semester**	
Soc 381 Sociological Theory	3	Free Electives	14
Free Electives	12		
	15		14

Recommended Course Sequence for Students Majoring in Sociology who wish to pursue a Master of Business Administration Degree

First Semester		Second Semester	
Soc 101 Intro. to Sociology	3	Ant 101 or 102 Intro. to Anthropology	3
Eng 101 Composition or	4	Eng 101 Composition or	4
Distribution Requirement	3	Distribution Requirement	3
Distribution Requirements	6	Distribution Requirements	9
FrF 101 Freshman Foundations	3		
	15-16		15-16
Third Semester		**Fourth Semester**	
Sociology Elective	3	Sociology Elective	3
Ec 101 Economics I*	3	Ec 102 Economics II*	3
Acc 101 Financial Accounting*	3	Acc 102 Managerial Accounting*	3
Free Electives	6	Free Electives	6
	15		15

Fifth Semester		Sixth Semester	
Soc 341 Social Psychology	3	Sociology Elective	3
BA 351 Management of Organizations*	3	BA/Ec 319 Business/Ec Statistics*	3
Free Electives	9	Free Electives	9
	15		15
Seventh Semester		**Eighth Semester**	
Soc 381 Sociological Theory	3	Soc 371 Methods of Research	3
Sociology Elective	3	Soc 395 Independent Research	1
Free Electives	9	Sociology Elective	3
		Free Electives	7
	15		14

* Students must earn 2.0 or better in MBA track.

SOC 101. INTRODUCTION TO SOCIOLOGY **Three credits**
A systematic view of sociology, providing essentials for an approach to questions about man in society; analysis of social processes, structures, and functions.

SOC 211. THE FAMILY **Three credits**
History and ethnological studies of family. Role of family in the development of the individual. Interrelation of church, state, and family. Social conditions and changes affecting the American family. Family stability and disorganization.
Prerequisite: Soc 101 or Ant 101 or 102 or approval of instructor.

SOC 212. HUMAN SEXUALITY **Three credits**
A balanced and thoughtful introduction to what is currently known about human sexuality. Research in sexuality comes from a variety of disciplines including Psychology, Sociology, Biology, Medicine, Physical Education and Human Education. Without assuming that the student has an extensive background in any of these fields, this course draws liberally on all of them and works hard to show how the biology, psychology and sociology of sex are interrelated.
Prerequisite: Soc 101 or approval of instructor.
Offered each fall semester.

SOC 214. SEX ROLES **Three credits**
This course deals with the origins of sex roles, the historical changes in sex roles, the consequences of sex roles to the individual and to society, and the outlook for sex roles in the future.
Prerequisites: Soc 101 or Ant 101 or 102 or approval of instructor.

SOC 215. FAMILY VIOLENCE **Three credits**
It is customary to think of violence between family members as infrequent and, when it does occur, as being the result of some mental defect or aberration. Research evidence shows that neither of these views is correct. This course examines the prevalence, experience, causes, and prevention of family violence.
Prerequisites: Soc 101 or Ant 101 or 102 or approval of instructor.

SOC 221. SOCIAL PROBLEMS **Three credits**
A survey of most pressing contemporary social problems and an examination of current theories of social disorganization.
Prerequisite: Soc 101 or Ant 101 or 102 or approval of instructor.

SOC 222. CRIMINOLOGY **Three credits**
An analysis of the nature and extent of crime and the causes and prevention of criminality. Topic areas include the history of criminology, criminological research methods, the extent and patterns of crime, and theories of criminal behavior, and criminal law and its functions.

SOC 223. DRUGS AND ALCOHOL IN AMERICAN SOCIETY **Three credits**
An examination of drugs and alcohol in American society as a major social problem.
Prerequisite: Soc 101 or approval of instructor.
Offered every other year.

SOC 224. SOCIAL GERONTOLOGY **Three credits**
Considers major findings about the social organization of aging and dying. Reviews history, present and future implications of the rapidly expanding population of elderly.
Prerequisites: Soc 101 or Ant 101 or 102 or permission of the instructor.

SOC 225. JUVENILE DELINQUENCY **Three credits**
An examination of the nature and extent of juvenile delinquency, its causes, and its prevention. Topics include the similarities and differences between juvenile and adult justice systems; trends in juvenile delinquency; theories of delinquency; gangs; and the roles of family, schools, and legal institutions as well as community-based programs and their role in delinquency prevention and control.

SOC 226. CORRECTIONS, PROBATION AND PAROLE **Three credits**
A study of the agencies devoted to the correction and treatment of convicted offenders with a special focus on adult and juvenile probation, parole agencies supervising offenders in the community, as well as residential correction facilities including jails, prisons and juvenile institutions.

SOC 228. DEVIANCE AND SOCIAL CONTROL **Three credits**
This course examines the nature of deviant behavior and the social responses to it. Topics covered are: what constitutes deviance, theories of deviance, varieties of deviant behavior, and the types of social responses to deviant behavior.

SOC 231. FIELDS OF SOCIAL WORK **Three credits**
A survey of the main problems of social work and of agencies and methods that have developed to cope with them. The nature and requirements of the different fields of social work.
Prerequisite: Soc 101 or Ant 101 or 102 or Psy 101 or approval of instructor.

SOC 235. CORRECTIONS COUNSELING **Three credits**
Interviewing and intervention strategies in dealing with the criminal offender population in both prison and community settings as well as the social services available for this population.

SOC 251. SOCIOLOGY OF MINORITIES **Three credits**
A theoretical analysis of inter-group tensions and processes of adjustment with special reference to modern racial, national, and religious conflicts.
Prerequisite: Soc 101 or Ant 101 or 102 or approval of instructor.

SOC 261. SOCIOLOGY OF SPORT **Three credits**
An examination of sport from a social and cultural perspective. Emphasis is placed on examining how the institution of sport is a microcosm of American society, reflecting society's major cultural beliefs, and how the organization of sport reflects that of society.
Prerequisite: Soc 101 or approval of instructor.
Offered every other year.

SOC 262. THE SOCIOLOGY OF WORK **Three credits**
An examination of varieties of work with particular emphasis on the industrial and service sectors and the professions. Included is a consideration of labor markets, occupational control, the social division of labor, and the nature of work.
Prerequisite: Soc 101 or Ant 101 or 102 or approval of instructor.

SOC 263. THE URBAN ENVIRONMENT **Three credits**
See description under Political Science listing, PS 212. (Same as PS 212).

SOC 341. INTRODUCTION TO SOCIAL PSYCHOLOGY **Three credits**
A general survey of the field of social psychology. Social factors in human nature; psychology of individual differences; social interaction; collective behavior; psychology of personality; social pathology.
Prerequisite: Soc 101 or Ant 101 or 102 or Psy 101 or approval of instructor.

SOC 352. SOCIAL STRATIFICATION **Three credits**
A survey of the structure and dynamics of social inequality in American life. Attention is focused on the institutionalization of power arrangements that perpetuate intergenerational patterns of economic, political, and prestige inequalities among collectivities. A special effort is made to compare the consequences of structured social inequality for the very wealthy and the very poor.
Prerequisites: Soc 101 or Ant 101 or 102 or permission of instructor.

SOC 361. MEDICAL SOCIOLOGY **Three credits**
Surveys findings and methods in current applications of sociology to medicine. Includes a consideration of large and small scale social influences on the organization of medical institutions and practices.
Prerequisites: Soc 101 or Ant 101 or 102 or permission of the instructor.

SOC 371. METHODS OF RESEARCH IN SOCIOLOGY **Three credits**
Introduction to sociological research; selected problems of research in social relations; interviewing techniques; questionnaire design and case studies.
Prerequisite: Soc 101 or approval of instructor.

SOC 372. SOCIOLOGICAL ANALYSIS **Three credits**
The systematic critical evaluation of data by means of concepts and methods consistent with the principles of sociology. Both quantitative and qualitative procedures will be employed.
Prerequisite: Soc 101 or Ant 101 or 102 or approval of instructor.

SOC 381. SOCIOLOGICAL THEORY **Three credits**
The aim of the course is to provide the student majoring in sociology, or in one of the related fields, with a historical background necessary for understanding of the current trends in sociology as well as for clarification of its distinct subject matter, problems, and methods.
Prerequisite: Soc 101 or approval of instructor.

SOC 393. PRACTICUM **Six credits**
A supervised practical field experience designed for sociology majors that involves work in a professional setting.

SOC 395-396. INDEPENDENT RESEARCH **One to three credits**
Independent study and research for advanced students in the field of the major under the direction of a staff member. A research paper at a level significantly beyond a term paper is required.
Prerequisite: By arrangement with an instructor.

SOC 399. COOPERATIVE EDUCATION **One to six credits**
Professional cooperative education placement in a private/public organization related to the student's academic objectives and career goals. In addition to their work experience, students are required to submit weekly reaction papers and an academic project to a Faculty Coordinator in the student's discipline. (See page 52 in the Bulletin for placement procedures.)
Prerequisites: Sophomore standing, 2.0 cumulative average, consent of academic advisor, approval of placement by department chairperson.

SOC 198/298/398/498. TOPICS **Three credits**
A study of topics of special interest not extensively treated in regularly offered courses.

SOC 491. SEMINAR **Three credits**
Presentations and discussions of selected themes and issues in sociology.
Prerequisite: Criteria will vary according to content of seminar.

THEATRE ARTS

Professor Zipay, Chairperson; Professor Emeritus, Groh; Associate Professor Dawson; Artist in Residence, Hill; Adjunct Professors Fallon, Jarmiolowski.

Total minimum number of credits required for a major in Theatre Arts leading to the B.A. degree — 120.

Total minimum number of credits required for a minor — 18.

The goal of the Theatre Arts program at Wilkes University is to develop the skills, crafts, and imagination of its students within the liberal arts context. It is strongly recommended that students who major in Theatre take a foreign language. The program is a strong pre-professional curriculum requiring 57 credit hours in the major distributed in the areas of dramatic literature, theatre history, play analysis, acting, directing, scenic design, lighting and production. This broad preparation at the undergraduate level develops a foundation for any theatre specialization, and the best theatre artists — be they actors, directors, designers, or playwrights — almost always have this kind of educational background.

Students having an interest in music and dance may elect courses in either area, or both, thereby further enhancing their preparation for professional work.

The Theatre Arts program is housed in the Dorothy Dickson Darte Center for the Performing Arts, a fully equipped, professional facility, unsurpassed in its ability to provide for the needs of a major program in theatre.

Recommended Course Sequence for a Major in Theatre Arts

First Semester		Second Semester	
Eng 101 Composition or	4	Eng 101 Composition or	4
Distribution Requirement	3	Distribution Requirement	3
THE 121 Stagecraft	3	THE 132 Speech for the Stage	3
THE 131 Acting I	3	Distribution Requirements	6
THE 190 Theatre Laboratory	1	THE 190 Theatre Laboratory	1
Distribution Requirements	3	The 191 Practicum	1
FrF 101 Freshman Foundations	3	Eng 120 Intro. to Lit/Culture	3
	16-17		17-18

Third Semester		Fourth Semester	
THE 111 Play Structure and Criticism	3	THE 112 Script Analysis	3
THE 211 Theatre History I	3	THE 141 Oral Interpretation	3
THE 221 Scene Design	3	THE 212 Theatre History II	3
THE 232 Acting II	3	THE 190 Theatre Laboratory	1
Distribution Requirement	3	THE 191 Practicum	1
THE 190 Theatre Laboratory	1	Elective in Dramatic Literature	3
		Elective	3
	16		17

Fifth Semester

THE 331 Acting III	3
THE 394 The Business of Acting	1
Free Elective	12
THE 190 Theatre Laboratory	1
	17

Sixth Semester

THE 234 Directing I	3
THE 394 The Business of Acting	1
Distribution Requirements	3
Dramatic Literature Requirement	3
THE 190 Theatre Laboratory	1
THE 191 Practicum	1
	12

Seventh Semester

THE 431 Acting IV	3
THE 394 The Business of Acting	1
Free Electives	11
THE 190 Theatre Laboratory	1
	16

Eighth Semester

THE 335 Directing II	3
THE 393 Senior Seminar	1
THE 394 The Business of Acting	1
THE 191 Practicum	1
Free Electives	6
THE 190 Theatre Laboratory	1
	13

Minor in Theatre Arts

Required Course:

THE 121 Stagecraft

Electives: Five of the following:

THE 111 Fundamentals of Play Structure and Criticism
THE 131 Acting I
THE 132 Speech for the Stage
THE 211 Theatre History I
THE 212 Theatre History II
THE 221 Scene Design
THE 232 Acting II
THE 234 Directing I
THE 335 Directing II

THE 100. APPROACH TO THEATRE **Three credits**
Attention will be directed to the importance of the dramatic imagination in reading and viewing plays, with the objective of developing a critical appreciation of the theatre. Lecture, discussion, demonstration, films, college and professional theatre performances.

THE 111. FUNDAMENTALS OF PLAY STRUCTURE AND CRITICISM **Three credits**
A study of critical techniques in interpreting plays and the application of such techniques to evaluating plays for stage presentation.
Prerequisite: Eng 101.

THE 112. SCRIPT ANALYSIS **Three credits**
The cultivation of interpretive skills as an approach to dramatic literature for the purposes of production. Classical Literature.
Prerequisite: THE 111.

THE 121. STAGECRAFT **Three credits**
An exploration of the many physical facets of theatrical production by introducing the student to the process of translating the concept of a design into physical actuality and of adapting a production to the requirements of a stage. Class and workshop.

THE 131. ACTING I **Three credits**
Basic acting techniques. Creating a variety of characters for the stage through the use of vocal interpretation, physical movement, improvisation, and theatre games.

THE 132. SPEECH FOR THE STAGE **Three credits**
Instruction and exercises in vocal development for the stage, including diction, delivery, and interpretation. Laboratory sessions.

THE 141. ORAL INTERPRETATION **Three credits**
Instruction in vocal delivery of prose, poetry, drama, and archaic language for the purposes of oral communication of the written text.
Prerequisite: THE 131 or permission of instructor.

THE 190. THEATRE LABORATORY **One credit**
A study, through the application of various techniques of different facets of theatre such as auditioning, costuming, fencing, make-up, masks, mime, scene study, soliloquy, stage combat, textual analysis, and voice. Guest lecturers, master classes, workshops. Required of all Theatre Arts majors every semester.

THE 191-192. DEPARTMENT PRACTICUM IN THEATRE PRODUCTION **One to two credits**
The Department Practicum in theatre production may be taken for one to two credits per semester with the total not to exceed six. Students may earn credit for major roles and positions of major responsibility in the above cocurricular activities. Credit for participation in these activities is optional, and voluntary participation (without credit) is also encouraged. The department, through the advisor or instructor of the activity, has the authority to approve or reject any contract for credit under this designation. Approval of credit must be by advisor and Department Chairperson.

THE 211. THEATRE HISTORY I **Three credits**
A survey of the historical development and background of theatrical art from ancient times through the seventeenth century.

THE 212. THEATRE HISTORY II **Three credits**
A survey of the historical development and background of theatrical art from the eighteenth century to the present.
Prerequisite: THE 211.

THE 213. CHILDREN'S THEATRE **One to three credits**
Methods of interpreting and performing plays for young audiences. Class projects will evolve into theatrical performances for children.
Prerequisites: THE 121 and 131, or permission of the department.

THE 221. SCENE DESIGN **Three credits**
The nature and function of scenic art with emphasis on contemporary theories and techniques.
Prerequisite: THE 121.

THE 232. ACTING II **Three credits**
An introduction to the major theories, aims, and styles of acting through performing various roles and monologues in selected dramatic scenes.
Prerequisite: THE 131.

THE 234. DIRECTING I **Three credits**
An introduction to the principles of directing including play selection, composition, casting, blocking, and rehearsing. Class and workshop.
Prerequisite: THE 131 or departmental permission.

THE 331. ACTING III — **Three credits**
Attention to special problems in acting in terms of classical style. Continued self-discovery through improvisation, kinesthetic awareness, and other basic acting techniques learned in THE 232 are expanded upon.
Prerequisites: THE 131, 132, 232 or permission of instructor.

THE 335. DIRECTING II — **Three credits**
A study of special problems in directing. Students will prepare a prompt book, critique productions, and direct a one-act play.
Prerequisite: THE 234.

THE 393. SENIOR SEMINAR — **One credit**
Discussion, research, and exploration of a selected topic in conjunction with a departmental theatre production. Presentations and a research project.

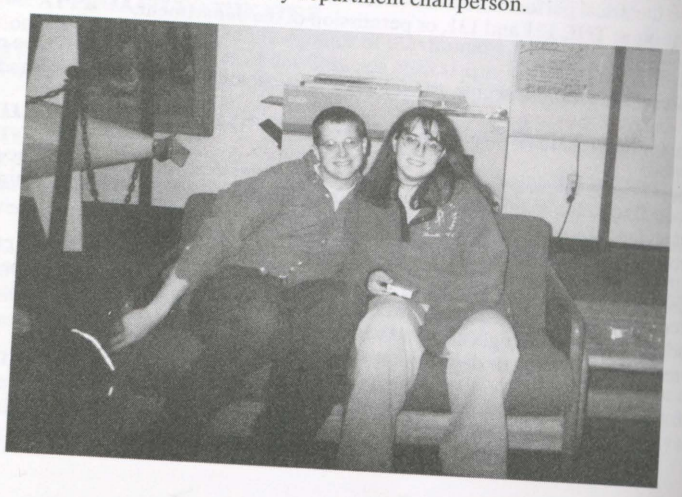
THE 394. THE BUSINESS OF ACTING — **One credit**
Discussion of materials, credentials, audition preparation needed to secure career opportunities in the entertainment industry. Student work will be videotaped and sent to casting agents. Taken by Theatre Performance majors each semester in their Junior and Senior years.

THE 395-396. INDEPENDENT RESEARCH — **One to three credits**
Independent study and research for advanced students in theatre under the direction of a staff member. A research paper at a level significantly beyond a term paper is required.

THE 431. ACTING IV — **Three credits**
Scene study, analysis, and development of acting theories for a sophisticated preparation of audition material and rehearsal technique for the working actor.
Prerequisites: THE 131, 132, 232, 331 or permission of instructor.

THE 198/298/398. TOPICS — **One to three credits**
A study of topics of special interest not extensively treated in regularly offered courses.

THE 399. COOPERATIVE EDUCATION — **One to six credits**
Professional cooperative education placement in a private/public organization related to the student's academic objectives and career goals. In addition to their work experience, students are required to submit weekly reaction papers and an academic project to a Faculty Coordinator in the student's discipline. (See page 52 in the Bulletin for placement procedures.)
Prerequisites: Sophomore standing, 2.0 cumulative average, consent of academic advisor, approval of placement by department chairperson.



WOMEN'S STUDIES

Women's Studies Coordinating Committee: Professors Garr, Laatikainen, Kalter, McKinley.

Total minimum number of credits required for a minor — 18.

Women's Studies in an interdisciplinary program in which students may earn a minor by taking Women's Studies 101 and fifteen additional credit hours in a variety of designated courses offered by various departments and approved by the Women's Studies Coordinating Committee. Courses that may count toward the minor are typically offered in the Departments of Business Administration and Economics, Communications, English, History, Foreign Languages, Nursing, Political Science, and Sociology, among others. As part of the requirement for the minor, students take a seminar or independent study (395, 396 or 397) in which they undertake an extensive research paper or project and present the results in a colloquium of students and faculty participating in the Women's Studies Program.

The minor is designed to add a professionally and personally valuable concentration for students majoring in such areas as business, sociology, English, communications, and nursing, as well as for students in pre-medical and pre-law courses of study. Students may also earn Women's Studies credit for approved internships they take in participating departments.

Students who intend to declare a minor in Women's Studies should take WS 101 before taking more than two other courses offered in the minor.

Students who select the minor should apply to a member of the Women's Studies Coordinating Committee for an advisor who will aid them in the selection of courses and the development of the Capstone Project.

WS 101. INTRODUCTION TO WOMEN'S STUDIES — **Three credits**
Introduction to Women's Studies is a lecture/discussion course. It introduces students to the theoretical assumption and historical development of feminist thought. It examines a variety of contemporary issues related to race, gender, class, culture, sexuality, the family, reproduction, language and discourse in the light of these theoretical assumptions. Designated Writing Intensive.
Offered every fall semester.

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BRIAN D. GILL (1999), Interim Vice President for Alumni, Development, and University Relations
B.A. Seton Hall

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B.A., M.Ed. Delaware, Ph.D. Michigan

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B.S. Wilkes, M.S. Binghamton University, C.P.A. State of Pennsylvania

MICHAEL J. FRANTZ (1998), Dean of Enrollment Services
B.A. Simpson College, M.A. Iowa

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B.A. Wilkes

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Academic Affairs

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A.B. Michigan, M.A. Indiana, M.L.S. Western Michigan

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HENRY P. STEUBEN (1974), Director, Part-time Programs
B.S. Penn State, M.S. Wilkes

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To be Announced, Program Counselor, Upward Bound

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B.S. Slippery Rock University, M.Ed. East Stroudsburg University

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B.S. Southern Nazerene University, M.S. Wagner

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TBA, Administrative Staff, Assistant Football Coach, Director of Intramurals

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TBA, Administrative Staff, Women's Basketball Coach

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TBA Assistant Director, Communications and Marketing

TBA Graphic Design Manager, Communications and Marketing

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TBA	Director of the Master of Business Administration Program
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ANNE Y.F. LIN — Pharmacy Practice

Technology

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B.A. Hofstra, M.A., Ph.D. Connecticut

****

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B.S. Air Force Academy, M.B.A. Southern Illinois, Ph.D. Massachusetts (Amherst)

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THOMAS J. BALDINO (1991), Professor of Political Science
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B.S., M.S., M.S. Wilkes, Ed. D. Temple

LOUISE McNERTNEY BERARD (1980), Professor of Mathematics/ Computer Science
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JOEL BERLATSKY (1970), Professor of History
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B.A. Wilkes, M.A. SUNY-Binghamton, Ph.D. North Carolina (Chapel Hill)

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CARL J. CHARNETSKI (1976), Professor of Psychology
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B.A. William and Mary, M.A., Ph.D. Virginia

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B.A. Bloomsburg, M.A. Ohio, Ph.D. Pittsburgh

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B.A. Simpson Collge, M.A. Iowa State

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JOHN B. GILMER, JR. (1991), Associate Professor of Engineering
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Continuing Education Office	J	Student Affairs Office	E
Cooperative Education Office	J	Student Union Building	N
Counseling Offices	H	Study Abroad Coordinator	D
Evening Program Office	E	Summer Program Office	E
Finance Office	M	Testing Center	H
Financial Aid Office	M	Theater	F
Graduate Admissions Office	B	Upward Bound Office	O
Graduate Affairs Office	B	Weekend Program Office	E
Health Sciences	L	Wilkes University Learning Center	E
Health Services	H	Writing Laboratory	D
Library	G		
Part-time Studies Office	E		

Building Key

A Annette Evans Faculty and Alumni House, 146 South River Street
B Capin Hall, 165 South Franklin Street
C Chase Hall, 184 South River Street
D Christopher N. Breiseth Hall, 137-139 South Franklin Street
E Conyngham Hall, 130 South River Street
F Dorothy Dickson Darte Center for the Performing Arts, Corner of River and South Streets
G Eugene Shedden Farley Library, Corner of Franklin and South Streets
H Evans Hall, Corner of South River and Northampton Streets
I Marts Center, 272-274 South Franklin Street
J Max Roth Center, 215 South Franklin Street
K Slocum Hall, 262-264 South River Street
L Stark Learning Center, 160 South River Street
M Passan Hall, 267 South Franklin Street
N Student Union, 84 West South Street
O Sturdevant Hall, 129 South Franklin Street
P Weckesser Hall, 170 South Franklin Street

WILKES UNIVERSITY
WEEKEND COLLEGE CALENDAR, 2001–2002

Fall Session
September–December, 2001
September 8, 9
September 29, 30
October 20, 21
November 10, 11
December 1, 2
December 8, 9
(Including Final Examinations)

Spring Session
January–April, 2002
January 12, 13
February 2, 3
February 23, 24
March 16, 17
April 6, 7
April 13, 14
(Including Final Examinations)

Summer Session
May–August, 2002
May 4, 5
June 1, 2*
June 22, 23
July 13, 14
August 3, 4
August 10, 11
(Including Final Examinations)

*Four-week interval between class meetings

Correspondence directory

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(800) 945-5378

Statement of Disclaimer
The statements in this Bulletin are for the purposes of information. The University reserves the right to change any provisions or requirements, including tuition and fees, at any time within the student's term of residence. No contract is created or implied. Students must fulfill all prevailing degree or program requirements.

On the cover:
Christopher N. Breiseth Hall, Wilkes University's classroom/office building named in May, 2001 in honor of the institution's fourth president. The building's glass-lined atrium area is named the Jane M. Breiseth Gallery in honor of Dr. Breiseth's wife and closest advisor.

WILKES
UNIVERSITY

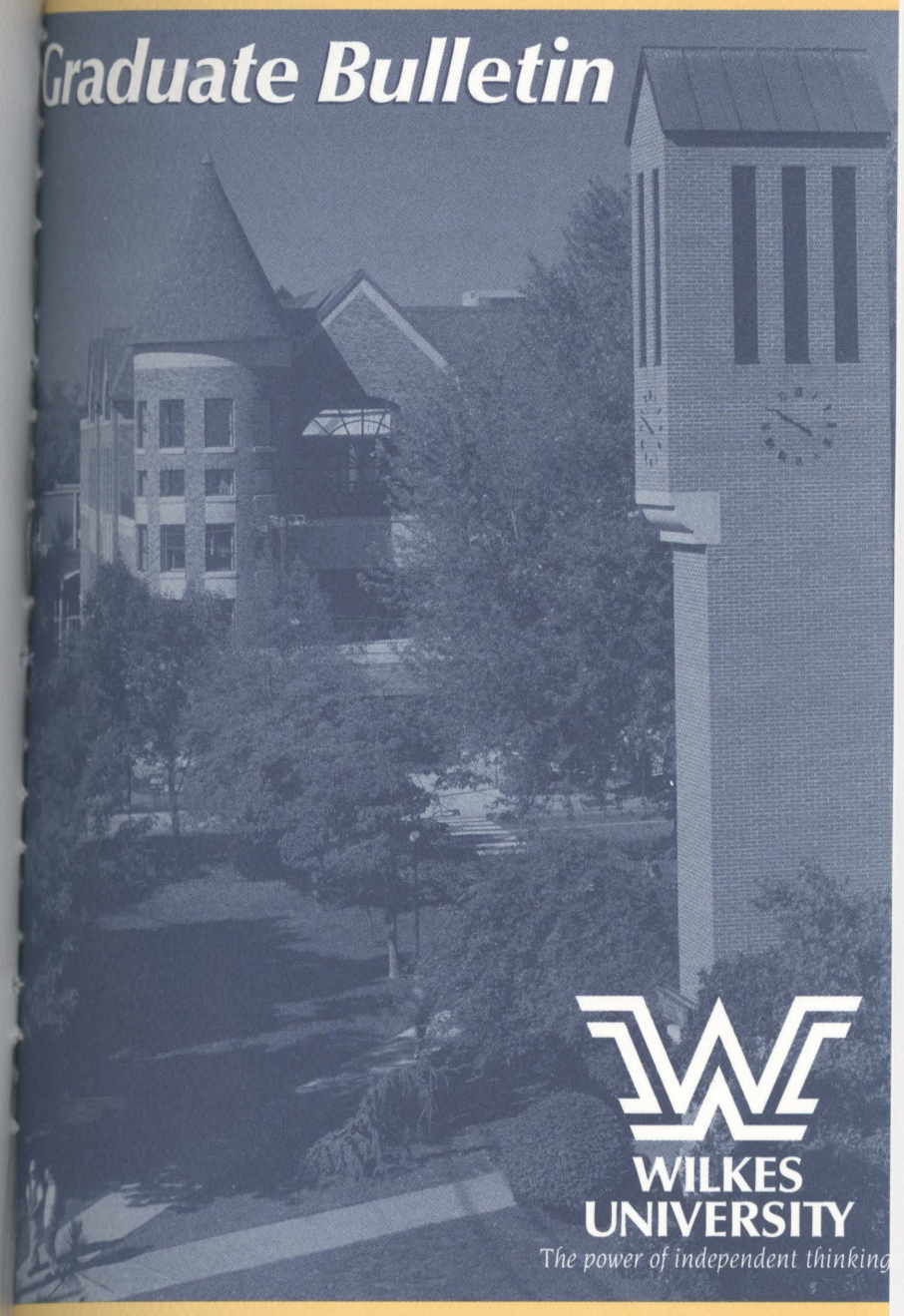
Wilkes-Barre, Pennsylvania
1-800-945-5378

www.wilkes.edu

A complete, electronic version of the Wilkes University Bulletin is available online at:
www.wilkes.edu/bulletin

Wilkes University

Graduate Bulletin



WILKES
UNIVERSITY
The power of independent thinking

2001-2002 Edition

WILKES
UNIVERSITY

2001-2002

Graduate Bulletin

Wilkes-Barre, Pennsylvania 18766
Telephone (570) 408-5000
1-800-WILKES U
(1-800-945-5378)
Home Page: http://www.wilkes.edu
Graduate Office: (570) 408-4160

Statement of Nondiscrimination

Wilkes University does not discriminate on the grounds of race, color,, national origin, sex, age, or disability in the administration of or admission to any of its educational programs, activities, or with respect to employment, in compliance with Title VII, Title IX, Section 504, ADA, and the Age Discrimination Act. It is the policy of Wilkes University that no person, on the basis of race, color, religion, national origin or affectional preference, or Vietnam-era veteran status, shall be discriminated against in employment, educational programs and activities, or admissions. Inquiries may be directed to the Dean of Student Affairs or the Affirmative Action Office (Ext. 4500).

The University complies with the Ethnic Intimidation Act of 1982 of the Commonwealth of Pennsylvania which provides additional penalties for the commission of illegal acts of intimidation when such actions are motivated by hatred of the victim's race, color, religion or national origin.

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Wilkes at a Glance

Vision

Wilkes University, an independent university, will be recognized for excellence in ndergraduate and graduate education throughout the mid-Atlantic region by helping students discover the "Power of Independent Thinking" through development of essential intellectual skills. Wilkes will enable student success in the global community by emphasizing the traditional liberal arts and sciences in collaboration with professional programs, the utilization of technology, the principled application of knowledge, and an entrepreneurial spirit.

Mission

Wilkes University is an independent institution of higher education dedicated to academic and intellectual excellence in the liberal arts, sciences, and professional programs. The University provides its students with the experience and education necessary for career and intellectual development as well as personal growth, engenders a sense of values and civic responsibility, and encourages its students to welcome the opportunities and challenges of a diverse and continuously changing world. The University enhances the tradition of strong student-faculty interactions in all its programs, attracts and retains outstanding people in every segment of the University, and fosters a spirit of cooperation, community involvement, and individual respect within the entire University.

Graduate Programs

In the last decade, Wilkes has increased substantially its engagement in graduate programs at the master's degree level in the arts and sciences, as well as professional fields, including Pharmacy. Emphasis has been placed on programs that are responsive to student needs for career advancement and the institution's role in applied research and outreach to the region. The graduate program, viewed as a whole, has the following goals:

1. A focus on programs designed for persons who are seeking personal growth, career advancement, and professional development.
2. Concentration on graduate degree programs intended to advance the economic and cultural development of the region.
3. Engagement in outreach programs which link external organizations with campus academic life and provide opportunities for applied research to graduate students and faculty members.
4. A multi-disciplinary approach to graduate studies, emphasizing breadth and adaptability to changing professional and societal conditions.
5. The development of carefully structured cooperative agreements, which provide for the offering of other institutions' programs on the Wilkes campus and the offering of Wilkes's programs on other campuses in the region.
6. Concentration on graduate programs in fields which are already strong in terms of faculty, facilities, and library resources at the undergraduate level and which will be augmented by graduate level offerings.

In Conclusion

The faculty, administration, and Board of Trustees continually assess the purposes and goals of Wilkes University and the programs designed to attain them. The unchanging principle guiding the University is to provide educational opportunities and outreach services which are responsive to student and community needs and consistent with Wilkes's tradition of service, excellence, and diversity.

General Information 2001-2002

Wilkes University is an equal opportunity and affirmative action institution. No applicant shall be denied admission to Wilkes because of race, color, sex, religion, national or ethnic origin, or handicap. See inside front cover for further information.

The University reserves the right to change the requirements and regulations contained in this bulletin and to determine whether a student has met its requirements for admission or graduation, and to reject any applicant for admission for any reason the University determines to be material to the applicant's qualifications to pursue graduate education.

Graduate Programs

Graduate programs were established in 1959 when the Board of Trustees authorized graduate study in the departments of chemistry and physics. The first master's degrees were conferred in 1965.

Graduate programs are designed to provide the opportunity for completion of a master's degree in one or two years of full-time study. Cycling of graduate courses allows a full-time student to plan for continuous progress in the program.

The programs also allow businesspersons, engineers, scientists, teachers, and others employed in the region to continue their studies without interrupting their employment. To permit a combination of work and study, many classes are scheduled to meet during late afternoon and early evening hours.

Academic responsibility for each graduate degree program is vested in the department offering the degree program. Graduate program admissions criteria are the responsibility of the Graduate Studies Committee, while applications for admission are processed by the Office of Graduate Studies. Extra-curricular and other support services for graduate students also are provided by the Office of Graduate Studies.

Accreditation

Wilkes's graduate programs are approved by the Department of Education of the Commonwealth of Pennsylvania and accredited by the Middle States Association of Colleges and Secondary Schools.

In addition to the total program accreditation, certain special areas are recognized by professional societies.

Admissions

Application

Those interested in graduate programs offered at Wilkes should apply to the Graduate Office, Room 203 Capin Hall. They should contact that office to obtain the forms and information needed to proceed with their application. They must fill out the "Application for Graduate Admission" form and arrange for the submission of official transcripts of all previous college and/or university work. All programs also require letters of recommendation and some require test scores for admission. For information on testing contact the Educational Testing Service, Box 955, Princeton, NJ 08540.

Students, other than international students, who are unable to complete the application process prior to the beginning of their first semester may be allowed special admission to the program pending processing of their applications. This policy does not imply acceptance of the special student into the degree program. Students failing to complete the application process by the beginning of the second semester after their initial application may be denied the right to register for courses

Qualifications

For admission to graduate study an applicant must have received from an accredited institution a baccalaureate degree earned under residence and credit conditions substantially equivalent to those required by Wilkes. Ordinarily, an entering student must have completed in a satisfactory manner a minimum of course work in designated areas, the specific courses and amount of work depending upon the field of advanced study.

Although no minimum undergraduate grade point average is a requirement for admission, it is expected that candidates for admission shall have maintained good or above-average performance during their undergraduate years and shall exhibit evidence of intellectual and temperamental fitness for graduate study.

Specific requirements established for each area of study are to be found herein. Each applicant should consult these requirements prior to filing an application. A student whose background is judged to be deficient in any specific area of the proposed field of study or whose undergraduate grades are below standard may be asked to remedy the deficiency by taking one or more courses at the undergraduate level, without graduate credit.

Classification of Students

A graduate student may be admitted either as a degree or a special non-degree student, depending upon the student's objectives. After admission to one of these categories, any change of status must be officially acted upon by the Office of Graduate Studies.

Degree Candidates

Provisional admission is a temporary classification in which a student may remain until completion of 12 graduate credits and all outstanding undergraduate prerequisites. A provisionally admitted student who wishes to petition for regular admission must submit a written request to the Office of Graduate Studies. **An applicant accepted provisionally will be permitted to take a maximum of 12 graduate credits as a provisionally admitted student.** Under extraordinary circumstances, a student may petition the Graduate Office for an extension.

Graduate Degree Programs

Degrees	Programs
Master of Business Administration, M. B. A.	Business Administration (p. 16) Concentrations: Accounting, E-Business, Entrepreneurship, Finance, Human Resources Management, International Business, Marketing, or Operations Management
Master of Science, M. S.	Mathematics (p. 50) Nursing (p. 57)
Master of Science in Education, M. S. Ed.	Classroom Technology (p. 24) Educational Development & Strategies (p. 24) Instructional Technology (p. 24) Educational Leadership (p. 25) Secondary Education with concentration in: Biology (p. 35) Chemistry (p. 38) English (p. 39) History (p. 41) Mathematics (p. 50) Physics (p. 44)
Master of Science in Electrical Engineering, M.S.E.E.	Electrical Engineering (p. 44)

Regular admission is granted to students who have demonstrated an acceptable level of academic work in their undergraduate program and are prepared for work at the graduate level in their field of specialization.

Note: nine credits per semester is considered to be full-time for graduate students.

Wilkes undergraduate students may be permitted to enroll in certain graduate courses with the approval of their advisors, the Chairperson of the Department offering the course, and the Office of Graduate Studies. Credit for such courses will be at the undergraduate level.

Special Non-Degree

Students may apply for admission and to register as special non-degree students. They must complete the Application for Admission form, check status desired (special non-degree) and pay the application fee. Special non-degree applicants are allowed to accumulate up to six credits only. Upon the completion of six credits, they must declare their intention to change their status to degree candidate status or their right to register for courses may be revoked. Exceptions to this policy must be approved by the Chairperson of the Department in which the student seeks to take additional courses as a special non-degree student.

Professional Development for Teachers

Teachers wishing to take graduate courses for professional development are allowed to register as special non-degree students. They must complete the Application for Admission form, check status desired (special non-degree) and pay the application fee. While there is no limit on the number of graduate courses that teachers may take for professional development, some of these courses may not fulfill a requirement for a master's degree at Wilkes. Teachers should consult the Wilkes Graduate Bulletin for degree requirements as well as confer with the Chair of the Education Department in order to determine which courses are required for a specific M.S. in Education degree program at Wilkes.

Auditing

A person desiring to audit a course does not need to meet normal admission requirements, but must obtain approval to audit from the course professor and indicate "audit" on the registration form. Auditors must file the regular Application for Admission. The student receives no credit for courses taken as an auditor and does not complete examinations or turn in written work in these courses.

Changing to Auditor Status

A student enrolled in a course may apply to become an auditor by completing a change-in-class-status form, available at the Registrar's Office, and must obtain approvals from the advisor and course professor. This change of status must be completed before the end of the second week of the class.

International Students

International students, holding an F-1 visa, must apply at least three months prior to the beginning of the semester or summer session in which they intend to begin graduate studies. They must submit two certified English translations of all academic records.

All applicants whose native language is not English and who hail from non-English speaking countries must take the TOEFL (Test of English as a Foreign Language) and submit the results of this test with the Application for Admission. A student must present a minimum TOEFL score of 550 to be considered for admission.

It is required that each international student submit an affidavit of support indicating that the applicant is able to cover one full year of tuition plus living expenses in the United States.

The Immigration and Naturalization Service of the United States Department of Justice requires a certificate of eligibility (Form I-20A) to be initiated by the University and

completed by the student prior to applying for a student visa to study in this country. Any extension of stay or employment while in the United States must have the prior approval of the regional office of the Immigration and Naturalization Service.

International students must maintain full-time student status.

International students may be required to take certain courses for undergraduate credit which are not applicable to the master's degree. In some cases these courses will be specified in the admissions letter, but the Department Chairperson and the student's advisor may make additional requirements if a student is found to be deficient in the English language or in background knowledge in the field.

All international students should register their names with the International Student Advisor as soon as they arrive. The International Student Advisor, second floor, Conyngham Center, serves as advisor on non-academic matters to all international students. Services provided include counseling on housing, visa problems and other difficulties in adjusting to life in the United States.

The Associate Dean of Student Affairs provides immigration and visa information and assistance as well as advice on personal issues. The Associate Dean also provides orientation to life in the United States and the American educational system; assists students in dealings with U.S. and foreign government agencies, other campus offices and departments, and the community; and serves as advisor to the International Student Organization.

Course Numbering

Courses are designated by three-digit numbers. The first digit denotes the level of the course as follows:

400-499 Courses for graduate students and advanced undergraduates

500-599 Courses for graduate students only (except with special permission)

Academic Degree Requirements

Students may be awarded the master's degree upon satisfaction of all graduate degree requirements and the following specific requirements:

1. **Regular** admission to the graduate program;

2. Satisfactory completion of all requirements for the degree to be completed within six calendar years preceding the date of the granting of the degree. If an extension of the six-year limit is needed, a request should be submitted in writing to the Office of Graduate Studies. The Graduate Dean will review the request and consult with appropriate parties (graduate program director, chairperson, advisor or academic dean). and will notify the student and the appropriate administrative offices of the final decision.

3. A minimum average of 3.0 for all graduate work (see Retention Policy);

4. If a thesis is required, the candidate should:

a. Be accepted by a thesis advisor and an Advisory Committee, before completion of nine hours of graduate study;

b. Submit an acceptable thesis in the required format and quantity of copies not later than 3 weeks prior to the commencement at which the degree is to be conferred;

c. Complete arrangements for publication of the thesis of the programs described below.

Specific requirements for graduate degrees will be found within each of the degree programs described below.

Students CANNOT substitute other courses for any of the core courses in any program.

Retention

A graduate student who accumulates two grades below 3.0 in one or more graduate courses will be placed on probation. A student earning a third grade below 3.0 will be

dismissed from the graduate program. A student who is dismissed from the graduate program may request a review of the case by the Faculty Committee on Academic Standards. The request should be submitted in written form to the Office of Graduate Studies.

Specific graduation requirements are listed under each specific program section.

Transfer Credits

A maximum of 6 credits of graduate work done at another institution may be applied toward the requirements for the master's degree. There is no exception to this policy.

Approval to apply any transferred credits toward a degree program must be granted by the Chairperson of the Department or, in the case of the MBA, the Program Director. Transferred academic work must have been completed within **six years** prior to the date of admission to the graduate program at Wilkes, with a grade of B or better. Pass-Fail grades are not transferable to a degree program unless the "Pass" can be substantiated by the former institution as being a grade of B or better. **Grades earned in transferred courses are not included in the computation of the cumulative grade point average at the University.**

Wilkes graduate students who seek to take a graduate course at another institution and to transfer the credits back to the University must complete a "Prior Approval Form." All completed forms for transfer of credits should be submitted to the Registrar's Office where forms for transfer of credit may be obtained.

Grade Regulations

Numerical grades are given for graduate work:

4.0 = A	Academic achievement of superior quality
3.5 = B+	Academic achievement of good quality
3.0 = B	Academic achievement of acceptable quality in meeting graduation requirements
2.5 = C+	Academic achievement of adequate quality but below the average required for graduation
2.0 = C	Academic achievement below the average required for graduation
0.0 = F	Failure. No graduate course credit

A grade of "X" indicates assigned work yet to be completed in a given course. Except in thesis work, grades of "X" will be given only in exceptional circumstances. Grades of "X" must be removed through satisfactory completion of all course work no later than four weeks after the end of the final examination period of the semester in which the "X" grade was recorded. Failure to complete required work within this time period will result in the conversion of the grade to 0. **An extension of the time allowed for the completion of work should be endorsed by the instructor in the form of a written statement and submitted to the Registrar.**

Regulations for Withdrawal

A student may withdraw from a course during the first three weeks of the semester by informing the instructor, completing a withdrawal form which is co-signed by the student and the student's advisor, and returning the signed form to the Registrar's Office within the first three weeks of the semester. A student may withdraw from a course from the end of the third week through the eighth week only with the approval of both the instructor and the student's advisor. (The completed form must be returned to the Registrar's Office by the end of the eighth week.) Thereafter, a student may withdraw from a course only for serious circumstances, as determined by the Department Chairperson or the Director/Coordinator of the appropriate graduate program in consultation with the instructor and the Office of Graduate Studies. A mark of "W" indicates an authorized withdrawal from the course.

It is the student's responsibility to initiate withdrawal from a course by obtaining the withdrawal form from the Registrar's Office, having it signed by the appropriate personnel, and returning it to the Registrar within the three- or eight-week period. A grade of "O" is assigned by the instructor and recorded for all courses in which no official withdrawal, as specified above, has been completed by the student.

"W" is not a grade; it does not constitute a reflection of academic performance within a course. The appropriate grade for academic performance below the minimum standard for course credit is "0."

A "W" granted during the first three weeks reflects a decision on the part of the student, after consultation with the instructor and advisor, not to be enrolled in a course. In those cases in which a student withdraws from one course to add another during the first week of class of the semester, a "W" will not appear on the transcript. A "W" granted during the remainder of the course constitutes recognition and agreement by the student, instructor, and advisor, that, due to some extraordinary circumstances beyond the student's control, enrollment in that course is not possible or feasible. Fear of receiving a low grade does not constitute an extraordinary circumstance.

Appeal of Grade Policy

Students who have a clear and justifiable grievance with reference to a grade should first seek resolution with the instructor and, subsequently, with the department chairperson/director. It is expected that they will consult with the faculty member in an effort to resolve the dispute. The chairperson may also exercise the option to involve others in the discussions with the faculty member.

If satisfaction cannot be obtained, the student has the right to appeal to the Vice President for Academic Affairs. The appeal must be made by the end of the fourth week of the subsequent fall or spring semester. The Vice President will consult with the department chairperson and will establish an appeal committee of three faculty members - at least two of whom shall be from the department of the faculty member involved, if this is possible. A committee chairperson will be appointed by the Vice President for Academic Affairs. The committee chairperson will notify the faculty member of the appeal and the composition of the committee.

The appeal committee will hear the student's complaint, interview the faculty member, and study the evidence presented by both parties. If necessary, the committee may interview other students or faculty in its efforts to determine the facts.

The committee will make a report to the Vice President for Academic Affairs in which it reviews the issues and recommends a solution. In most cases this will be a recommendation to uphold the grade awarded by the instructor or to alter the grade which the student received. In some cases the recommendation may be to present the student with other alternatives such as the completion of additional work before a final grade is determined.

The Vice President for Academic Affairs, after consultation with the President, will inform the faculty member and the student of the recommendations of the appeal committee and will take the steps which are necessary to implement the recommendations.

Regulations on Thesis Research

Each graduate student shall select a major advisor under whose direction he/she wishes to pursue thesis research, if a thesis is required. Following acceptance of the candidate, the advisor shall appoint two other members of the graduate faculty to serve with the advisor as the student's Advisory Committee.

Part-time students employed in laboratories on a full-time basis may be permitted to conduct their thesis research in these laboratories, if a mutually satisfactory agreement can be reached by the student, the laboratory staff, and the University. In such cases, a qualified member of the staff of the employer shall be named by the Chairperson of the Department to serve as a member of the student's Advisory Committee. This staff person shall be appointed an adjunct professor of the University and shall supervise day-to-day progress of the student's research.

Thesis Policy

1. Upon approval of the thesis topic, the student and the advisor will identify the objectives, develop a timetable, and plan the distribution of credits in that timetable. This written plan will be placed in the student's files in the department office and the Registrar's Office.

2. The student shall be continuously registered for a minimum of one thesis credit up to and including the semester that he/she defends the thesis and submits the final copies of the thesis.

3. The thesis objectives should be completed within the allocated number of credits and within the timetable developed; however, circumstances and the uncertainties associated with research and project work may require subsequent adjustments to the credits allocated and the timetable. Such adjustments shall also become part of the student's files in the department office and the Registrar's Office.

4. Students registered for thesis credits will be awarded a grade reflecting the level and the quality of work conducted for that semester. Incomplete and audit designations are explicitly excluded as thesis grades.

5. The satisfactory completion of the thesis is indicated by passing the oral examination and obtaining the necessary approvals from the Thesis Committee, the Department Chairperson, and the Office of Graduate Studies.

6. Student appeals to any provisions in this policy shall be to the Thesis Advisor, the Department, and finally to the Graduate Studies Committee.

The original and two copies of the thesis must be submitted to the Office of Graduate Studies after the thesis has been approved by the Advisory Committee. One copy will be filed in the Library, one in the Office of Graduate Studies and one in the appropriate department. If the student desires a personal copy bound, an additional copy should be furnished. For thesis binding fees, see under fees and expenses.

Examinations and Tests

Students who desire to remove undergraduate deficiencies may do so by formal coursework or by **challenge examination.** Challenge examinations cannot be used to earn credits toward the graduate degree. Arrangements are made by the student directly with the Graduate Program Director . The fee for each challenge examination is $50 per credit.

Transcripts

Transcripts are provided by the Office of the Recorder. They are issued only upon written request by the student, and should be requested at least three weeks prior to the date needed. A student requesting a transcript in person must present valid identification.

Transcripts given directly or mailed to students do not carry the University seal and are not official. The seal is attached only when the transcript is mailed directly from the University to another academic institution or authorized agency.

There is no charge for the first transcript requested from Wilkes. The student will pay $6 for each additional transcript.

A transcript of work completed at any college or university other than Wilkes University must be obtained directly from that institution.

The Family Educational Rights and Privacy Act of 1974

Wilkes University, in full compliance with the Family Educational Rights and Privacy Act of 1974, shall make educational records available to students upon request. Likewise, in accordance with the law, individually identifiable educational records will not be released to other than authorized individuals without written consent of the student.

Wilkes University has established a policy on access to and release of student information for compliance with provisions of this Act. This policy is published in the Wilkes University Student Handbook, which is available in the Graduate Office or the Library.

Disciplinary Procedures

Graduate students are obligated to observe the regulations governing all Wilkes University students relative to:

1. Academic honesty and integrity;
2. Respect for the rights of others relative to their safety, welfare and educational commitments;
3. The safety and security of the entire community.

Any disciplinary cases arising from a lack of observance of these regulations will be adjudicated by the Graduate Dean and the Dean of Student Affairs. These two Deans shall have the responsibility of hearing such cases with the Chairperson of the Graduate Studies Committee and a student.

Any appeals from the decisions of this Committee may be made in written form to the Vice President for Academic Affairs.

Financial Information

Tuition and Fees

All payments for tuition, board, fees, etc., are due at the time registration forms are processed and no later than two weeks before the start of classes. Payment of all charges is to be made at the Financial Management Office, Passan Hall.

Several plans have been developed to assist students who do not have the cash in hand, and it is suggested that these plans be considered when special assistance is needed. Students may consult with the Director of Financial Aid for information regarding scholarships and loan programs.

Subject to the regulations concerning refunds, the total tuition is considered fully earned by the University upon completion of registration by the student.

Application Fee: $30. International students: $50
Tuition Cost, M.B.A., M.S., M.S.E.E.: $596 per credit hour.
Tuition Cost, M.B.A.: $513 per credit hour.
Tuition Cost, M.S.Ed.: $256 per credit hour.
General Fee: $10 per credit hour.
Technology Fee: $3 per credit hour.
Graduation Fee: $135 (Charged to all graduating students in their last semester.)
Thesis Binding Fee: $15 per copy.
Transcript Fee: The first transcript is free of charge; the fee for the second and subsequent transcripts is $6 per copy.
Audit Fee: One half of tuition cost.
Individual departments have the right to charge laboratory and breakage fees as appropriate.

Third-Party Billing and Deferred Payment forms may be picked up at the Financial Management Office. **These forms must be submitted each semester.**

Note: The Financial Management Office is prohibited from signing graduation clearance forms until any outstanding balance is paid in full. Graduates who have requested the deferred payment option must pay the final semester balances personally before clearance forms are signed (or have a written guarantee from their employer that the amount will be paid to Wilkes regardless of course completion or final grade). Those prospective graduates not complying with the above policy will not be cleared until actual cash payment is received from their employer.

Refunds

Students who have paid their tuition in full and who withdraw from courses or from the University during the time limits indicated below will receive tuition refunds, upon written request to the Assistant Director of Financial Management, according to the following formula. (Fees are non-refundable. Refunds for special sessions [sessions which do not correspond to the calendar outlined below] will be calculated by the Financial Management Office upon student request.)

Charges for students attending their first semester will be refunded pro-rata in accordance with the 1992 reauthorization of the Higher Education Act.

Time of withdrawal		Tuition Refund
Academic Year	First two weeks	90%
	Third and Fourth weeks	50%
	Fifth-eighth weeks	25%
	After eighth week	No refund
5-week Summer Sessions	First week	50%
8-week Summer Sessions	First two weeks	50%
	Third-eighth weeks	No refund
Weekend College	Through second weekend	50%
	After second weekend	No refund

Financial Aid

Assistantships and Counselorships

The University awards a limited number of Graduate Assistantships. **Applications for these assistantships must be filed with the Dean of Graduate Studies no later than March 1 for the following academic year.**

A number of counselorships in undergraduate residence halls are available each year to graduate students. Applications for these positions must be filed with the Director of Housing no later than February 1 to be considered for the academic year beginning in September.

Criteria for Selecting Graduate Assistants

1. Admission to the program and full-time status.
2. Full-time (nine credits per semester) status while holding the assistantship.
3. Minimum 3.0 undergraduate grade point average. Current graduate students may apply for an assistantship after completion of nine semester hours of graduate credit with a cumulative average of 3.0 or higher.
4. Two additional letters of recommendation and submission of personal resume (character reference, if needed).
5. Successful interview or equivalent assessment of suitability for assistantship.
6. Ability and willingness to perform the duties assigned by the Program Director in the MBA program or by the department chair and/or the supervisor.

Institutional and Financial Assistance Information

The following information concerning student financial assistance may be obtained from the Director of Financial Aid, Passan Hall, 267 S. Franklin Street:

1. Financial aid programs available to students who enroll at Wilkes;
2. The method by which such assistance is distributed;

3. The means, including forms, by which application for student financial assistance is made; the requirements for accurately preparing such applications; and the review standards employed to make awards for student financial assistance.

Loans

There are several federal loan programs available to graduate students. While each has its unique characteristics, there are some standardized features which apply to all of the following loans. In order to qualify, a student must be accepted as a degree candidate, must be a U.S. citizen or permanent resident, must be enrolled on at least a half-time basis in eligible graduate-level courses and must be in good academic standing according to the academic progress standard set for receipt of federal aid. To determine eligibility, all students must complete the Free Application for Federal Student Aid and and a Wilkes University Financial Aid Application. These forms are available at the Financial Aid Office.

In order for enrollment in courses to qualify for federal financial aid eligibility, the site at which they are offered must be approved by the Department of Education if more than 50% of the academic program is available at that site. Since the University seeks flexibility in selecting sites for the off-campus graduate education program, the University has chosen not to request approval of each of these sites. Therefore, students enrolled in these courses do not qualify for federal financial aid, including the Stafford Losn program. Private loan programs, however, are available to help students enrolled in these courses cover educational expenses. Contact the Financial Aid Office for additional information on these private loans.

Important Terms

Academic Grade Level: Graduate programs are divided into two grade levels; the first 15 graduate credits are grade level 6 and the remainder of the program is grade level 7.

Academic Progress: For continued participation in the loan programs, students must meet specific academic progress requirements which include the successful completion of a specific number of credits based on their enrollment status and the maintenance of a 3.0 cumulative grade point average.

Enrollment Status: Full-time is 9 graduate credits per semester; half-time is 6 graduate credits per semester.

Graduate Student: A student who has been officially accepted as a candidate in a graduate degree program.

Federal Stafford Loans

The subsidized Stafford Loan is a federal program that enables students to borrow money from a bank, credit union, savings and loan, or other participating lenders. It is available to graduate students who are enrolled on at least a half-time basis and who show financial need. The loan is interest-free while the borrower is enrolled at least half-time and for the first six months following termination of such enrollment. Graduate students may apply for $8,500 per academic year.

Interest begins to accrue the seventh month after the student ceases to be enrolled on at least a half-time basis. Any student who borrowed for the first time after October 1, 1992, has a flexible interest rate.

Repayment of principal and interest begins six months after the student ceases to be enrolled on at least a half-time basis.

The unsubsidized Stafford Loan differs from the subsidized loan in that the student must pay the interest on the loan while enrolled or have the interest capitalized. Under the federal subsidized Stafford Loan, the government pays interest on the loan while the student is enrolled in college. This loan is for students who do not qualify because of lack of financial need for any or all funds under the subsidized Stafford Loan program.

A borrower who is eligible for a portion of the subsidized Stafford Loan may borrow the difference from the unsubsidized Stafford Loan program. The maximum loan limit includes a combination of the subsidized and unsubsidized loan.

The borrower is expected to make quarterly interest payments while the student is enrolled in college or have the interest capitalized. The loan carries a flexible interest rate.

Repayment of the principal begins six months after the student is no longer enrolled on at least a half-time basis.

Additional Unsubsidized Stafford Loan

Graduate students are eligible to apply for additional unsubsidized Stafford Loan funds which are over and above the Stafford Loan maximums described above. The maximum additional amount is $10,000 per academic year with an aggregate limit of $73,000.

This loan carries the same interest rate and repayment obligation as described under the section on Stafford Loans.

Graduation

All graduating graduate students are expected to participate in one of the two commencement exercises held over the calendar year. These exercises occur in January and May each year.

It is the responsibility of the graduate student to notify the Registrar's Office of his/her intention to graduate. This written notification must be received in the Registrar's Office no later than ninety days prior to the date of the Commencement Exercise at which the student expects to be graduated. Graduate students must also register for graduation (GRD-000B) for "O" credit at the beginning of their final term before graduation.

Academic Programs

Accounting

See Business Administration, page 16.

Biology

See M. S. in Education, page **35**.

Business Administration

Anthony L. Liuzzo, J.D., Ph.D., Director
Robert M. Burke, M.B.A., Coordinator

Master of Business Administration (MBA)

Purpose

The curriculum leading to the Master of Business Administration degree at Wilkes emphasizes a general, broad-based approach to graduate business education. Students acquire the quantitative and judgmental skills necessary for a manager to succeed. The program provides advanced training in the functional areas of business and also provides the opportunity for specialization in a selected field through additional training in Accounting, e-Business, Entrepreneurship, Finance, Human Resources Management, International Business, Marketing, or Operations Management. The core objectives of the MBA include:

- To develop professional managers, with emphasis on the organization, operation, and control of an enterprise;
- To enable individuals to create and evaluate alternative courses of action as a procedure for making decisions;
- To give business persons an understanding of international business policies and practices;
- To prepare these business persons for the challenge of understanding and appreciating the cultural and subcultural similarities and differences in various business environments;
- To prepare students for further training through post-graduate and/or doctoral studies in business and related disciplines.

The program provides management education at the master's level for students with varied undergraduate backgrounds: business and economics, engineering and science, and others.

Master of Business Administration courses are offered on weekday evenings and in a year-round weekend format. Weekend courses are offered on Saturday and Sunday every third or fourth weekend, five weeks per trimester.

The Business Division is a member of the Association of Collegiate Business Schools and Programs. The MBA program is accredited by the Association of Collegiate Business Schools and Programs.

Admission Requirements

Applications are invited from individuals who have earned undergraduate or graduate degrees in any discipline or field of study. To be considered for admission, the applicant must meet the following minimum requirements:

1. Submit to the Graduate Admissions Office a completed graduate application for admission with payment of appropriate application fee;
2. Submit two letters of recommendation from previous academic faculty and/or from current or previous supervisors, if employed. Letters of recommendation should attest to the student's fitness for managerial leadership and discuss interpersonal and organizational skills;
3. Demonstrate satisfactory performance as an undergraduate by providing a complete set of official undergraduate transcripts to the Graduate Admissions Office;

To be accepted on a **regular** basis, a candidate for the Wilkes MBA must have obtained a cumulative GPA of at least 3.0 is his/her undergraduate degree program. A prospective student with a GPA of less than 3.0 may be accepted into the MBA program on a conditional basis. To change to regular status, the conditionallyaccepted MBA student must maintain no less than a 3.0 for each course in the first six graduate credits of the MBA program. Failure to maintain the minimum 3.0 in any course will result in dismissal of the conditionally accepted student from the MBA program.

The Master of Business Administration (MBA) Program at Wilkes practices intensive self-directed student advising. A student accepted into the program is immediately assigned an advisor. Advising sessions are used as an opportunity to communicate effective managerial role models, changing job market conditions, student career ambitions and strengths and to identify course scheduling options. The focus of the advising process is to encourage students to develop a responsible and rewarding career.

Degree Requirements

A minimum of thirty-six (36) credit hours is required for all MBA students. These consist of twenty-seven (27) credits in CORE courses and nine (9) credits in ELECTIVE SEMINARS, INDEPENDENT STUDY, OR TOPICS courses. Students who have not completed undergraduate courses in financial accounting, managerial accounting, marketing, busiess law, finance, management and human resources management, organizational behavior, macroeconomics, microeconomics, international business, statistics, and operations management and information systems will need to complete up to twelve modules (12 credits) in the PROFESSIONAL COMPETENCY SERIES.

Students may concentrate their elective courses in one area of study or may select three courses that complement the individual interests or professional needs from different disciplines.

Courses of Instruction

Professional Competency Series (0-12 credits)

Note: Students may be exempted from any course in the Professional Competency Series if they have earned a grade of C or better for an equivalent, credit-bearing course as part of a program of study for which a degree was awarded by an accredited institution within the past five years.

BA 500. FINANCIAL ACCOUNTING **One credit**
An overview of accounting practices and principles used by managers in decision-making, planning and control, and the preparation of financial reports.

BA 501. MANAGERIAL ACCOUNTING **One credit**
A study of the essential foundations of managerial accounting. The course includes accounting and analysis techniques used in decision-making activities such as financial statement analysis and budgeting.

BA 502. MARKETING **One credit**
An introduction to the principles and practices of marketing. Marketing activities play a dynamic role in the global and national economy. Course content will build a knowledge

foundation about the following areas: strategic marketing, research, consumer behavior, segmentation and targeting, and marketing mix planning.

BA 503. LAW AND BUSINESS **One credit**

This course provides a foundation for business managers to operate within the legal environment in which all businesses in our society function. It also provides a foundation for individuals to engage in commercial transactions, including principles of contract law and property law.

BA 504. FINANCE **One credit**

An introduction to the principles of financial theory and practice. Topics to be surveyed include financial decision-making, the financial model of the firm, financial markets, working capital management and capital budgeting.

BA 505. MANAGEMENT AND HUMAN RESOURCES MANAGEMENT One credit

A foundation course that reviews theories of management and organizational behavior as they have been developed and applied in organizations. Topics will include the functions of managers, the decision-making process, leadership, social responsibility, ethical considerations and the special problems of operating in a global environment. The course is intended for graduate students who have not completed an undergraduate course in management within the past five years.

BA 506. ORGANIZATIONAL BEHAVIOR **One credit**

Organizational Behavior examines organizational issues in the public, private, and not-for-profit sectors, including the interrelationships among individuals, groups, and organizations that affect job performance. A behavioral approach is used to examine attitudes, behavior, and performance of people as individuals and as members of formal and informal groups. We explore topics such as group dynamics, leaderhsip and motivation, communication, personality, culture, conflict, and organizational change and development.

BA 507. MACROECONOMICS **One credit**

A study of the essential foundations of macroeconomics. The course will introduce the problem of scarcity, and supply and demand analysis to the student. Additionally, the course will focus on a variety of topics including national income, unemployment, inflation, monetary, and fiscal policy.

BA 508. MICROECONOMICS **One credit**

A study of the essential foundations of microeconomics. The course will introduce the problem of scarcity, and the concept of opportunity cost. additionally, the course will focus on a variety of topics including the theory of the firm, and the efficiency of resource allocation under various market structures.

BA 509. INTERNATIONAL BUSINESS **One credit**

An introduction to the field of international business and international trade. Business enterprise in international trade; effects of economic, political, and social environment on international business and international trade.

BA 510. STATISTICS **One credit**

This course introduces students to the essential elements of applied statistical analysis appropriate for business organizations. It is intended for students who have never studied business statistics, or those wishing to refresh their knowledge of probability theory, descriptive statistics, inferential statistics, and data relationships. Spreadsheet software will be used extensively; students registering for this course must have basic working knowledge of Microsoft *Excel*.

BA 511. OPERATIONS MANAGEMENT & INFORMATION SYSTEMS One credit

This course has two distinct modules, and is intended for students having no academic or experiential exposure to either of them. The operational management module presents strategic design and tactical management models for operating organizations. Several quantitative models are introduced. In the information systems module, students will learn the strategic, organizational, and ethical issues involved in systems design, database management, knowledge management, and decision support systems.

The Core (27 credits)

MBA 512. BUSINESS RESEARCH DESIGN AND METHODS Three credits

This course presents methodology appropriate for conducting research in business organizations. It includes brief review of the scientific method and its application to the business research process, discussion of ethics in the research process, research design (including measurement, scaling, and sampling issues), sources and collection of data (both primary and secondary), and analysis (hypothesis testing, correlation, multivariate) and presentation of date (both oral and written). Both application and spreadsheet softwares are used extensively.

Prerequisite: BA 510 or undergraduate equivalent.

MBA 513. APPLIED BUSINESS MODELS Three credits

This course presents a variety of quantitative models applicable to both routine and non-routine business decisions. It emphasizes databased decision making and representation of actual business problems or opportunities using mathematical models. Topics may include multiple criteria decision making, sequential decision trees (including Bayesian analysis), linear programming, Markov analysis, project management, simulation, and other models as appropriate. Both application and spreadsheet softwares are used extensively.

Prerequisite: BA 511, or undergraduate equivalent.

MBA 520. MARKETING MANAGEMENT Three credits

This course presents a strategic foundation for marketing decision-making. It integrates the tactics of information gathering, environment analysis, competitive analysis, product positioning and the implementation of strategic positioning. Emphasis is placed on written and verbal communications skill development.

Prerequisite: BA 502, or undergraduate equivalent.

MBA 532. MANAGERIAL ECONOMICS Three credits

Problems of the firm and how to solve them. Price and output determination with analysis of cost and demand functions in markets of various types as well as decision making under conditions of uncertainty and over time. Emphasis is given to firm's role in the global economy and the theory of international trade. The course will deal with the application of economic theory to business practice.

Prerequisite: BA 507, or undergraduate equivalent.

MBA 540. FINANCIAL MANAGEMENT Three credits

A survey of the tools and techniques currently employed by financial decision makers when evaluating organizational performance and developing future courses of action. Emphasis will be placed upon working capital management and capital budgeting techniques.

Prerequisite: BA 500, or undergraduate equivalent.

MBA 552. ORGANIZATIONAL BEHAVIOR AND LEADERSHIP Three credits

The purpose of this course is to examine leadership and organizational issues in the private

and nonprofit sectors. We will specifically focus on the similarities and contrasts of leadership issues in the health care and business sectors. This course emphasizes how to become an effective leader by achieving mastery over the noisy, incessant and changing environment rather than simply reacting and living in a perpetual state of shock. The course focus is on three central issues: a) what makes a person an effective leader, b) how does a leader encourage high performance and build commitment, and c) how does a leader translate intention into reality, communicate those intentions successfully. empower others, and stay on course while knowing when to change.

Prerequisite: BA 505, or undergraduate equivalent.

MBA 560. FINANCIAL AND MANAGERIAL ACCOUNTING **Three credits**

A basis understanding of both internal and external accounting principles and techniques with appropriate application to decision models. Financial and managerial accounting concepts and issues are considered from the viewpoint of the report users. Students with 12 credit hours or more of accounting must fulfill the accounting core requirement by taking one ofthe following: MBA 561, MBA 563 or MBA 564. (No independent research.)

Prerequisite: BA 500, or undergraduate equivalent.

MBA 580. BUSINESS ISSUES IN A DYNAMIC ENVIRONMENT **Three credits**

This course introduces students to the varied diverse stakeholders who impact directly and indirectly on business policy and public policy formation. Included is analysis of the ways in which the interests of the customer, the creditor, the shareholder, the employee, the government, and the society interface with optimal decision-making by business organizations. The course utilized current business issues to provide students with the opportunity to think and write critically and entrepreneurially, while being sensitive to ethical, global, and policy dimensions.

Prerequisite: BA 503, or undergraduate equivalent.

MBA 590. STRATEGIC MANAGEMENT & POLICY **Three credits**

The capstone course integrates a business approach to strategic decision-making which encompasses the business functions of marketing, production, finance, and human resource management. The course will facilitate both conceptual and experiential integration of functional concepts and techniques from the core courses as well as enhance the written and oral communication skills of students.

Prerequisite: Minimum of 24 MBA-level complete credits with all core MBA courses complete **or** currently being taken.

Elective Courses (9 credits)

MBA 515. SEMINAR IN OPERATIONS MANAGEMENT **Three credits**

This course will address select advanced topics in operations management. Topics may include multiple criteria decision analysis, game strategies, network theory, probablistic models, or other current issues. Seminar activities may include in-class discussions, research, online participation, case analyses, application of advanced techniques, or information technologies and methodologies.

Prerequisites: MBA 512, MBA 513, MBA 580.

MBA 525. SEMINAR IN MARKETING **Three credits**

This course will address select advanced topics in marketing. Topics may include business-to-business marketing, consumer behavior, international marketing, new product development, promotion management, or other current issues. Seminar activities may include in-class discussions, research, online participation, case analyses, application of advanced techniques, or information technologies and methodologies.

Prerequisites: MBA 512, MBA 520, MBA 580.

MBA 535. SEMINAR IN INTERNATIONAL BUSINESS **Three credits**

This course will address select advanced topics in international business. Topics may include cross-cultural analysis, international business management, legal environment of international trade, or other current issues. Seminar activities may include in-class discussions, research, online participation, case analyses, application of advanced techniques, or information technologies and methodologies.

Prerequisites: MBA 512, MBA 532, MBA 580.

MBA 545. SEMINAR IN FINANCE **Three credits**

This course will address select advanced topics in finance. Topics may include investment and portfolio management, advanced financial management, financial markets and institutions, risk management and insurance, or other current issues. Seminar activities may include in-class discussions, research, online participation, case analyses, application of advanced techniques, or information technologies and methodologies.

Prerequisites: MBA 512, MBA 540, MBA 580.

MBA 555. SEMINAR IN HUMAN RESOURCES MANAGEMENT **Three credits**

This course will address select advanced topics in human resources management. Topics may include employee compensation incentive systems, employment law, motivation and training, or other current issues. Seminar activities may include in-class discussions, research, online participation, case analyses, application of advanced techniques, or information technologies and methodologies.

Prerequisite: MBA 512, MBA 552, MBA 580,

MBA 565. SEMINAR IN ACCOUNTING **Three credits**

This course will address select advanced topics in accounting. Topics may include corporate financial reporting, financial and tax planning, accounting policies and practices, advanced management accounting, or other current issues. Seminar activities may include in-class discussions, research, online participation, case analyses, application of advanced techniques, or information technologies and methodologies.

Prerequisite: MBA 512, MBA 560, MBA 580.

MBA 575. SEMINAR IN E-BUSINESS **Three credits**

This course will address select advanced topics in E-business. Topics may include legal issues and the Internet, fundamentals of E-business, E-marketing, or other current issues. Seminar activities may include in-class discussions, research, online participation, case analyses, application of advanced techniques, or information technologies and methodologies.

Prerequisite: MBA 512, MBA 580.

MBA 585. SEMINAR IN ENTREPRENEURSHIP **Three credits**

This course will address select advanced topics in entrepreneurship. Topics may include intrapreneurship, new venture creation, financing high growth ventures, or other current issues. Seminar activities may include in-class discussions, research, online participation, case analyses, application of advanced techniques, or information technologies and methodologies.

Prerequisite MBA 512, MBA 580.

MBA 595-596. INDEPENDENT RESEARCH **Three credits each**

Independent study and research for advanced students in the field of the major under the direct of a staff member.

MBA598. TOPICS **Three credits**

Special topics in a major field. This course will be offered from time to time as interest and demand justify it.

Computer Science

See Mathematics, page 50.

Earth and Environmental Sciences

Sid Halsor, Ph.D., Chairperson

These courses may be taken by special students or may be applied towards graduate degrees offered by other departments. Students planning to apply these credits towards degree programs should secure the approval of their academic advisor prior to inclusion in their course of study.

Courses of Instruction

EARTH & ENVIRONMENTAL SCIENCES 491. PRACTICUM Three to six credits

EARTH & ENVIRONMENTAL SCIENCES 498. ADVANCED TOPICS One to three credits Selected topics covering a variety of atmospheric, hydrospheric, and lithospheric processes and environmental management issues. May be repeated for credit.

Prerequisite: Graduate standing.

Education

Kathleen M. Moran
Interim Director, Graduate Programs in Education

Master of Science in Education

Purpose

Graduate study in Education is offered primarily to enable teachers to enhance their preparation for classroom leadership. Study in various academic fields is required as well as in professional courses.

Programs are offered in Education (with options in Classroom Technology, Educational Development and Strategies, Educational Leadership, and Instructional Technology); Secondary Education/Biology; Secondary Education/Chemistry; Secondary Education/English; Secondary Education/History; Secondary Education/Mathematics; and Secondary Education/Physics.

Wilkes University provides two graduate programs with certification. The Master of Science Degree in Educational Leadership provides elementary and/or secondary principal certification. The Master of Science Degree in Instructional Technology provides Pennsylvania K-12 Instructional Technology Specialist certification.

Wilkes University houses a Regional Computer Resource Center (RCRC) which provides microcomputer laboratories, as well as an extensive educational software library, used primarily by students in the M.S. in Instructional Technology and Classroom Technology degree programs.

The RCRC also provides microcomputer facilities and technical support to all teachers enrolled in graduate study at Wilkes. Additional services include:

1. Training for K-12 teachers in microcomputer topics via short workshops and seminars; and
2. Assistance to school districts in designing computer-oriented curricula.

Special Features of the Program

Graduate programs in Education are arranged so that students may pursue the degree on a full- or part-time basis. Late afternoon and evening classes are offered to enable full-time teachers within a reasonable distance from Wilkes-Barre to take courses toward fulfillment of degree requirements during the academic year. Credits may also be earned during the summer sessions. Programs in Classroom Technology, Educational Development and Strategies and Educational Leadership are offered at off-campus sites as well as on the Wilkes campus.

Admission

For admission to graduate study in education, the applicant must have a baccalaureate degree from an accredited institution, with an appropriate major, and a teaching certificate.

Students deficient in any phase of these requirements may, at the discretion of the academic department, and the Graduate Education Department, be granted provisional admission. Deficiencies must be made up satisfactorily before full admission to graduate study will be granted.

Students are allowed to apply for admssion and to register as special non-degree graduate students. They must complete the Application for Admission form, check status desired (special non-degree) and pay the required application fee. The University's general rule for non-degree students limits the number of credits to six. However, a teacher may take courses for professional development to keep abreast with the latest trends in education, as a non-degree student, and there is no limit to the number of Education courses that a student may take. Nevertheless, teachers wishing to pursue one of the M.S. in Education degree programs offered at Wilkes must complete the sequence of courses required for the degree as listed in the Wilkes Graduate Bulletin.

Program of Study

Advisors are assigned when students are admitted to the graduate program. To plan your program of studies fully, consult with your advisor. Graduate courses are offered each semester, with the greatest variety during the summer sessions. Fall and Spring courses are usually offered during the late afternoon and evening. Students may transfer a maximum of six graduate credits from an approved college or university. Transfer credits should be no more than six years old with a grade of B or better and must be approved by the Director of Graduate Programs in Education. For more information see Transfer Credits in the General Information section at the beginning of this Graduate Bulletin. NOTE: It is the student's responsibility to register for Graduation (GRD OOOB) the same semester you enroll in the final course for your degree.

Second Master's Degree

An applicant who has a master's degree from Wilkes University or is working on a master's degree, may obtain a second master's degree if the majors, programs and/or options are different. Up to twelve credits of course work used to satisfy the requirements for the first degree (the basic requirements from Areas I and II) may be applied to the second; all other catalog requirements and credit requirements in courses must be fulfilled. A student who opts for a second degree must submit a written request to the Director of Graduate Programs in Education.

Degree Requirements

All candidates for the Master of Science in Education degree must complete a program of at least thirty credits including six credits in Area I and three credits in Area II in addition to ED 522 - School Curriculum. Instructional Technology majors do not take ED 522 but take ED 589. See individual program descriptions below for specific program course credit requirements.

Master's Degree Programs

Classroom Technology

Kathleen M. Moran
Program Director of Graduate Education

A candidate for the Master of Science in Education degree with an emphasis in Classroom Technology must complete 30 credits with a minimum of six credits in Area I Foundations of Ed; three credits in Area II (ie ED 520) plus ED 522-School Curriculum; the following technology courses from Area VI: ED 526, ED 527, ED 528, ED 585 and six elective credits. Completion of the Classroom Technology degree does not fufill the requirements for any additional teacher certification area. The intent of this program is to upgrade the technology skills of the classroom teacher.

Along with the program at Wilkes University, the M.S. in Education with a concentration in Classroom Technology is offered at the following off-campus sites: Allentown School District, Bethlehem Area School District, Berks County IU#14, Carbon-Lehigh IU#21, Central Susquehanna IU #16, Crestwood School District, Delaware Valley School District, Hazleton @ MMI-Freeland, Jim Thorpe School District, Mount Carmel School District, Northeastern Educ IU#19, Northwest Area School District, Pleasant Valley School District, Pocono Mountain School District, Schuylkill IU#29, Tunkhannock School District, Wallenpaupack School District and the Wilkes-Barre Area School District.

Educational Development and Strategies (EDS)

Kathleen M. Moran
Program Director of Graduate Education

A candidate for the Master of Science in Education may elect the program in Educational Development and Strategies (EDS). The requirements for this 30-credit degree are: a minimum of two courses in Area I Foundations of Ed; two courses in Area II (one of which must be ED 522), four courses in Area V Educational Development and Strategies (Note: additional PLS courses in Area V cannot be used as electives in this program), and six elective credits. Students may use Wilkes' graduate ED courses for the six elective credits or transfer approved graduate courses from other colleges or universities. Off-campus EDS programs are offered at: Bradford County, Chambersburg, Harrisburg/ Mechanicsburg, Lancaster, Lewistown, Quakertown, Schuylkill IU #29, Wallenpaupack, and Williamsport.

Instructional Technology

Barbara N. Bellucci, Ed.D.,
Program Director

A candidate for the Master of Science in Education degree with a concentration in Instructional Technology must complete six credits in Area I Foundations of Ed (preferably from among ED 510, ED 512, or ED 515), one course in Area II (preferably ED 525-Educational Research) and select one course from among these three technology courses: ED 581, ED 582, ED 584. Additional required technology courses are: ED 579, ED 583, ED 585, ED 587, ED 588, ED 589, a total of 30 credits. In addition to these courses, a 3-credit internship, ED 591, is required for Pennsylvania Department of Education certification as a K-12 Instructional Technology Specialist (a total of 33 credits for the Master's degree with certification).

Effective Fall 2001, the criteria for admission to the Instructional Technology Specialist program shall include the following:

- Completion of the Wilkes University Graduate Application,
- Recommendations from college faculty and/or professional supervisors,
- The Miller Analogy Test (MAT) or the Graduate Record Exam (GRE),

- Official transcripts indicating successful completion of a baccalaureate degree with an overall minimum undergraduate GPA of 3.0 from a regionally accredited college or university. Students who do not have a 3.0 GPA may be admitted provisionally by the Director of Graduate Studies. After completion of 12 graduate credits, their performance will be evaluated; if they are successful, they may apply for full admission to the graduate program. A graduate student who accumulates two grades below 3.0 in one or more graduate courses will be placed on probation. A student earning a third grade below 3.0 will be dismissed from the graduate program.

The Master's in Education with a concentration in Instructional Technology was designed to prepare educators to assume positions of technology leadership in schools. Graduates of the program have gone on to become computer coordinators in K-12 settings, or work in the computer industry, serve as technology consultants to education, business or industry, or are pursuing a doctorate in the field.

Educational Leadership (EDLS)

Rhoda Tillman, Ed.D.,
Program Director

The graduate program in Educational Leadership (EDLS) consists of 36 credits. A candidate for this degree, which includes PA Department of Education principal certification in elementary and/or secondary education, must complete ED 514, ED 516, ED 517, ED 518, ED 522, ED 573, ED 574, ED 576, ED 578 and ED 585. EDLS students must complete all these program credits prior to registering for ED 592, a six-credit Internship required of all candidates for principal certification. Candidates will be recommended for principal certification upon the successful completion of: the program of study, a Pennsylvania Department of Education required principal certification exam, and 5 years of professional school experience. In addition to the Wilkes campus, off-campus EDLS programs are offered at the Bethlehem School District, Berks IU 14, NEIU 19 and CLIU 21. Students must follow the program outlined above in order to complete all necessary requirements.

Qualifications for Admission to the Educational Leadership Program:

1. Successful completion of the general Wilkes University application process;
2. Miller's Analogies scores (administered during ED 516);
3. Written statement from the candidate attesting to interest and motivation to pursue a degree in educational leadership and principal certification;
4. Instructional I Teaching Certificate if seeking principalship certification (completed during ED 516);
5. At least three years full-time teaching experience if seeking principalship certification; and
6. Successful completion of ED 516 and ED 517.

Secondary Education

Wilkes offers Master's degree programs in: Secondary Education/Biology; Secondary Education/Chemistry; Secondary Education/English; Secondary Education/History; Secondary Education/Mathematics; and Secondary Education/Physics. A candidate for the Master of Science in Education degree whose program is in one of the secondary school teaching subjects must complete eighteen credits in the appropriate cognate area; twelve credits must be completed in Education courses (six credits in Area I and six credits in Area II, of which three credits must be ED 522). Information about specific Secondary Education Master's degree programs is found in the Biology, Chemistry, English, History, Mathematics or Physics sections of this catalog.

Courses of Instruction

Area I - Foundations of Education

EDUCATION 510. PSYCHOLOGICAL FOUNDATIONS OF EDUCATION
Three credits

A study of human development and learning, application of psychological principles in the practice of education.

EDUCATION 511. PHILOSOPHICAL FOUNDATIONS OF EDUCATION
Three credits

An examination of philosophical issues which bear upon American education. The problem of relating theory to practice is considered.

EDUCATION 512. SOCIAL FOUNDATIONS OF EDUCATION **Three credits**

An introduction to the history, scope, materials and methods of the sociological analysis of education. Instruction includes the concepts of culture, socialization, stratification, social control and change as they relate to formal education.

EDUCATION 513. COMPARATIVE FOUNDATIONS OF EDUCATION **Three credits**

An analytic study of educational patterns in contemporary societies. Educational policies and institutions are studied in their cultural context. Educational patterns of developed and developing nations are described, analyzed and compared; examples from each pattern are examined.

EDUCATION 514. ISSUES IN EDUCATION **Three credits**

(previously titled Historical Foundations in Education)

An examination of contemporary issues in education and their historical perspectives. The development of school organizations and higher education; instructional programs and curricula; and the delivery systems and functions of education are examined in light of contemporary issues. A survey of American education from past to present are presented and future trends are considered. Required for Educational Leadership program.

EDUCATION 515. COGNITION **Three credits**

This course provides in depth study of the processes required for students to process information, including perception, attention, memory, encoding, retrieval, problem solving, and the information processing requirements of reading and writing. Consideration of problem solving in specific subject areas is also covered.

EDUCATION 518. SCHOOL LAW **Three credits**

(previously numbered ED 578--cannot repeat for additional credit)

An examination of school law at the federal, state and local levels; review, discussion and analysis of court decisions which affect schools. Required for Educational Leadership program

Area II - Professional Skills in Education

EDUCATION 520. EDUCATIONAL ASSESSMENT **Three credits**

(previously titled Tests and Measurements)

An examination of various assessment strategies, and current methods of assessment, through the study of theory and effective practices in assessment translated into design.

EDUCATION 521. STATISTICS IN EDUCATION **Three credits**

Correlation and regression through statistical inference.

Prerequisite: ED 520 or equivalent.

EDUCATION 522: SCHOOL CURRICULUM **Three credits**

(replaces previous ED 534 El Curr/ED 541 Sec Curr—cannot repeat for additional credit)

A study of school curricula offered in elementary and secondary education. Models and trends in curriculum development will be explored by examining past and present influences on curriculum. Participants will relate this knowledge to their own delivery of curriculum to students. Required for all programs except Instructional Technology.

EDUCATION 525. EDUCATIONAL RESEARCH **Three credits**

This course is designed to facilitate learning methods and techniques of educational research, critiquing published research and conducting a thorough and professional search for research literature on a selected topic. Recommended for Instructional Technology program.

Area III - Elementary Education

EDUCATION 531. CHILDREN'S LITERATURE **Three credits**

A study of methods and materials appropriate for elementary school instruction in literature.

EDUCATION 532-533. PROBLEMS IN ELEMENTARY EDUCATION **Three credits**

Advanced study of materials and methodology appropriate for elementary classroom instruction.

Section
A Mathematics
B Science
C Language Arts
D Social Studies
E Special Subjects

EDUCATION 536. ELEMENTARY SCHOOL READING INSTRUCTION
Three credits

Lectures and demonstrations cover the psychology of the reading process, appraisal of reading needs, directed reading activities, word recognition and comprehension abilities.

EDUCATION 537. READING DISABILITIES **Three credits**

Lectures and demonstrations cover the identification, diagnosis, and classification of individuals with reading problems at all ages and levels of instruction.

Prerequisite: ED 536.

Area IV - Secondary Education

EDUCATION 540. SPECIAL METHODS IN SECONDARY SCHOOL INSTRUCTION
Three credits

Section
A Biology
B Chemistry
C Environmental Science
D English
E History
F Mathematics
G Physics
H Reading
I Social Studies
J Educational Theater
K Science

Area V - Educational Development and Strategies

NOTE: Education 541 thru Education 553 were developed by educators at Performance Learning Systems, Inc. (PLS). The coursework is tightly structured, utilizing programmed learning with integrated audio-visual materials. Students conduct research in their own classrooms and report regularly on their success in employing strategies taught. Instructors for these courses receive special training prior to assignment. To register in, and pay the tuition for, these PLS courses contact the Performance Learning Systems office directly in Emerson, NJ at 1-800-862-7263.

EDUCATION 541. KEYS TO MOTIVATION **Three credits**

Designed to help teachers create a motivating environment for all students. Provides understanding of students who are unmotivated to learn or participate by covering strategies which increase student involvement and motivation in learning.

EDUCATION 542. MEANINGFUL ACTIVITIES TO GENERATE INTERESTING CLASSROOMS (M. A. G. I. C.) **Three credits**

A hands-on course which offers students the opportunity to learn a variety of engaging activities to go beyond textbook and workbook instruction. Participation in over 60 activities provide practice in creating, evaluating, and adapting ideas to each participant's specific curriculum.

EDUCATION 543. ACHIEVING STUDENT OUTCOMES THROUGH COOPERATIVE LEARNING **Three Credits**

Designed to encourage teachers to use cooperative strategies appropriately in classrooms. Activities include simulations, use of cooperative learning models, and creation of lesson plans.

EDUCATION 544. ADVANCED PROJECT T.E.A.C.H. LAB **Three credits**

Offers an opportunity for participants to actively practice the skills learned and utilized in Project T.E.A.C.H. Participants use the innovative techniques of storyboarding, journal writing, videotaping, live event activities and simulations in this course.

Prerequisite: Project T.E.A.C.H.

EDUCATION 545. ADVANCED TEACHING THROUGH LEARNING CHANNELS LAB **Three credits**

Offers an opportunity for participants to actively practice the skills learned and utilized in Teaching Through Learning Channels.

Prerequisite: Teaching Through Learning Channels

EDUCATION 546. COACHING SKILLS FOR SUCCESSFUL TEACHING **Three credits**

Develops and models strategies that help teachers share teaching ideas with one another. Participants will learn how to plan and implement coaching conferences, enhance teacher self-esteem with supportive techniques, share ideas with colleagues in a non-threatening environment and identify excellent teaching practices and grow from them.

EDUCATION 547. TEACHING THE SKILLS OF THE 21st CENTURY **Three credits**

Through the use of dynamic videotape productions, activities, articles and unique survey instruments, this course looks at what students need to know and be able to do to live successfully in the 21st century. In a forum where educators can share their vision of how a curriculum should be developed and taught, the course introduces facilitations skills that ensure the successful education and enrichment of both student and teacher.

EDUCATION 548. PURPOSEFUL LEARNING THROUGH MULTIPLE INTELLIGENCES **Three credits**

Based on the research of Howard Gardner, this course focuses on understanding each of the intelligences and identifying them. Discovery centers are used to experience each intelligence and teaching strategies and classroom activities that enhance the intelligences are designed by participants.

EDUCATION 549. DISCOVERING THE POWER OF LIVE EVENT LEARNING **Three credits**

This course teaches how to use active participation in real-life experiences to create lesson plans that allow students to learn through real experiences. Participants learn facilitative leadership skills which enable them to go beyond hands-on learning and simulations to incorporate real concrete experiences in their lessons which promote student problem solving and decision making.

EDUCATION 550. PROJECT T.E.A.C.H. **Three credits**

Teacher Effectiveness and Classroom Handling (T.E.A.C.H.) deals with clarity of communication, avoidance of confrontation, and techniques to reduce tension in the classroom.

EDUCATION 551. P.R.I.D.E. **Three credits**

Professional Refinements in Developing Effectiveness (P.R.I.D.E.) treats questioning techniques, non verbal communication, and the development of contracts to motivate students.

EDUCATION 552. TEACHING THROUGH LEARNING CHANNELS **Three credits**

This course utilizes recent brain research, examines individual differences in learning styles, and develops adaptive teaching procedures to accommodate varying cognitive processes.

EDUCATION 553. PATTERNS FOR I.D.E.A.S. **Three credits**

Patterns for I.D.E.A.S. is designed to explain ways inductive, deductive, analysis and synthesis processes can be taught in classroom lessons. This includes effort management and curriculum decision making.

NOTE: All courses listed with a "W" on the PLS schedule may be used toward the required 12 credits of Performance Learning Systems courses for your Wilkes' degree.

Area VI - Educational Computing Courses

EDUCATION 526. TELECOMMUNICATIONS IN THE 21ST CENTURY **Three credits**

This course will show educators how they can use telecommunications in the classroom. Participants will use FTP, gopher, telnet, the World Wide Web, e-mail, newsgroups and WAIS to obtain resources in the classroom. Configuring and networking computers to the internet will be addressed. Required for Classroom Technology program.

Prerequisite: Ed 580 or equivalent.

EDUCATION 527. AUTHORING SYSTEMS/INSTRUCTIONAL DESIGN **Three credits**

Design and construct lessons, tutorials and presentations for the classroom utilizing authoring software such as Authorware, HyperCard, HyperStudio or Digital Chisel. Multimedia including sounds, pictures, and movies will be incorporated. Various design methodology will be explored. Required for Classroom Technology program.

Prerequisite: Ed 580 or equivalent.

EDUCATION 528. DESKTOP PUBLISHING **Three credits**

This introduction to Desktop Publishing course will present methods of layout and construction of newsletters, flyers, transparencies, booklets and other teacher generated classroom materials using desktop publishing software such as PageMaker or QuarkExpress. Scanning and graphics programs such as Photoshop and Illustrator will also be used in designing this course. Required for Classroom Technology program.

Prerequisite: Ed 580 or equivalent.

EDUCATION 529. DISTANCE LEARNING **Three credits**

This course is designed to guide students through the process of adapting their current teaching materials for TeleTeaching. Educators will learn how to prepare themselves, their students and their materials for the new teaching and learning environment.

EDUCATION 579. MEDIA DESIGN **Three credits**

This course is designed to give specific and realistic examples of how different types of media and instructional technology can complement each other in the computer age classroom. Emphasis will be given to the design and production of instructional materials using text, videotape, audiotape, and computer based and photographic formats for use in both

distance learning and traditional classrooms. Required for Instructional Technology program.
Offered spring semesters of even years.
Prerequisite: ED 585 or equivalent

EDUCATION 580. INTRODUCTION TO EDUCATIONAL COMPUTING
Three credits

The course will provide teachers with basic computer skills and experiences with exemplary courseware and utility software. The course is especially designed for teachers who are computer novices who lack the skills necessary for the advanced classroom technology courses.

*** Choose one course from ED 581, ED 582 or ED 584 for Instructional Technology**

EDUCATION 581*. INSTRUCTIONAL PROGRAMMING IN BASIC **Three credits**

Introduction to computer programming using the BASIC language. Topics include BASIC syntax, program modularity and design, simple graphics, and elementary data structures. Emphasis is on application in instructional environments.

Offered fall semesters of odd years.
Prerequisite: Ed 580 or equivalent.

EDUCATION 582*. INSTRUCTIONAL PROGRAMMING IN C++ **Three credits**

C++ is an object-oriented programming environment that generates compiled code. C++ (and the underlying language C), has been designated as the programming language to be used in the Advanced Placement computer science examination for high school students. It is also the fastest growing language for personal computer software development. Emphasis is on application in instructional environments.

Offered in fall semesters when demand warrants.
Prerequisite: Ed 580 or equivalent.

EDUCATION 583. COURSEWARE DESIGN AND CONSTRUCTION **Three credits**

Using state-of-the-art technology to design and construct appropriate courseware support and curricula. Topics include the use of authoring software, optical technologies, ISD (Instructional Systems Design) models and strategies geared towards proper courseware design. Required for Instructional Technology program.

Offered fall semesters of even years.
Prerequisite: Ed 581/Ed 582/Ed 584 or equivalent.

EDUCATION 584*. LOGO **Three credits**

Introduction to computer programming using Logo and LogoWriter. Topics included are turtle-graphics, words and lists, recursion, "scrapbook" and "microworld" construction and elementary data structure representation.

Offered fall semesters of odd years.
Prerequisite: Ed 580 or equivalent.

EDUCATION 585. INTEGRATING TECHNOLOGY INTO THE CURRICULUM
Three credits

(formerly titled Microcomputer Assisted Instruction)
The course will present models of instructional design to provide a theoretical framework in the application and integration of microcomputer technology into the K-12 curriculum. Participants will develop a portfolio of computer-generated materials for their classroom. Required for Classroom Technology, Instructional Technology and Educational Leadership Programs.

Offered fall semesters.
Prerequisite: Ed 580 or equivalent

EDUCATION 586. MICROCOMPUTERS IN EDUCATION **Three credits**

An analysis of microcomputer applications designed for various educational settings. Special emphasis is placed on software selection, review and utilization.

Section A Mathematics B Science C Language Arts
D Social Studies E Special Topics

Offered when demand warrants.
Prerequisite: Ed 580 or equivalent.

EDUCATION 587. TECHNOLOGY LEADERSHIP **Three credits**

Organization of instructional technology programs, facilities and resource management-including a technological in-service program. This course will also study the laws and regulations which govern the selection and utilization of media, sources for funding and collaboration on development of a grant proposal. Required for Instructional Technology program.

Offered fall semesters of even years.
Prerequisite: Ed 585 or equivalent.

EDUCATION 588. OPERATING SYSTEMS & NETWORKING **Three credits**

An exploration into the design of present-day microcomputer systems. Topics include microcomputer architecture and hardware, telecommunications, networking, and general operating systems. Required for Instructional Technology program.

Offered spring semesters of odd years.
Prerequisite: Either ED 581, ED 582, ED 584 or equivalent.

EDUCATION 589. INSTRUCTIONAL TECHNOLOGY: MODELS AND METHODS
Three credits

A "wide area" look into technology integration. An investigation into what the responsibilities of a technology coordinator will be - relating technology and thinking processes, the cognitive effects of technology integration, materials acquisition and placement and general administrative strategies. Required for Instructional Technology program.

Offered spring semesters of odd years.
Prerequisite: Ed 585 or equivalent.

EDUCATION 591 INTERNSHIP **Three credits**

Participation in field experience to observe the use of technology to support instruction, the management of technology resources in educational settings, and the evaluation of effectiveness of technology resources for teaching and learning; application of technology resources to support instruction in classroom settings.

Offered spring semesters. Required for PA Instructional Specialist Certification.
Prerequisites: ED 587, ED 588, ED 589 (or equivalent) and permission of Director.

Area VII - Science Education

EDUCATION 500. INTEGRATED SCIENCE METHODS AND CURRICULA FOR K-12 TEACHERS

Two credits

Section A - Early Childhood C - Middle School
B - Elementary School D - High School

Integrated Science Methods and Curricula for early childhood, elementary, middle school and high school teachers will prepare participants to infuse life, earth and space, and physical science activities into their own classrooms. Several innovative curricula will be included: Scholastic Science Place (grades K-2), Macmillan/McGraw Hill Science (Grades 3-6), Glencoe Science Interactions (Grades 7-9), BSCS Biology and Project Physics (Grades 9-12), other curricula appropriate for science content areas and grade levels, plus supplementary curricula such as AIMS, GEMS, and NatureScope. Various instructional methods proven effective by research or practice will be identified, described and modeled. Included

will be hands-on activities, cooperative learning, thematic connections, constructivism, team teaching, role playing, peer teaching and others.

EDUCATION 501. IMPLEMENTING SCIENCE METHODS AND CURRICULA, GRADES K-12 **One credit**

Section A - Early Childhood C - Middle School
B - Elementary School D - High School

Implementing Science Methods and Curricula for K-12 teachers will prepare participants to utilize life, earth and space, and physical science activities in their own classrooms and schools. Several innovative curricula will be included: Scholastic Science Place (grades K-2), Macmillan/McGraw Hill Science (Grades 3-6), Glencoe Science Interactions (Grades 7-9), BSCS Biology and Project Physics (Grades 9-12), other curricula appropriate for science content areas and grade levels, plus supplementary curricula such as AIMS, GEMS, and NatureScope. Various instructional methods proven effective by research or practice will be utilized. Included will be hands-on activities, cooperative learning, thematic connections, constructivism, team teaching, role playing, peer teaching and others. Participants will be expected to play a leadership role, providing curriculum implementation overviews and preparing, leading and supporting integrated science staff development programs in their own schools, and assessing the effectiveness of the implementation.

EDUCATION 502. PROGRAM FOR ENHANCING EDUCATIONAL LEADERSHIP IN THE SCIENCES (PEELS) **One credit**

Section A - Early Childhood D - High School E - Principals
B - Elementary School C - Middle School

PEELS is designed to involve administrator/teacher teams in exemplary science experiences. Teams are instructed in science process skills, effective science teaching strategies, development of science program goals and the application of science education research to school science programs. Each team will design and implement an action plan which focuses on specific actions for the improvement of science in their own schools.

EDUCATION 503. SCIENCE AND MATHEMATICS ACTIVITIES AND METHODS **Two credits**

Section A - Early Childhood C - Middle School
B - Elementary School D - High School

Science and Mathematics Activities and Methods is designed to enable teachers to utilize hands-on laboratory experiences and effective instructional strategies to teach the content, processes and attitudes inherent in modern science and mathematics curricula and instruction.

EDUCATION 504. CAREER ORIENTATION IN SCIENCE AND TECHNOLOGY (COST) **Three credits**

Section A - Early Childhood B - Elementary School C - Middle School

COST is designed to involve early childhood, elementary or middle/junior high teachers in utilizing the skills of community resource people to demonstrate the need for science in many careers-including those not traditionally associated with science. The format of the course follows the COMETS (Career Orientated Modules to Explore Topics in Science) model. Teachers learn where to find science resource people and how to work with the resource person to present lessons in the classroom. Teachers will be responsible for implementing lessons with a resource person during the course.

EDUCATION 505. PROMOTING READING THROUGH INSTRUCTION IN SCIENCE AND MATHEMATICS (PRISM) **Two credits**

Section A - Early Childhood C - Middle School
B - Elementary School D - High School

PRISM is designed to enable teachers to use hands-on science and mathematics activities to foster improvement in language development through investigations in science and mathematics. Three or more basic elementary school curricular areas will be reinforced within the same time frame.

EDUCATION 506. LOCAL SCIENCE CURRICULUM ENHANCEMENT (LSCE) **One credit**

Section A - Early Childhood C - Middle School
B - Elementary School D - High School

The Local Science Curriculum Enhancement course is designed to instruct early childhood, elementary, middle school and high school teachers in curriculum selection, design and development at the local school level. Course participants will be involved in characteristic science lessons highlighting different types of science curricula available and will select/design lessons to add to their science program. Participants will observe and analyze numerous instructional techniques key to science instruction.

EDUCATION 507. A MATHEMATICAL ADVENTURE THROUGH SCIENCE EDUCATION (AMASE) **Two credits**

Section A - Early Childhood C - Middle School
B - Elementary School

The Mathematical Adventure thru Science Education course will actively involve participants in hands-on investigations which exemplify application of mathematics concepts, science process skills and positive attitudes. Problem solving, real-life applications and tools of instructional technology will be utilized as models.

Area VIII - Advanced Courses

EDUCATION 516. EDUCATIONAL LEADERSHIP **Three credits**

This course introduces students to research on educational leadership theory, models, and styles. Ethics in leadership, decision making models, and the principal as instructional leader are examined. The study of research methodology is incorporated and practiced to develop skills for future use in leadership plans of study. **Required for Educational Leadership program.**

Prerequisite: Enrollment in the Educational Leadership program.

EDUCATION 517. THE PRINCIPALSHIP **Three credits**

This course introduces students to the role and responsibilities of the principal. Theory is transferred to practice through the use of case study and in-basket/out-basket assignments which will address critical issues in educational leadership. The use of leadership knowledge and skills are developed through the study of the principal's role in shaping the school culture & climate, developing a shared vision, managing group dynamics, and maintaining a safe & orderly learning environment. **Required for Educational Leadership program.**

EDUCATION 560. PSYCHOLOGY OF EXCEPTIONAL CHILDREN **Three credits**

Advanced study of children whose characteristics deviate significantly from normal children.

Section A - Mentally Retarded B - Socially and Emotionally Maladjusted
C - Gifted and Talented

EDUCATION 570. PROFESSIONAL AWARENESS FOR COOPERATING TEACHERS **Three credits**

This course is designed to identify the role of the cooperating teacher concerning the supervision of student teachers. The course presents a formal training program for cooperating teachers including strategies for the effective interaction with student teachers as well as

crucial techniques of observation, supervision and evaluation.

Prerequisite: Admission to this course approved through application to the Education Department.

EDUCATION 571. PRACTICUM IN SUPERVISION **Three credits**
Affords students an opportunity to gain experience in supervisory activities in education under the guidance of experienced supervisors.

EDUCATION 572. EXTENDED TEACHING **Three credits**
Students with appropriate teaching experience are assigned to a supervised teaching setting.

Prerequisite: Approval of department chairperson.

EDUCATION 573. EDUCATIONAL ASSESSMENT AND PROGRAM EVALUATION **Three credits**
Students will undertake advanced study in educational assessment strategies and program evaluation. Instruction will focus on the principal's role in guiding teachers in the design of effective assessments and alternative assessment strategies, and the use of assessment in program evaluation. Working in collaboration with faculty, colleagues, and a practicing administrator, students will design a leadership plan of study for a topic in this area. The plan of study must directly relate to the role and responsibilities of the principal in this capacity. Sample topics can be drawn from such areas as: student assessment methods, evaluation of special and regular education programs, academic standards and the PA Assessment System or other related topics. **Required for Educational Leadership program.**

EDUCATION 574. SCHOOL/COMMUNITY RELATIONS **Three credits**
Students will study the role of the principal in establishing and maintaining positive school and community relations. Instruction will be provided on positive public relations and in effective communications techniques. Working in collaboration with faculty, colleagues and a practicing administrator, students will design a leadership plan of study for a topic related to this area. The plan of study must directly relate to the role and responsibilities of the principal in this capacity. Sample topics can be drawn from such areas as: needs assessments, communication systems, parent involvement, school partnerships, or other related topics. **Required for Educational Leadership program.**

EDUCATION 576. SITE MANAGEMENT **Three credits**
This course focuses on the study of administrative functions in educational institutions. Topics covered are budget planning, facilities management, resource allocation & scheduling. School finance and sources of revenue for schools are examined as they impact the allocation of resources and scheduling of programs. **Required for Educational Leadership program.**

EDUCATION 578. STAFF DEVELOPMENT AND SUPERVISION **Three credits**
(If you previously completed School Law as ED 578 you must repeat ED 578-Staff Development & Supervision for the Educational Leadership program)
This course focuses on staff development and teacher supervision. Models of supervision, such as clinical supervision and differentiated supervision, are examined. Case studies will be utilized to gain understanding of the teacher evaluation process. Mentoring and new teacher induction programs will be investigated. An overview of the laws and policies which influence and govern these programs will be included. **Required for Educational Leadership program.**

EDUCATION 590. THESIS **Three credits**

EDUCATION 592. ADMINISTRATIVE INTERNSHIP AND APPLIED RESEARCH PROJECT **Six credits**
Students will complete work as an administrative intern with a practicing principal at their expected level of certification: elementary and/or secondary. Within this experience, students will design a leadership plan of study to implement a research-based project which will attest to their ability to perform as an educational leader. The project is to address the needs of the candidate, as well as the needs of the school where the internship is being complete. Required for Educational Leadership program.

Prerequisites: Completion of the 30 required program credits and permission of the Program Director.

EDUCATION 594. WORKSHOP **Three credits each semester**
Provides an opportunity for experienced teachers to develop study programs designed to meet their special needs. Students may receive credit more than once if there is no duplication in subject matter covered.

EDUCATION 595-596. INDEPENDENT STUDY **Three credits each semester**
Affords an opportunity for independent study of selected topics under faculty supervision.

Prerequisite: Permission of department chairperson.

EDUCATION 597. SEMINAR **Three credits**
An advanced course dealing with some significant issues selected by the instructor. The seminar technique provides a review of major problems based on the current level of knowledge in the area.

Prerequisite: Permission of the instructor.

EDUCATION 598. TOPICS **Three credits**
Advanced study of topics of special interest not extensively treated in regular courses.

EDUCATION 599. SHORT COURSES **One to three credits**
These courses treat a variety of topics, usually on a condensed schedule basis. Designed to investigate problems in the field, these courses provide an opportunity for practicing professionals to study current issues under qualified leadership. Departmental approval is required if credits are to be applied to meet degree requirements. A maximum of six credits may be used as electives to meet degree requirements. Credit is given at the rate of one-half semester hour for each eight hours of classwork.

Biology/Secondary Education Lester J. Turoczi, Ph.D., Chairperson

Master of Science in Education

Admission
Refer to the general admission requirements on page 5.

Degree Requirements
Candidates for the degree of Master of Science in Education with a concentration in Secondary Education/Biology must take eighteen hours of biology in courses numbered 400 or above. Chemistry 361 and 362 may be taken for credit toward the biology component with the prior approval of the Chairperson of the Biology Department.
Requirements for the education component of the Master of Science in Education with a major in biology, are listed under Education on page 31.
Special Notice: Biology courses shown below are only offered during daytime class periods. Biology 466 and 468 are offered in alternate summers.

BIO 406. INVERTEBRATE BIOLOGY **Four credits**
A study of the major invertebrate phyla with respect to their taxonomy, evolution, morphology, physiology and ecology. Lecture, three hours a week, laboratory, three hours a week. Laboratory fee: $40.

Prerequisites: Biology 121-122, 225-226, or permission of instructor.

BIO 411. COMPARATIVE PHYSIOLOGY **Four credits**
Comparative physiology encompasses the study of organ functions and organ system functions in different animal groups. Emphasis will be on the systemic physiology of vertebrate animals. Lecture, three hours a week; laboratory, three hours a week. Fee: $40.

BIO 412. PARASITOLOGY **Four credits**
Parasitology is the study of organisms that live on or within other organisms and the relationship of these organisms to their hosts. This course deals with the common parasites that infect man and other animals. Lecture, three hours a week; laboratory, three hours a week. Fee: $40.

Prerequisites: Biology 121-122, 225-226, or permission of instructor.

BIO 423. FUNCTIONAL HISTOLOGY **Four credits**
This course emphasizes the microscopic examination of mammaliam tissues from morphological and physiological perspectives. Reference is made to organ embryogenesis to support the understanding of organ form and function. Tissue preparation for histological examination is demonstrated. Lecture, three hours; laboratory, three hours per week. Laboratory fee: $40.

Prerequisites: Biology 121-122, 225-226, or permission of instructor.

BIO 424. MOLECULAR BIOLOGY **Three credits**
Molecular Biology is the study of the energetics, metabolism, and biochemical aspects of living systems. A general biochemical presentation will be provided with reference to proteins, carbohydrates, and lipids with extensive coverge of molecular genetics. Lecture, three hours a week.

Prerequisites: Biology 121-122, 225-226, Chemistry 231-232, or permission of instructor.

BIO 426. IMMUNOLOGY AND IMMUNOCHEMISTRY **Four credits**
This course is concerned with the biologic mechanisms and chemistry of reactants and mediators associated with natural and acquired states of immunity, tissue and blood serum responses to infection and immunization, and related patho-physiologic alterations of hypersensitivity phenomena in vertebrate animals and man. A background in microbiology, physiology, and biochemistry is advisible. Lecture, three hours a week; laboratory three hours a week. Fee: $40.

Prerequisites: Biology 121-122, 225-226, or permission of instructor.

BIO 428. DEVELOPMENTAL BIOLOGY **Three credits**
A course dealing with principles of organismic development, gametogenesis, fertilization, cleavage, embryogenesis, differentiation, morphogenesis, regeneration. Laboratory work includes vertebrate embryology, microtechnique, and some experimentation. Lecture, two hours; laboratory, three hours a week. Laboratory fee: $40.

Prerequisites: Biology 121-122, 225-226, or permission of instructor.

BIO 441. LIMNOLOGY **Three credits**
A study of the chemical, physical, and biological aspects of fresh water systems. Laboratory investigations will consist of in-depth analyses of local lakes and streams. Lecture, two hours a week; laboratory three hours a week. Fee: $40.

Prerequisites: Biology 121-122, 225-226, or permission of instructor.

BIO 443. MARINE ECOLOGY **Three credits**
An examination of the biology of marine life within the context of modern ecological principles. The structure and physiology of marine organisms will be studied from the perspectives of adaptation to the ocean as habitat, biological productivity, and interspecific relationships. Emphasis will be placed on life in intertidal zones, estuaries, surface waters, and the deep sea. Two hours of lecture and three hours of laboratory per week. Fee: $45.

Prerequisites: Biology 121-122, EES 230, or permission of instructor.

BIO 444. ECOLOGY **Four credits**
Ecology examines contemporary ecological thinking as it pertains to the interrelationship of organisms and their environments. Interactions at the population and community levels are emphasized. Lecture, three hours a week; laboratory, three hours a week. Fee: $40.

Prerequisites: Biology 121-122, 225-226, or permission of instructor.

BIO 445. GENETICS **Four credits**
Genetics will present treatment of genetics beyond the introductory level with particular emphasis on populational and molecular aspects of heredity. Topics will include plant and human genetics. Lecture, three hours a week; laboratory, three hours a week. Laboratory fee: $40.

Prerequisites: Biology 121-122, 225-226, or permission of instructor.

BIO 446. ANIMAL BEHAVIOR **Four credits**
A course emphasizing behavior as the response of an organism to physical and social environmental change, and covering the processes that determine when changes in behavior occur and what form they will take. Laboratories, using living local fauna, will demonstrate principles discussed in lecture. Lecture, three hours; laboratory, three hours a week. Laboratory fee: $40.

Prerequisites: Biology 121-122, 225-226, or permission of instructor.

BIO 461. PLANT FORM AND FUNCTION **Four credits**
An introduction to the morphology, anatomy, cytology, and physiology of plants, with emphasis on the vascular plants. Structural and functional aspects of plants will be interpreted in relation to each other and within ecological and evolutionary contexts. Lecture, three hours per week; laboratory, three hours per week. Laboratory fee: $40.

Prerequisites: Biology 121-122, 225-226, or permission of instructor.

BIO 462. PLANT DIVERSITY **Four credits**
A comprehensive survey of bryophytes, vascular plants and plantlike organisms (fungi and algae) emphasizing their structure, reproductive biology, natural history, evolution, and importance to humans. Lecture, three hours per week; laboratory, three hours per week. Laboratory fee: $40.

Prerequisites: Biology 121-122, 225-226, or permission of instructor.

BIO 466. FIELD BOTANY **Three credits**
This is a specialized summertime field course which emphasizes a taxonomic, phylogenetic, and ecological survey of higher plants indigenous to Northeastern Pennsylvania.

Prerequisites: Biology 121-122, or permission of instructor.

BIO 468. MEDICAL BOTANY **Three credits**
A specialized course that provides a scientifically-based overview of the ways that plants affect human health. Topics include cultural and historical perspectives of plants and medicine, plants that cause human ailments, plants that cure human ailments, and psychoactive plants. Lecture, two hours per day for five weeks in alternate summers.

Prerequisites: Biology 121-122, 225, CHM 232, or permission of instructor.

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BIO 494. BIOLOGICAL FIELD STUDY **Three credits**
On-site study of biological problems or situations incorporating documentation and investigation techniques. May be repeated for credit when no duplication of experience results. One hour of lecture per week, plus field trip. Fee: Variable
Prerequisites: Biology 121-122, 225-226, or permission of instructor.

BIO 498. TOPICS **Three credits**
A study of topics of special interest not extensively treated in regularly offered courses.
Prerequisites: Biology 121-122. 225-226, or permission of instructor.

Chemistry/Secondary Education

Lester J. Turoczi, Ph.D., Chairperson

Master of Science in Education

Admission

Refer to the general admission requirements on page 5.

The applicant should have a baccalaureate degree from an accredited institution, with a minimum of 35 semester credit hours in chemistry. In addition, a year of physics and a working knowledge of calculus and differential equations are required. Students deficient in any of these areas may, at the discretion of the chemistry faculty, be granted provisional admission.

Degree Requirements

General requirements for the Master of Science in Education with a program in Secondary Education/Chemistry are listed under Education on page 25. Specific chemistry requirements will be outlined by the student's advisor in the chemistry department.

Courses of Instruction

CHM 421. ADVANCED INORGANIC CHEMISTRY **Three credits**
Introduction to ligand field theory; chemistry of the first transition series, organometallic, and pi acceptor compounds; mechanisms of inorganic reactions. Class three hours a week.
Prerequisite: CHM 222 and 252.

CHM 423. ADVANCED INORGANIC CHEMISTRY LABORATORY **One credit**
Synthesis of coordination and organometallic compounds, and spectroscopic characterization of the products using modern laboratory techniques. Fee $50
Prerequisite: CHM 232

CHM 461. BIOCHEMISTRY I **Three credits**
This course is a study of the physical and chemical properties of proteins, nucleic acids, fatty acids and carbohydrates emphasizing the relationship between the chemical structure and the biological function. The course includes the physical methods of biochemistry, enzyme kinetics, bioenergetics and nucleic acid transcription and translation.
Prerequisite: CHM 232.

CHM 462. BIOCHEMISTRY II **Three credits**
This course is a study of the catabolism and anabolism of carbohydrates, fatty acids and amino acids. The course emphasizes the regulation and integration of major metabolic pathways, including glycolysis, the Kreb's cycle, electron transport, gluconeogenesis, pentose phosphate, fatty acid metabolism and amino acid metabolism.
Prerequisite: CHM 232.

CHM 463. BIOCHEMISTRY LABORATORY **One credit**
Laboratory experiments which emphasize biochemical techniques used in isolation and characterization of macromolecules. Included in the course are various chromatographic techniques, electrophoresis, spectrophotometry and classic biochemical methods. Laboratory three hours a week. Pre-lab, one hour per week. Fee $50.
Prerequisite: CHM 461 or permission of instructor.

CHM 498. TOPICS **Three credits**
A study of topics of special interest not extensively treated in regularly offered courses.
Prerequisite: Permission of the instructor.

English/Secondary Education

Darin E.Fields, Ph.D., Chairperson

Master of Science in Education

Admission

Refer to the general admission requirements on page 5.

Degree Requirements

Candidates for the degree of Master of Science in Education with a concentration in Secondary Education/English must take eighteen hours of English in courses numbered 400 or above.

Requirements for the education component of the Master of Science in Education with a major in English, are listed under Education on page 25.

Courses of Instruction

ENGLISH 431. MEDIEVAL ENGLISH LITERATURE **Three credits**
A study of English literature to 1500, exclusive of Chaucer.

ENGLISH 432. TUDOR PROSE AND POETRY **Three credits**
Study of English non-dramatic literature, 1485-1603.

ENGLISH 433. SEVENTEENTH CENTURY PROSE AND POETRY **Three credits**
A study of the non-dramatic literature of the period.

ENGLISH 434. EIGHTEENTH CENTURYPROSE AND POETRY **Three credits**
Study of major authors and literary traditions of the eighteenth century.

ENGLISH 435. ROMANTIC PROSE AND POETRY **Three credits**
Study of the chief poets and prose writers of the Romantic Period.

ENGLISH 436. VICTORIAN PROSE AND POETRY **Three credits**
Study of major writers, works, and topics of the Victorian era.

ENGLISH 440. CHAUCER **Three credits**
Study of Chaucer's works, including The Canterbury Tales and Troilus and Criseyde.

ENGLISH 442. SHAKESPEARE **Three credits**
A study of selected plays; written reports on others not studied in class.

ENGLISH 444. MILTON **Three credits**
A study of Milton's poetry and major prose.

ENGLISH 450. THE ENGLISH NOVEL **Three credits**
A study of the tradition and major writers of the English novel in the eighteenth and nineteenth centuries. Works by Defoe, Richardson, Fielding, Austen, the Brontes, Dickens, Eliot, and Hardy, among others, as well as critical and theoretical works, may be included.

ENGLISH 452. AMERICAN NOVEL **Three credits**
A study of the American novel from its beginning to the present.

ENGLISH 455. MODERN NOVEL **Three credits**
Study of the major novels of the twentieth century.

ENGLISH 458. CONTEMPORARY FICTION **Three credits**
A study in fiction, including the novel, short story, and novella, written since World War II. Works from English, American and world literature may be included to reflect the diversity of contemporary literature and the emergence of post-modern themes and forms.

ENGLISH 461. EARLY ENGLISH DRAMA **Three credits**
Study of the drama from the tenth century to 1642; reading of plays by pre-Elizabethan and Elizabethan dramatists exclusive of Shakespeare.

ENGLISH 463. RESTORATION AND EIGHTEENTH CENTURY DRAMA **Three credits**
Study of the drama from 1660-1780.

ENGLISH 465. MODERN DRAMA **Three credits**
Study of important dramatists, European and American, from the time of Ibsen.

ENGLISH 466. AMERICAN DRAMA **Three credits**
A study of American drama from the colonial period to the present.

ENGLISH 468. CONTEMPORARY DRAMA **Three credits**
A study of dramatic literature from the 1960s to the present. Works and major figures from British, American and world drama may be included to reflect the diversity of the plays and playwrights of the period.

ENGLISH 470. MODERN BRITISH POETRY **Three credits**
Study of the major English and American novels of the twentieth century.

ENGLISH 476 . MODERN AMERICAN POETRY **Three credits**
Study of major movements and representative figures in modern American poetry.

ENGLISH 494. LITERARY CRITICISM **Three credits**
A study of literary theory and techniques of analysis.

ENGLISH 495-496. INDEPENDENT RESEARCH **Three credits each**
Independent study and research for advanced students in the field of the major under the direction of a staff member. A research paper at a level significantly beyond that of a term paper is required.
Prerequisite: Approval of department chairperson.

ENGLISH 497. SEMINAR **Three credits**
Presentations and discussions of selected topics.
Prerequisite: Approval of department chairperson.

ENGLISH 498. TOPICS **Three credits**
The study of a special topic in language, literature, or criticism. Possible topics include literature and science, Black literature, semiotics, children's literature, literature and film, literature and religion, etc.

History/Secondary Education Darin E. Fields, Ph.D., Chairperson

Master of Science in Education

Admission
Refer to the general admission requirements on page 5.

Degree Requirements
Candidates for the degree of Master of Science in Education with a concentration in Secondary Education/History must take eighteen hours of history in courses numbered 400 or above. Requirements for the education component of the Master of Science in Education with a major in history, are listed under Education on page 25.

Courses of Instruction

HISTORY 416. READINGS IN ANCIENT HISTORY: THE CLASSICAL WORLD **Three credits**
Selected readings on the history of Greece and Rome, with emphasis on primary sources. Conferences with instructor and paper.

HISTORY 421. AMERICAN SOCIAL HISTORY **Three credits**
This course entails a consideration of the development of American society from the colonial period until present times. Attention will focus especially on the rise of industrialism and its impact on society in the late nineteenth and twentieth centuries.

HISTORY 422. AMERICAN INTELLECTUAL HISTORY **Three credits**
This course is a survey of the formative ideas which seem most to have influenced American perceptions of the individual, society, and the drift of human affairs. The focus is upon the late 19th and early 20th centuries because this period is the time when seminal ideas were articulated in America.

HISTORY 424. AMERICAN ECONOMIC HISTORY **Three credits**
A survey of the evolution of the American economy from colonial dependency to modern industrial maturity. Emphasis will be placed upon the development of the United States as an industrial world power since about 1850.

HISTORY 425. AMERICAN ETHNIC HISTORY **Three credits**
A study of the institutions and problems that have characterized various immigrant, black, and Indian communities from colonial times to the present.

HISTORY 428. HISTORY OF THE FOREIGN POLICY OF THE UNITED STATES **Three credits**
A selective treatment of major themes in American foreign policy from the founding of the Republic to the present.

HISTORY 431. COLONIAL AMERICA **Three credits**
Discovery, exploration and settlement; development of social, political, religious and intellectual institutions; independence and political reorganization.

HISTORY 432. THE NATIONAL PERIOD **Three credits**
A study of the political and economic history of the United States from 1783 to 1865. Special attention will be given to the evolution of sectional differences and the culmination of these differences in intersectional warfare.

HISTORY 433. THE AGE OF BIG BUSINESS, 1865-1914 **Three credits**
A study of the political and economic history of the United States from 1865 to 1914. Special attention will be paid to the period of congressional dominance and the restoration

of presidential power at the turn of the century; the economic, social and political consequences of the industrial revolution; and the rise of urban America.

HISTORY 434. THE UNITED STATES, 1900-1945 **Three credits**
The emergence of the United States as a world power and the corresponding development of its political, economic, social, and religious institutions.

HISTORY 435. THE UNITED STATES SINCE 1945 **Three credits**
An examination of the political, social, and economic changes in the United states since World War II. Special attention is paid to America's dominant role in the immediate post-war world and how changing conditions over the past forty years have altered this role.

HISTORY 441-442. HISTORY OF GREAT BRITAIN AND THE BRITISH EMPIRE AND COMMONWEALTH **Three credits each semester**
A study of British history from the Neolithic period to present times. The first semester will cover social, economic, and political developments to 1783, including expansion overseas. The second semester will cover the consequences of the industrial revolution and the evolution of the empire into the Commonwealth.

HISTORY 445. HISTORY OF EASTERN EUROPE **Three credits**
A study of the cultural, political, and intellectual history of the Poles, Czechs, Slovaks, Croats, Slovenes and Hungarians, who occupy the northern tier of Eastern Europe. Special attention is given to the roles of the Habsburg and Russian empires in shaping the historical destinies of these peoples, and to the roots and consequences of the forces of nationalism in the region.

HISTORY 446. HISTORY OF THE BALKANS **Three credits**
A study of the cultural, political and intellectual history of the Bulgarians, Serbs, Croats, Slovenes, Albanians, Greeks, Romanians and Turks, who occupy the southern, or Balkan, tier of Eastern Europe. Special attention is given to the roles of the Ottoman Turkish, Habsburg and Russian empires in shaping the historical destinies of these peoples, and to the roots and consequences in the region of such forces as Christian-Muslim cultural interrelationships and nationalism.

HISTORY 448. HISTORY OF RUSSIA **Three credits**
A study of the political, social, and intellectual history of Russia. Emphasis is placed upon the emergence of Russia as a major power after 1700.

HISTORY 451. READINGS IN MEDIEVAL EUROPE **Three credits**
Selected readings on the history of Medieval Europe, with emphasis on primary sources. Conferences with instructor and paper.

HISTORY 452. THE RENAISSANCE AND REFORMATION **Three credits**
Within the political and economic framework of the period, study will be made of the culture of the Renaissance, the religious reform and conflicts resulting from the crisis in the sixteenth century.

HISTORY 453. AGE OF ABSOLUTISM **Three credits**
The political, social, economic, intellectual, and cultural development of Europe and dependencies from 1600 to ca. 1750.

HISTORY 454. THE ERA OF THE FRENCH REVOLUTION AND NAPOLEON **Three credits**
A study of the structure of the Ancien Regime and an examination of the causes, events, and consequences of the French Revolution culminating in the Napoleonic Empire.

HISTORY 455. EUROPE IN THE NINETEENTH CENTURY **Three credits**
A study of the political, social, and cultural development of Europe from the Congress of Vienna to World War I.

HISTORY 456. EUROPE IN THE TWENTIETH CENTURY **Three credits**
Against a background of the internal and international developments of the leading powers, the class will study the origins and results of the two World Wars.

HISTORY 461-462 HISTORY OF THE FAR EAST **Three credits each semester**
A study of the history of the civilizations developed in India, China and Japan with emphasis on their interrelations and distinctive characteristics and on their transformation in response to the penetration of western civilization from the sixteenth century onward. Some attention will be given to similar developments and changes among the countries of Southeast Asia. Fall semester: to c. 1760. Spring semester: 1760 to present.

HISTORY 463. HISTORY OF MODERN CHINA **Three credits**
A study of Chinese history since 1840 with special emphasis on social, political, economic, and intellectual developments.

HISTORY 467. HISTORY OF MODERN INDIA **Three credits**
A study of the political, social, and economic development of the Indian sub-continent since 1500.

HISTORY 476. WORLD WAR II **Three credits**
Consideration of the causes of the war, military strategy and tactics, diplomatic interests of the participants, and resulting cold war problems.

HISTORY 491. HISTORIOGRAPHY AND RESEARCH **Three credits**
An introduction to historical research and writing. The writings and ideas of major historians of the past and present are examined. The student is exposed to research methods, particularly in the area of primary sources, and to the construction and criticism of the historical monograph.

HISTORY 495-496. INDEPENDENT RESEARCH **One to three credits**
Independent study and research for advanced students in the field of the major under the direction of a staff member. A research paper at a level significantly beyond a term paper is required.

HISTORY 497. SEMINAR **One to three credits**
Presentations and discussions of selected topics. (May be repeated for credit.)
Prerequisite: Approval of the instructor is required.

HISTORY 498. TOPICS **Three credits**
Special topics in history. This course will be offered from time to time when interest and demand justify it.

Mathematics/Secondary Education

Stephen J. Tillman, Ph.D., Chairperson

Master of Science in Education

For information, see Mathematics on page 50.

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Physics/Secondary Education

Roger Maxwell, Ph.D., Chairperson

Master of Science in Education

Admission

For admission to graduate study in Secondary Education/Physics, the applicant should possess an undergraduate degree in physics or in a related science, mathematics, or engineering area.

Degree Requirements

General requirements for the Master of Science in Education with a program in Secondary Education/Physics are listed under Education on page 25. Specific physics requirements consist of eighteen graduate credits chosen in consultation with the student's advisor in the Physics Department. The advisor may recommend that one or more courses be taken at the 408 level.

PHYSICS 408. TOPICS FOR PHYSICS EDUCATION **One to three credits**
Topics dependent on interest and need. Education students may elect to attend undergraduate 300-level courses under this umbrella course.

Electrical and Computer Engineering

Roger Maxwell, Ph.D., Chairperson
Thyagarajan Srinivasan, Ph.D., Program Director

Master of Science in Electrical Engineering (MSEE)

Accreditation

The electrical engineering program is accredited by the Engineering Accreditation Commission (EAC) of the Accreditation Board of Engineering and Technology (ABET).

Courses are available days and evenings.

Admission

In addition to the general admission requirements on page 5, applicants should possess a B.S. degree in Electrical Engineering from an accredited institution. Applicants not meeting the requirements may be provisionally admitted and will be required to take sufficient undergraduate courses to make up deficiencies. Applicants should provide acceptable scores in the GRE (General and Engineering) or evidence of competence to perform graduate-level work.

Degree Requirements

Thirty (30) credit hours are required for the M.S.E.E. degree. These include the following:

12 credits EE 410, EE 460, EE 481, and EE 482

18 credits Students should choose either the thesis or the non-thesis option. In either case at least two courses (for 6 credits) must be chosen from the following: EE 414, EE 442, EE 445, EE 465, and EE 471. Other courses may be chosen from graduate level courses in EE/CS and an approved course from the Business Administration program.

Non-thesis option: 3 credits of EE 590 are required. Students should submit a well-documented report to the department.

Thesis option: Six credits of thesis (EE 590) are required. The thesis shall be defended in an open forum. Three faculty members constitute a thesis committee with the thesis advisor as chair.

Students who opt to complete a thesis may select from posted research topics or proposed areas of interest of the faculty and submit a proposal of their thesis to the Department. Final decision of topic and advisor will be taken by the Department in accordance with Department guidelines. Ordinarily, these topics will touch on one or more of the following areas: Communication, Navigational Systems; Computers, Digital Systems; Microelectronics; Microwaves and Antennas; Power, Control Systems; Software Engineering. Some of the highly specialized and state-of-the-art laboratories available for students include Communications, Thick-Film Processing, Microelectronics, Microwaves,Antennas, Machines and Controls, Digital Design.

Both full- and part-time students are limited to a maximum of three thesis credits in any single semester.

The minimum acceptable grade point average is 3.0. (See Retention Policy, page 10.)

Advanced standing or transfer credit is limited to six (6) graduate credits. Petitions should be submitted to the Engineering and Physics Department and should document minimum competency defined as relevant graduate coursework at an accredited institution with an earned minimum grade of 3.0 (0-to-4 scale) or equivalent expertise.

Financial Aid

A limited number of assistantships are available for full-time students. Applicants should possesss superior academic qualifications and provide good scores in the GRE (General and Engineering).

Course Descriptions

Students will be advised of the course offerings, sequencing, and prerequisites upon admission. The faculty advisor will be in a position to recommend courses to the student taking into account the time-table and the necessary prerequisites.

The 500-level courses are restricted to students who have achieved candidate status or by written permission of the instructor. All 400-level courses require a background based on 300-level courses or the equivalent of the B.S. degree.

Courses of Instruction

EE 410. LINEAR SYSTEM THEORY **Three credits**
Linear spaces and linear operators; input-output systems and state variables; linear dynamical equations and impulse response matrices; controllability, observability and their applications to minimal realizations; state feedback controllers and observers; multivariable systems.

EE 414. FEEDBACK CONTROL SYSTEMS **Three credits**
A review of mathematical models for physical systems. Block diagram simplifications; sensitivity measure and performance of control systems; state space representations; stability analysis; the Routh Hurwitz criterion; the root locus method; Bode plots; and the Nyquist criteria; lead and lag compensator design; design with state space representations.

Prerequisite: EGR 214.

EE 415. DIGITAL CONTROL SYSTEMS DESIGN **Three credits**
Review of design and compensation of control systems. State space analysis of continuous-time and discrete-time systems; discrete-time observations, control and feedback; digital regulators design; digital tracking systems design; controlling continuous-time systems.

Prerequisite: EE 414.

EE 416. ROBOT VISION **Three credits**
Image formation and image sensing; binary images; geometrical and topological properties; reflectance map; photometric stereo, shape, and shading; motion field and optical flow;

extended Gaussian images; picking parts out of bin.

Prerequisite: First course in Robotics.

EE 418. CONTROLS AND KINEMATICS IN NAVIGATION **Three credits**

Theory of kinematics with application to terrestrial navigation using inertial instrumentation. Accelerometer, gyroscope, stable platform and inertial mechanizations. Space stable, local level and strapdown navigator configurations and error analysis. Integrated navigation using complementary and Kalman filter techniques.

Prerequisites: EE 318, EE 460.

EE 421. POWER SYSTEM ANALYSIS **Three credits**

Review of power generation schemes. Transmission line calculations and power system representation; network solution by matrix transformations; symmetrical components; symmetrical and unsymmetrical fault analysis of power systems; load flow analysis.

Prerequisite: EE 321.

EE 425. POWER ELECTRONICS **Three credits**

SCR characteristics; turn-on and turn-off mechanisms; SCR connections; power and switching devices, including UJT, triac and special devices; AC power control: full-wave control, half-wave control, and phase control; line-commutated converters and inverters; chopper circuits; applications.

Prerequisite: EE 252, EE 321.

EE 432. ELECTROMAGNETIC FIELDS AND WAVES **Three credits**

Maxwell's equations; energy and momentum in the electromagnetic field; plane, cylindrical, and spherical waves; boundary conditions; cylindrical waveguides; cavity resonators; scattering by a sphere and other geometries.

Prerequisite: EE 337.

EE 435. MICROSTRIP CIRCUIT DESIGN **Three credits**

A review of TEM mode transmission line theory. Static TEM parameters and design; discontinuities in microstrip and coupled microstrip lines; design examples of passive microstrip elements; narrowband and wideband microwave amplifiers.

Prerequisite: EE 335/EE337.

EE 436. ANTENNA THEORY AND DESIGN **Three credits**

Electromagnetic vector potentials; Green's functions; radiating systems; image theory; reciprocity; directional arrays; linear and broadboard antennas; moment method; aperture antennas; microstrip antennas, and antenna synthesis.

Prerequisite: EE 337.

EE 441. DIGITAL SYSTEMS DESIGN **Three credits**

Advanced topics in digital design; combinational and sequential circuit modeling, fault modeling, digital design testing and testability, design to test principles, and basic concepts in fault tolerant design.

Prerequisite: EE 241.

EE 442. MICROCOMPUTER OPERATION AND DESIGN **Three credits**

Microprocessor architecture, microcomputer design, and peripheral interfacing. Microprogramming, software systems, and representative applications. Associated laboratory experiments consider topics such as bus structure, programming, data conversion, interfacing, data acquisition, and computer control. Two hours lecture and one two-hour laboratory a week.Fee: $50. (same as CS 429)

Prerequisite: EE 345.

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EE 444. OPERATING SYSTEM PRINCIPLES **Three credits**

Analysis of the computer operating systems including Batch, Timesharing, and Realtime systems. Topics include sequential and concurrent processes, processor and storage management, resource protection, processor multiplexing, and handling of interrupts from peripheral devices. Three hours lecture a week. (same as CS 426)

Prerequisite: EE 343/CS 227.

EE 445. COMPUTER ORGANIZATION **Three credits**

Number representation, digital storage devices and computational units, bus structures; execution sequences and assembly language concepts; control units with horizontal and vertical microcoding; addressing principles and sequencing; microprocessors; basic input and output devices; interrupts; survey of RISC principles including pipelined execution. Three hours lecture a week. (same as CS 445)

Prerequisite: EE 241.

EE 446. COMPUTER ARCHITECTURE **Three credits**

A study of the design, organization, and architecture of computers, ranging from the microprocessors to the latest "supercomputers." (same as CS 430)

Prerequisite: EE 242 or EE 342.

EE 448. SOFTWARE ENGINEERING **Three credits**

A course in "programming in the large". Topics include software design, implementation, validation, maintenance, and documentation. There will be one or more team projects. (same as CS 434)

Prerequisite: CS 324.

Offered every spring.

EE 451. OPTO-ELECTRONICS **Three credits**

Electromagnetic theory; propagation of rays; propagation of optical beams in homogeneous and guiding media; optical resonators; interaction of radiation and atomic systems; theory of laser oscillators; some specific laser systems; second-harmonic generation and parametric oscillation; electroptic modulation of lasers; optical radiation interaction of light and sound; propagation, modulation, and oscillation in optical dielectric waveguides; laser applications; fiber optics and couplers.

Prerequisite: EE 337.

EE 460. STOCHASTIC PROCESSES IN ENGINEERING **Three credits**

Review of probability. Random variables and random processes; functions of one and two random variables; expectations; moments and characteristic functions; correlation and power spectra; stationary and nonstationary processes, harmonic analysis of random processes.

EE 461. DIGITAL COMMUNICATIONS **Three credits**

Sampling theory; analog pulse modulation; time-division multiplexing; baseband digital transmission; bandlimited digital PAM systems; synchronization techniques; PCM, PCM with noise, DPCM and DM; digital multiplexing; error correction and detection; linear block codes; convolutional codes; bandpass digital transmission; coherent and noncoherent binary systems; quadrature carrier and M-ary systems; information theory.

Prerequisite: EE 361, EE 460.

EE 465. DIGITAL SIGNAL PROCESSING **Three credits**

Z transforms; Fourier transforms; discrete Fourier transforms; sampling theorem; analog filter approximations; digital filter realizations and topological properties; analysis and design of recursive (IIR) filters and non-recursive (FIR) filters; fast Fourier transforms.

Prerequisite: EE 252.

EE 471. ADVANCED SOLID STATE DEVICES **Three credits**
Review of semiconductor fundamentals. Physics, fabrication technologies, and operational characteristics of a variety of solid-state structures including p-n junctions, bipolar transistors, thyristors, metal semiconductor contacts, JFET and MESFET, MIS and CCD, MOSFET, microwave and photonic devices including IMPATT, BARITT, TED, LED, semiconductor lasers, photodetectors, and solar cells.

Prerequisite: EE 371.

EE 474. INTEGRATED CIRCUIT DESIGN **Three credits**
Model calculations, transfer characteristics and use of SPICE for MOS devices and circuits; basic logical units; integrated systems fabrication including scaling, channel properties, yield statistics, design rules and choice of technology; data and control flow including clocks, registers and PLA'S; design implementation from circuit topology to patterning geometry and wafer fabrication; CAD; overview of LSI and VLSI systems; architecture and design of system controllers; system timing (SPICE); physical aspects of computational systems; ASICs memories and other logical circuits.

Prerequisite: EE 241, EE 371.

EE 481. ADVANCED MICROELECTRONICS LAB **Three credits**
Theoretical and practical aspects of techniques utilized in the fabrication of semiconductor devices. Techniques of wet chemistry; deposition and diffusion; advanced concepts of contamination control; defect-free processing and gettering; complete characterization including junction penetration, resistivity, and oxide thickness. Switching speed, junction characteristics, leakage and gain, ion implantation, and method of fabrication. Extensive use of process simulation programs such as SUPREM.

Prerequisite: EE 371.

EE 482. ADVANCED COMMUNICATION AND ANTENNA LAB **Three credits**
Characterization and measurement of microwave devices and systems; emphasis on antenna design and testing; utilization of the network analyzer and spectrum analyzer; antenna pattern measurements; communication link design; computer-aided design of active and passive microwave circuits; touchstone, optical signal generation and modulation. Fee: $50.

Prerequisite: EE 335.

EE 498. TOPICS IN ELECTRICAL ENGINEERING **Three credits**
Selected topics in electrical engineering. These may include one or more of the following: control systems, information theory, signals and noise measurements, communication systems, navigational systems, network design and synthesis, solid state, quantum electronics, magnetic and non-linear circuits, digital and analog systems, computer systems, medical engineering, power systems and generation. May be repeated for credit.

EE 510. OPTIMAL FILTERING THEORY **Three credits**
Review of stochastic processes; stochastic integrals and differential equations; Wiener filtering; discrete Kalman filter; applications and additional topics on discrete Kalman filtering; continuous Kalman filter; discrete smoothing and prediction; additional topics on Kalman filtering.

Prerequisite: EE 410, EE 460.

EE 514. OPTIMAL CONTROL THEORY **Three credits**
The calculus of variations and the minimum principle; optimal control of discrete-time systems; optimal control of continuous-time systems; dynamic programming; models of dynamic systems; optimal estimation; stochastic neighboring optimal control.

Prerequisite: EE 410.

EE 516. ROBOTICS AND ARTIFICIAL INTELLIGENCE **Three credits**
Prospects for knowledge-based robots; robots and artificial intelligence; expert systems and knowledge-based languages; production-rule expert systems; search techniques; heuristic graph searching; AND/OR graphs; first order predicate logic; future prospects for knowledge-based robots.

Prerequisite: First course in Robotics.

EE 521. COMPUTER AIDED ANALYSIS OF POWER SYSTEMS **Three credits**
Bus impedance and bus admittance matrices; sparsity programming and triangular factrorization. Load-flow studies; Gauss, Gauss-Seidel, Newton-Raphson methods. Approximate, fast and special-purpose load-flow studies. Optimal dispatch: equal incremental cost rule; gradient dispatch; optimal reactive power dispatch methods.

Prerequisite: EE 421.

EE 535. MICROWAVE CIRCUITS **Three credits**
Microwave networks; S-parameters and stability considerations; characterization of transmission line structures and discontinuities; models of microwave solid state devices; measurement techniques for modeling; design synthesis; optimization and analysis of microwave integrated circuits; numerical methods.

Prerequisite: EE 435.

EE 541. MICROPROCESSOR-BASED SYSTEMS DESIGN **Three credits**
Brief review of directions in microprocessor development: single chip microcomputers, Reduced Instruction Set Computers (RISC's), and Multiple Data Stream processors; hardware and software aspects of the design of microprocessor based systems; architecture and design of multiple computer and parallel processing systems; cache memory techniques and issues; bus standards and interfacing.

Prerequisite: EE 342.

EE 560. DETECTION AND ESTIMATION THEORY **Three credits**
Probabilistic signal detection and parameter estimation theory. Decision criteria, performance, likelihood, Bayes and parameter estimation; random processes, detection and estimation of white and nonwhite Gaussian noise. Kalman and Wiener filters.

Prerequisite: EE 460.

EE 561. COMPUTER COMMUNICATION NETWORKS **Three credits**
Data/computer communication network structures; the structure and function of network protocols; data link control procedures; multiple-access protocols; wideband data transmission media; functions and characteristics of devices used in computer communications; analysis of data/computer networks.

Prerequisite: EE 461.

EE 562. OPTICAL COMMUNICATION **Three credits**
Structure and waveguiding fundamentals of optical fibers; signal degradation in optical fibers; optical sources and their characteristics; power launching and coupling; photodetectors; optical receiver operation; coherent and non-coherent detection; analysis and design of optical transmission links.

Prerequisite: EE 432, EE 461.

EE 565. DIGITAL IMAGE PROCESSING **Three credits**
Scenes, images and digital pictures; linear operations on pictures; discrete picture transforms; random variables and random fields; visual perception. Sampling using array of points and orthonormal functions; quantization; Karhunen-Loeve, Fourier, Hadamard, and cosine compression; predictive block truncation, error-free compression; rate-distortion

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function. Enhancement: gray scale modification, sharpening and smoothing; restoration: inverse least-squares and recursive filtering, constrained deconvolution.

Prerequisite: EE 460.

EE 568. MODERN NAVIGATION SYSTEMS **Three credits**

Overview of electronic navigationsystems: Global Positioning Systems (GPS); application and status; concept and operation; accuracy and propagation consideration; GPS receiver; signal structure, integration principles for navigation systems; Kalman filtering; differential GPS.

Prerequisites: EE 418, EE 460.

EE 571. MODERN SOLID STATE DEVICES AND DESIGN **Three credits**

Semiconductor fundamentals at an advanced level. Silicon and GaAs, MOS devices; processing details; performance limitations; process design for given device specifications; limitations due to fabrication techniques; quantum phenomena in a variety of modern high performance devices; microwave semiconductor devices; integrated circuit design; VLSI design; computer aids for process and circuit design.

Prerequisite: EE 471.

EE 590. PROJECT/THESIS **One to six credits**

Students have the option to select a 6-credit or a 3-credit project to meet the degree requirement. Topics will touch on one or more of the following areas: Communications, Navigational Systems; Computers, Digital Systems; Microelectronics; Microwaves and Antennas; Power, Control Systems; and Software Engineering. Three faculty members constitute a faculty committee with the project/thesis advisor as chair. The project/thesis shall be presented in an open forum.

EE 598. ADVANCED TOPICS IN ELECTRICAL ENGINEERING **Three credits**

Advanced topics in electrical engineering. These may include one or more of the following: control systems: navigational systems; information theory; signals and noise measurements; communication systems; network design and synthesis; solid state; quantum electronics; magnetic and non-linear circuits; digital and analog systems; computer systems; medical engineering; power systems and generation. May be repeated for credit.

Five-Year B.S. degree in Engineering Management/M.B.A.

This program is designed for students who wish to attain a B.S. and an M.B.A. degree at Wilkes in five years. An Engineering Management major may apply for admission to this program during the eighth semester. However, final admission will be based upon successful completion of the B.S. degree in Engineering Management.

Mathematics

Stephen J. Tillman, Ph.D., Chairperson

Master of Science
Master of Science in Education

The courses of study are intended for:

1. Those with an undergraduate degree in a traditional mathematics major who wish to make the transition to applied mathematics/computer science. For the degree in mathematics, a student who has met admission requirements can take up to half of the required thirty credits in computer science.
2. Current or prospective teachers of mathematics who wish to enhance their training in either educational methodology or in mathematics/computer science itself.
3. Those who plan to continue their studies beyond the master's level in either mathematics or computer science.

Admission

General admission requirements are described on page 6.

1. Master of Science in Mathematics
   Applicants are expected to have had undergraduate courses in each of the following three areas: linear algebra or matrix theory, advanced calculus or real variables, and abstract algebra. Students deficient in one or more of these areas may still be admitted into the program, but are required to make up for all undergraduate deficiencies early in their graduate studies.
2. Master of Science in Education
   Admission requirements for the Department of Education are described on page 24.

Degree Requirements

General degree requirements are described on page 10.

1. **Master of Science in Mathematics**
   Thirty credits of courses offered by the Department of Mathematics/ Computer Science are required, including six credits in courses numbered 500 or above.
   In addition, there is a thesis option available whereby students can work independently toward the completion of a written thesis under the direction of their faculty advisor. As many as six of the required thirty credits may be earned through thesis work. Students electing this option must also satisfy all general thesis requirements as described on pages 10 and 12.
2. **Master of Science in Education**
   The Department of Education degree requirements are described on page 31. Of the required thirty credits, eighteen must be in approved courses offered by the Department of Mathematics/Computer Science. Up to nine credits may be taken in Computer Science.

Special Features of the Program

The department makes every effort to make the programs available to part-time as well as full-time students. Required courses are frequently offered in the early mornings and in the evenings, as well as during the summer months.

Financial Aid

A limited number of assistantships are available for full-time students.

Courses of Instruction

MTH 411. REAL ANALYSIS **Four credits**

A rigorous study of the topology of the real line, limits, continuity, differentiation, integration, and series of functions.

Offered fall of even years.

MTH 413. FUNCTIONS OF SEVERAL VARIABLES **Three credits**

A modern treatment of calculus of functions of several real variables. Topics include: Euclidean spaces, differentiation, integration and manifolds leading to the classical theorems of Green and Stokes.

Prerequisites: Mth 311 and a course in linear algebra.

Offered when demand warrants.

MTH 414. COMPLEX ANALYSIS **Three credits**

Complex functions, limit, continuity, analytic functions, power series, contour integration,

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Laurent expansion, singularities and residues.
Offered when demand warrants.

MTH 431. ABSTRACT ALGEBRA I **Four credits**
A rigorous study of elementary number theory, groups, rings, and fields.
Offered fall of odd years.

MTH 432. ABSTRACT ALGEBRA II **Three credits**
A continuation of Mathematics 331. Polynomial rings, ideals, field extensions and Galois Theory.
Prerequisite: Mth 331.
Offered when demand warrants.

MTH 442. TOPOLOGY **Three credits**
Metric spaces, topological spaces, countability and separation axioms, compactness, connectedness, product spaces.
Prerequisite: Mth 311 or consent of instructor.
Offered when demand warrants.

MTH 443. GEOMETRY **Three credits**
A study of selected topics from Euclidean and non-Euclidean geometry.
Offered in the fall semester of even years.

MTH 451. PROBABILITY AND MATHEMATICAL STATISTICS I **Three credits**
Random variables, probability distributions, expectation and limit theorems, confidence intervals.
Offered every fall.

MTH 452. PROBABILITY AND MATHEMATICAL STATISTICS II **Three credits**
Hypothesis testing, non-parametric methods, multivariate distributions, introduction to linear models.
Prerequisite: Mth 351 or consent of instructor.
Offered in the spring semester of odd years.

MTH 454. STATISTICAL METHODOLOGY **Three credits**
This course emphasizes applications, using statistical computer packages (SPSS or BMDP) and real data sets from a variety of fields. Topics include estimation and testing; stepwise regression; analysis of variance and covariance; design of experiments; contingency tables; and multivariate techniques,including the log-linear model.
Prerequisite: Mth 351 or consent of instructor.
Offered in the spring semester of even years.

MTH 460. LINEAR PROGRAMMING **Three credits**
Graphical linear programming, simplex algorithm and sensitivity analysis. Special L.P. models such as the transportation problem, transshipment problem, and assignment problem. May include integer programming, branch and bound algorithm, geometric programming, goal programming. (Same as CS 460)
Prerequisite: Programming experience in a high-level language.
Offered in the fall semester of even years.

MTH 461 APPLIED MATHEMATICS I **Three credits**
Intended for physical science and engineering students. Topics include inner product spaces, operator algebra, eigenvalue problems, Sturm-Liouville theory, Fourier series and partial differential equations.
Offered in the fall semester of odd years.

MTH 462. APPLIED MATHEMATICS II **Three credits**
Intended for physical science and engineering students. Topics includesystems of linear differential equations; nonlinear differential equations;qualitative, numerical, and finite difference methods; theorems of Green and Stokes and the Divergence Theorem.
Offered in the spring semester of even years.

MTH 463. OPERATIONS RESEARCH **Three credits**
A survey of operations research topics such as decision analysis, inventory models, queueing models, dynamic programming, network models, heuristic models, and non-linear programming. (Same as CS 463)
Prerequisite: Programming experience in a high-level language.
Offered spring of odd years.

MTH 464. NUMERICAL ANALYSIS **Three credits**
Numerical methods of differentiation, integration, solution to equations and of differential equations with emphasis on problems that lend themselves to solution on computers.
Prerequisites: A course in differential equations and programming experience in a high-level language.
Offered in the spring semester of odd years.

MTH 470. READINGS IN MATHEMATICS **Three credits**
Individual study of special topics under the supervision of a faculty member. Designed for students who have completed a substantial amount of course work in mathematics.
Prerequisite: Consent of department chairperson.
May be repeated for credit.

MTH 511. MEASURE AND INTEGRATION **Three credits**
Measures, measurable functions, integration, convergence theorems, product measures, signed measures.
Prerequisite: Mth 442, or consent of instructor.
Offered when demand warrants.

MTH 513. FUNCTIONAL ANALYSIS **Three credits**
Topics include: Banach spaces, Lp-spaces, Hilbert spaces, topological vector spaces, and Banach algebras.
Prerequisites: Mth 311 and a course in linear algebra.
Offered when demand warrants.

MTH 532. MODERN ALGEBRA **Three credits**
A study of group theory (including the Sylow Theorems and solvable groups); ring theory (including the Noetherian rings and UFDs); modules, tensor algebra, and semi-simple rings.
Prerequisites: Mth 331 and a course in linear algebra or consent of instructor.
Offered when demand warrants.

MTH 542. ALGEBRAIC TOPOLOGY **Three credits**
Polyhedra, simplicial homology theory, cohomology rings, and homotopy groups.
Prerequisite: Mth 442.
Offered when demand warrants.

MTH 498/598. TOPICS IN MATHEMATICS **Variable credit**
A wide range of topics in pure and applied mathematics may be offered upon demand.
Prerequisite: Consent of instructor.
May be repeated for credit.

MTH 590. THESIS **Variable credit**
Prerequisite: Consent of department chairperson. May be repeated for credit.

THE FOLLOWING COMPUTER SCIENCE COURSES MAY BE TAKEN AS PART OF THE MASTER'S DEGREE IN MATHEMATICS OR MATHEMATICS EDUCATION.

CS 419. PRINCIPLES OF PROGRAMMING LANGUAGES **Three credits**
A study of the principles that govern the design and implementation of programming languages. Topics include language structure, data types, and control structures. Programming projects will familiarize students with the features of several specific langauges, such as Ada, LISP,and PROLOG.
Prerequisite: Computer Data Structures.
Offered in the spring semester of even years.

CS 421. SIMULATION AND DATA ANALYSIS **Three credits**
Methods of handling large data bases including statistical analysis and computer simulations. The emphasis will be upon discrete simulation models with a discussion of relevant computer languages, SLAM, GPSS, and/or SIMSCRIPT.
Offered in the fall semester of odd years.

CS 423. THEORY OF COMPUTATION **Three credits**
This course formalizes many topics encountered in previous computing courses. Topics include: languages, grammars, finite automata, regular expressions and grammars, context-free languages, push-down automata, Turing machines and computability.
Prerequisite: Knowledge of computer data structures.
Offered in the fall semester of even years.

CS 424. SYSTEMS ANALYSIS **Three credits**
A study of the design and implementation of large computer projects. Special emphasis is placed on applications to business systems. Students will use a CASE tool for automated systems analysis and design.
Prerequisite: File management experience in COBOL.
Offered every fall.

CS 425. DATABASE MANAGEMENT **Three credits**
Practical experience in solving a large-scale computer problem including determination of data requirements, appropriate data organization, data manipulation procedures, implementation, testing and documentation.
Prerequisite: CS 324.
Offered every spring.

CS 426. OPERATING SYSTEM PRINCIPLES **Three credits**
Analysis of the computer operating systems including Batch, Timesharing, and Realtime systems. Topics include sequential and concurrent processes, processor and storage management, resource protection, processor multiplexing, and handling of interrupts from peripheral devices. (same as EE 444).
Prerequisite: Computer Data Structures.
Offered every fall.

CS 427. COMPILER DESIGN **Three credits**
A study of compiler design including language definition, syntactic analysis, lexical analysis, storage allocation, error detection and recovery, code generation and optimization problems.
Prerequisite: Computer Data Structures.
Offered in the spring semester of odd years.

CS 428. ALGORITHMS **Three credits**
Theoretical analysis of various algorithms. Topics are chosen from sorting, searching, selection, matrix multiplication and multiplication of real numbers, and various combinational algorithms.

Prerequisite: Computer Data Structures.
Offered every fall.

CS 429. MICROCOMPUTER OPERATION AND DESIGN **Three credits**
Microprocessor architecture, microcomputer design, and peripheral interfacing. Microprogramming, software systems, and representative applications. Associated laboratory experiments consider topics such as bus structure, programming, data conversion, interfacing, data acquisition, and computer control. Two hours lecture and one two-hour laboratory per week. Fee: $50. (same as EE 442)
Prerequisite: CS 320/EE 341.
Offered every spring.

CS 430. COMPUTER ARCHITECTURE **Three credits**
A study of the design, organization, and structure of computers, ranging from the microprocessors to the latest "supercomputers." (same as EE 346)
Prerequisite: CS 329/EE 342, or a course in assembly language.
Offered every spring.

CS 434. SOFTWARE ENGINEERING **Three credits**
A course in "programming in the large". Topics include software design, implementation, validation, maintenance and documentation. There will be one or more team projects. (same as EE 448)
Prerequisite CS 324.
Offered every spring.

CS 435. ADVANCED DATABASE CONCEPTS **Three credits**
A continuation of CS 325. Concentration on the design of a large scale database system, current special hardware and software, and the role of a DBMS in an organization.
Prerequisite: CS 325.
Offered in the fall semester of odd years.

CS 440. ARTIFICIAL INTELLIGENCE **Three credits**
This course will provide an overview of artificial intelligence (AI) application areas and hands-on experience with some common AI computational tools. Topics include search, natural language processing, theorem proving, planning, machine learning, robotics, vision, knowledge-based systems (expert systems), and neural networks.
Prerequisite: Knowledge of computer data structures.
Offered in the spring semester of even years.

CS 445. COMPUTER ORGANIZATION **Three credits**
Number representation, digital storage devices and computational units, bus structures;execution sequences and assembly language concepts;control units with horizontal and vertical microcoding; addressing principles and sequencing; microprocessors; basic input and output devices; interrupts; survey of RISC principles including pipelined execution. Three hours lecture a week. (same as EE 445)
Prerequisite: Knowledge of digital design.

CS 450. OBJECT-ORIENTED PROGRAMMING **Three credits**
The course serves as a practical introduction to the object-oriented programming paradigm. Fundamental concepts of object-oriented programming will be covered; these include objects, classes, inheritance, polymorphism, and data abstraction. Attention will be focussed on program development; among the specific languages to be covered are Smalltalk and C++. Object-oriented databases will also be discussed.
Prerequisites: Knowledge of computer data structures.
Offered in the fall semester of odd years.

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CS 455. COMPUTER NETWORKS **Three credits**

This course introduces basic concepts, architecture, and widely used protocals of computer networks. Topics include the Open System Interconnection (OSI) model consisting of physical link layer, data layer, network layer, transport layer, session layer, presentation layer, and application layer, medium access sublayer and LAN; various routing protocols; Transmission Control Protocol (TCP) and Internet Protocol (IP) for internetworking.

Prerequisite: Knowledge of computer data structures.

Offered every spring.

CS 460. LINEAR PROGRAMMING **Three credits**

Graphical linear programing, simplex algorithm and sensitivity analysis. Special L.P. models such as the transportation problem, transshipment problem, and assignment problem. May include integer programming, branch and bound algorithm, geometric programming, goal programming. (same as Mth 460)

Prequisite: Programming experience in a high-level language.

Offered in the fall semester of even years.

CS 463. OPERATIONS RESEARCH **Three credits**

A survey of operations research topics such as decision analysis, inventory models, queueing models, dynamic programming, network models, heuristic models, and non-linear programming. (same as Mth 463)

Prerequisite: Programming experience in a high-level language.

Offered spring of odd years.

CS 464. NUMERICAL ANALYSIS **Three credits**

Numerical methods of differentiation, integration, solution of equations and of differential equations with emphasis on problems that lend themselves to solution using computers. (same as Mth 464)

Prerequisites: A course in differential equations and programming expereince in a high-level language.

Offered in the spring semester of odd years.

CS 467. COMPUTER GRAPHICS **Three credits**

Introduction to equipment and techniques used to generate graphical representations by computer. Discussion of the mathematical techniques necessary to draw objects in two and three-dimensional space. Emphasis on application programming and the use of a high-resolution color raster display.

Prerequisite: Computer Data Structures.

Offered in the fall semester of even years.

CS 495-496. INDEPENDENT STUDY IN COMPUTER SCIENCE **Three credits**

Individual study in a chosen area of computer science under the supervision of a faculty member.

Prerequisite: Approval of department chairperson.

May be repeated for credit.

CS 498. TOPICS IN COMPUTER SCIENCE **Variable credit**

Study of one or more special topics in computer science.

Prerequisite: Consent of instructor.

May be repeated for credit.

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Nursing

Mary Ann Merrigan, Ph.D., R.N., Chairperson
Sharon G. Telban, D.Ed., R.N.C., Coordi nator, Gerontological Nursing
Margaret M. Slusser, Ph.D., R.N., C.S.,, Coordinator, Psychiatric Mental Health Nursing

Master of Science with Major in Nursing

Purpose

The purpose of the graduate program in Nursing at Wilkes University is to prepare advanced practice nurses in the role of Clinical Nurse Specialist with a focus in either gerontological nursing or psychiatric mental health nursing. This multidisciplinary program provides a foundation for doctoral study in nursing and continued professional development.

Graduates of the program are eligible to write the certification examination for clinical nurse specialist by the American Nurses Credentialing Center (ANCC) upon completion of the requirements.

An advanced practice nurse is a registered nurse who is prepared at the master's level to provide direct patient care.

This program is fully accredited by the Commission on Collegiate Nursing Education (CCNE).

Each student's program of study is planned to meet each individual's professional goals and professional requirements.

Program Outcomes

1. Synthesize advanced knowledge of nursing and related disciplines in the development of advanced practice nursing for the roles of the Clinical Nurse Specialist.
2. Develop clinical expertise as an advanced practice nurse in the role of Clinical Nurse Specialist.
3. Develop skills and abilities to assume the role of the Advanced Practice Nurse.
4. Evaluate nursing research for its applicability to advanced practice nursing.
5. Evaluate applicable knowledge and concepts in nursing to deal with the complexities of a dynamic society.
6. Participate in life-long learning as a part of advanced practice nursing.

Admission Requirements

In addition to the requirements of the Graduate Division, admission to the Master's Program in nursing requires:

1. Graduation from an approved baccalaureate program in nursing.
2. Licensure as a Registered Nurse.
3. One year of clinical experience.
4. An undergraduate statistics course.
5. An undergraduate research course.
6. Evidence of health assessment skills.
7. A statement of professional goals. These goals should relate to the goals of the graduate program in nursing at Wilkes.
8. Two letters of recommendation.

A student whose background is judged to be deficient in any area will be evaluated individually and a program plan which will remedy the deficiency will be developed. Courses to remedy such deficiency do not carry graduate credits.

For a personal interview to discuss program requirements and career goals, please arrange an appointment with the appropriate coordinator.

The Curriculum (36/37 credits)

The Core (18 credits)

N501:	Theoretical Foundations of Nursing	3 credits
N502:	Application of Nursing Research	3 credits
N504:	Advanced Role Development in Nursing	3 credits
N505:	Current Perspectives in Nursing	3 credits
N533:	Pharmacotherapeutics for Nursing	3 credits
N590:	Scholarly Project	3 credits

Gerontological Advanced Practice Core (18 credits)

N406:	Health Assessment of the Elderly	3 credits
N511:	Perspectives on Aging	3 credits
N506:	Advanced Practice in Gerontological Nursing I	3 credits
N515:	Advanced Practice in Gerontological Nursing II	3 credits
	Electives	6 credits

or: **Psychiatric Mental Health Advanced Practice Core (19 credits)**

N525:	Psychopathology of Acute and Chronic Mental Illness	4 credits
N526:	Clinical Modalities in Advanced Psychiatric Mental Health Nursing Practice	3 credits
N527:	Family Systems Theory I	3 credits
N528:	Family Systems Theory II	3 credits
N535:	Advanced Practice in Psychiatric Mental Health Nursing I	3 credits
N536:	Advanced Practice in Psychiatric Mental Health Nursing II	3 credits

Courses of Instruction

Note: **Students in practicum courses must carry personal liability insurace.**

NURSING 406. HEALTH ASSESSMENT OF THE ELDERLY **Three Credits**
This course presents an overview of the health assessment of the older adult client. In most respects the physical assessment of the elderly is no different from the young adult. However, the greater incidence of disease and infirmity in the older adult requires skill on the part of the examiner in separating pathologic process from aging process. Emphasis on multiple aspects of assessment including physical, functional, and cognitive assessment along with transcultural variations, will prepare the student for advanced practice in gerontological nursing.

Prerequisite: Graduate Standing or permission of Instructor.

NURSING 501. THEORETICAL FOUNDATIONS OF NURSING **Three credits**
This course emphasizes the systematic process of theory development in nursing. The role of traditional science in relation to other ways of knowing is explored. Students will describe, analyze, and evaluate current theories of nursing. The relationship of research and practice to theory is discussed.

Prerequisite: Graduate Standing.

NURSING 502. APPLICATION OF NURSING RESEARCH **Three credits**
This course builds on knowledge and skills developed in undergraduate research and statistics courses. Skills in the analysis and evaluation of nursing research are further developed. Students analyze the contributions of the empirical approach to the development of nursing science. Selected research designs and methodologies which are used to advance nursing knowledge are examined. Students are given the opportunity to critique and synthesize current research for its application to an identified problem in nursing practice.

Prerequisite: Undergraduate Statistics

NURSING 504. ADVANCED ROLE DEVELOPMENT IN NURSING **Three credits**
Examines the role development process and its applicability to the advanced practice nurse. The historical, theoretical, and conceptual basis of role development, advanced practice, and evaluation are explored. A framework for practice, which includes the sub-roles of direct care provider, educator, researcher, manager and consultant, is examined.

NURSING 505. CURRENT PERSPECTIVES IN NURSING **Three credits**
Analysis of issues relative to advanced nursing practice. Assessment of proposed approaches to the resolution of issues, based on current literature and research findings, is done collaboratively in a seminar format.

Prerequisite: Graduate Standing

NURSING 506. ADVANCED PRACTICE IN GERONTOLOGICAL NURSING I **Three credits**
Students use theories from nursing and other sciences to plan, manage, and evaluate direct care services provided to older adults and their families in community settings. Clinical experience focuses on case management, including advanced assessment, diagnosis, planning and evaluation as it relates to health promotion and maintenance in this population. Opportunities for interdisciplinary experience and collaborative practice are provided. The seminar component of the course is designed to develop clinical decision-making skills through case study presentations and extend the theoretical and research base of advanced clinical practice.

Prerequisites: NSG 406, 501, 511, and 504 (May be taken concurrently)

NURSING 511. PERSPECTIVES ON AGING **Three credits**
Human development from adulthood through old age is analyzed from a multidisciplinary perspective. The interrelationship of physical, psychological, and social processes of aging is analyzed. Holistic assessment of aging, including the interaction between an aging society and the subsequent increase in chronic health problems as they impact on social resources and health care delivery, is emphasized.

Prerequisite: Graduate Standing.

NURSING 515. ADVANCED PRACTICE IN GERONTOLOGICAL NURSING II **Three credits**
Students use theories from nursing and other sciences to plan, manage and evaluate direct care services provided to frail older adults and their families in institutional and community settings. Clinical experience focuses on case management, including advanced assessment, diagnosis, planning and evaluation as it relates to the management of acute conditions and complex chronic health problems. Opportunites for interdisciplinary experiences and collaborative practice are provided. The seminar component of the course is designed to develop clinical decision-making skills through case study presentations and to extend the theoretical and research base of advanced clinical practice.

Prerequisites: NSG 406, 501, 511, and 504 (May be taken concurrently)

NURSING 525. PSYCHOPATHOLOGY OF ACUTE AND CHRONIC MENTAL ILLNESS **Three credits**
This course explores the development of mental illness in adults with an emphasis on growth and development issues, psychopathological processes, diagnostic criteria, and treatment of individuals with these illnesses pertinent to advanced nursing practice.

Prerequisite: Graduate standing or the permission of the Instructor.

NURSING 526. CLINICAL MODALITIES IN ADVANCED PSYCHIATRIC MENTAL HEALTH NURSING PRACTICE **Three credits**
This course provides a foundation in the major systems of therapy for individuals and groups used in advanced psychiatric mental health nursing and other disciplines engaged in mental

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health practice. Focus will be on therapeutic modalities such as brief psychotherapy, group processes and practices, milieu therapy and crisis intervention as they relate to advanced nursing practice in mental health.

Prerequisite: Graduate standing.

NURSING 527. FAMILY SYSTEMS THEORY I **Three credits**

This course examines the process of human development in the context of the family relationship system. A theoretical framework for understanding this process and the therapeutic methods that derive from it are presented. Orientation to various methods and techniques of family therapy is provided.

Prerequisite: Graduate standing or the permission of the Instructor.

NURSING 528. FAMILY SYSTEMS THEORY II **Three credits**

Critical phases or occurrences in the family that can interfere with, or enhance, human growth and development are addressed in this course. Problems are discussed both from a theoretical and therapeutic perspective.

Prerequisite: Nursing 527.

NURSING 530. PRINCIPLES AND PRACTICES OF ADULT EDUCATION **Three credits**

This elective course examines research and theory in adult education which serve as a basis for program development and design. It includes teaching/learning strategies, legal/ethical issues, marketing and sources of funding for adult education programs.

NURSING 531. MENTAL HEALTH IN THE ELDERLY **Three credits**

This elective course presents an overview of mental helath and aging that is grounded in an integrated biopsychosocial approach to human behavior. Deigned to bring professionals up to date on society's approach to the basic issues that confront those in the field of aging, it features exploration of issues related to prevention, recognition, and management of major psychiatric disorders affecting the elderly in a variety of settings. Content includes tools for assessment of mental health and functional status and responses to problematic behaviors. Research related to course topics will be evaluated in terms of its applicability to clinical practice.

NURSING 533. PHARMACOTHERAPEUTICS FOR NURSING **Three credits**

The basic concepts of clinical pharmacokinetics and its application in drug regimen design and monitoring are discussed in this required course. Pharmacotherapy for major diseases of geriatric patients is emphasized. A case study approach is utilized to emphasize the application of pharmacotherapy and nursing concepts in patient care.

NURSING 535. ADVANCED PRACTICE IN PSYCHIATRIC MENTAL HEALTH NURSING I **Three credits**

Supervised advanced psychiatric mental health nursing practice is undertaken with adults and/or older adults and their families in a variety of settings. Theories and practice are integrated to address the process of assessment and diagnosis of functional and dysfunctional patterns of behaviors; the formation of initial intervention strategies; and implementation of treatment and case management of psychiatric clients. A minimum of 15 hours of practice and 3 hours of small group supervision is required each week

Prerequisites or co-requisites: Nursing 525, 526, and 527

NURSING 536. ADVANCED PRACTICE IN PSYCHIATRIC MENTAL HEALTH NURSING II **Three credits**

Supervised advanced psychiatric mental health nursing practice is undertaken with adults and/or older adults and their families in a variety of settings. The focus is on the refinement and development of clinical interventions. Outcome evaluation, termination and professional role development are emphasized. A minimum of 15 hours of practice and 3 hours of small group supervision is required each week.

Prerequisites or co-requisites: Nursing 528, 533, and 535

NURSING 590. SCHOLARLY PROJECT **Three credits**

The student, under the guidance of a selected faculty member, will critique and synthesize relevant research and literature on a clinical problem in nursing. The student will explore interrelationships between ideas in a scholarly manner. Implications for advanced nursing practice will be addressed. Each student will present their project upon its completion.

Prerequisite: Consent of instructor.

NURSING 596-596. INDEPENDENT STUDY **One to three credits**

Affords an opportunity for independent study of selected topics under faculty supervision.

Prerequisite: Permission of department chairperson or program director.

NURSING 598. TOPICS IN NURSING **Three credits**

Advanced study of topics of special interest not extensively treated in regular courses.

Prerequisite: Graduate standing.

Elective Courses

In consultation with the advisor, the graduate student may choose any graduate course available in any program in the University.

RN-MS Program

Purpose

This accelerated program is designed for the experienced, practicing registered nurse who plans to continue nursing studies through the master's level and does not hold a baccalaureate degree.Adjustments of the undergraduate requirements permit rapid progress into the graduate level. The Master's Program in the Clinical Nurse Specialist (CNS) concentrations remain intact and prepares an advanced practice nurse. Program plans are individualized for each student. Time to complete the program is related to the applicability of transfer credit as well as the number of credits taken in any semester.

An interview with the Program Director is required prior to entry into the program. Formal admission to Wilkes University is necessary and will include evaluation of transfer credits.

Prerequisites for admission into the program:

1. Graduation from a regionally accredited nursing program.
2. Licensure as a Registered Nurse.
3. At least three (3) years of clinical practice after graduation.
4. A GPA from the original program of 3.0 on a 4.0 scale.
5. A statement of professional goals. (These goals should relate to the graduate program (CNS) at Wilkes.)

Post-Master's Degree Certificate Program
Adult Psychiatric-Mental Health Nursing
or
Gerontological Nursing

Purpose

This program is designed for professional nurses who have earned a Master's Degree in Nursing and who seek further education in order to qualify for certification as a Clinical Nurse Specialist in either Gerontological Nursing or in Adult Psychiatric Mental Health Nursing. No degree will be awarded.

Admission Criteria:

- Master's degree with a major in nursing from a program approved by either The National League for Nursing or The Commission on Collegiate Nursing Education (CCNE).
- GPA 3.0 on a 4.0 scale
- Current Pennsylvania registered nurse license.
- Two years of recent professional experience in nursing.
- Personal interview with a Department of Nursing faculty member.
- Completed application for admission to Graduate Studies, including academic transcripts.
- Two letters of reference from healthcare professionals attesting to the candidate's clinical expertise.
- Statement of professional goals.

Requirements:

Students will be required to take all of the specialty courses (15 credits for Gerontological Nursing and 25 credits for Adult Psychiatric-Mental Health Nursing). Students may transfer up to six (6) credits if taken within the past five (5) years.

Gerontological Advanced Practice Courses (15 credits)

N406:	Health Assessment of the Elderly	3 credits
N511:	Perspectives on Aging	3 credits
N506:	Advanced Practice in Gerontological Nursing I	3 credits
N515:	Advanced Practice in Gerontological Nursing II	3 credits
N533:	Pharmacotherapeutics for Advanced Practice Nursing	3 credits*

Psychiatric Mental Health Advanced Practice Courses (22 credits)

N525:	Psychopathology of Acute and Chronic Mental Illness	4 credits
N526:	Clinical Modalities in Advanced Psychiatric Mental Health Nursing Practice	3 credits
N527:	Family Systems Theory I	3 credits
N528:	Family Systems Theory II	3 credits
N535:	Advanced Practice in Psychiatric Mental Health Nursing I	3 credits
N536:	Advanced Practice in Psychiatric Mental Health Nursing II	3 credits
N533:	Pharmacotherapeutics for Advanced Practice Nursing	3 credits*

* To meet this requirement students must take N533 or have completed a 3-credit advanced pharmacotherapeutics course within the past five years. Courses completed prior to the five-year limit must be accompanied by evidence of at least three hours of continuing education in advanced pharmacotherapeutics for each year surpassing the five-year limit.

Wilkes University Calendar — 2001-2002

Fall Semester 2001

Classes commence	Monday, August 27, 2001	8 a.m.
Labor day recess	Friday August 31, 2001	5 p.m.
Classes resume	Tuesday, September 4, 2001	8 a.m.
Fall recess	Thursday, October 11, 2001	10 p.m.
Classes resume	Monday, October 15, 2001	8 a.m.
Follow Friday class schedule	Tuesday, November 20, 2001	
Thanksgiving recess	Tuesday, November 20, 2001	5 p.m.
Classes resume	Monday, November 26, 2001	8 a.m.
Classes end	Friday, December 7, 2001	5 p.m.
Final examinations begin	Monday, December 10, 2001	8 a.m.
Final examinations end	Tuesday, December 18, 2001	4:30 p.m.

Spring Semester 2002

Class commence	Monday, January 14, 2002	8 a.m.
Winter commencement	Sunday, January 20, 2002	2 p.m.
Spring Recess	Friday, March 1, 2002	5 p.m.
Classes resume	Monday, March 11, 2002	8 a.m.
Easter recess	Wednesday, March 27, 2002	10 p.m.
Classes resume	Tuesday, April 2, 2002	8 a.m.
Follow Thursday class schedule	Tuesday, April 30, 2002	
Follow Friday class schedule	Wednesday, May 1, 2002	
Classes end	Wednesday, May 1, 2002	5 p.m.
Final examinations begin	Friday, May 3, 2002	8 a.m.
Final examinations end	Tuesday, May 11, 2002	4:30 p.m.
Spring commencement	Saturday, May 18, 2002	11 a.m.

MBA Weekender Dates

Fall, 2001	**Spring, 2002**
September 8-9	January 12-13
September 29-30	February 2-3
October 20-21	February 23-24
November 10-11	March 16-17
December 1-2	April 6-7
December 8-9	April 13-14

Wilkes University Graduate Contacts

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Dr. Harold E. Cox, Coordinator of Graduate Programs	(570) 408-4226
Ms Kathleen J. Diekhaus, Graduate Secretary	(570) 408-4160
Mr. Robert M. Burke, MBA Coordinator	(570) 408-4710
Ms Kathy Moran, Graduate Teacher Education Program	(570) 408-4671
Dr. Thyagarajan Srinivasan, Electrical Engineering Program	(570) 408-4811
Dr. Stephen J. Tillman, Mathematics Program	(570) 408-4830
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