GRADUATE CATALOGUE
2007-2008

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Delaware State University is an Equal Educational and Employment Opportunity/Affirmative Action Institution.

The provisions of this publication are not be regarded as an irrevocable contract between the student and Delaware State University. The University reserves the right to revise any provision or regulation at any time within the student's term of enrollment, if it is deemed advisable. Advance notice of any changes is given whenever possible.

The University reserves the right to refuse admission or to revoke admission to any applicant.

ACCREDITATIONS AND INSTITUTIONAL MEMBERSHIPS

Delaware State University, chartered by the State of Delaware, is accredited by the Commission on Higher Education of the Middle States Association of Colleges and Secondary Schools to award degrees at the baccalaureate and masters levels.

Credits earned at Delaware State University are accepted by other accredited institutions of higher education throughout the country for transfer credit, graduate study, professional placement and employment opportunities. The University also holds full membership in and/or accreditation from the following state, regional and national educational or professional organizations:

Accreditation on Commission for Programs in Hospitality Administration (ACPHA)
American Association of Colleges of Teacher Education (AACTE)
American Association for Higher Education (AAHE)
American Association of State Colleges and Universities (AASCU)
American Chemical Society (Chemistry)
American Council on Education (ACE)
American Dietetic Association (Dietetics)
Association of American Colleges and Universities (AAC & U)
Association of Collegiate Business Schools and Programs (ACBSP)
Association of Governing Boards (AGB)
Association to Advance Collegiate Schools of Business (AACSB) International
The College Board
Council for Higher Education Accreditation
Council for Undergraduate Research (CUR)
Council of 1890 Presidents/Chancellors
Commission of Collegiate Nursing Education (CCNE)
Council on Social Work Education (Social Work)
Delaware State Department of Education (Teacher Education Program)
Federal Aviation Administration (FAA)
International Association for Continuing Education and Training (IACET)
International Association of University Presidents North American Council
Middle States Association of Colleges & Schools, Inc.
Mid-Eastern Athletic Conference (MEAC)
National Association for Equal Opportunity in Higher Education (NAFEO)
National Association of State Universities and Land Grant Colleges (NASULGC)
National Collegiate Athletic Association (NCAA)
National Council for Accreditation of Teacher Education (NCATE)
National League for Nursing (NLNAC)

CAMPUS TELEPHONE DIRECTORY

(302) 857 - xxxx

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Provost and Vice President for Academic Affairs	6100
Vice President for Business and Finance	6200
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Market Street Campus 621 Market Street Wilmington, DE	(302) 254-5342
Montessori Program Wilmington, DE	(302) 254-5328

University administrative offices are open from 8:30am until 4:30pm. Business may be transacted daily Monday through Friday with the exception of certain legal holidays. Interested persons should contact the Office of Public Relations at (302) 857-6060.

Delaware State University does not discriminate on the basis of race, color, national origin, sex, age or handicap in the administration of any of its educational programs and activities or with respect to admission and employment. Inquires may be directed to the Section 504 Coordinator or the Title IX Coordinator located in William C. Jason Library, 6th floor at (302) 857-6001.

Visit us on the Web: http://www.desu.edu

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Students at Delaware State University are responsible for knowing and complying with all requirements for their respective degrees as well as the policies and procedures governing graduate study as outlined in this document, the Delaware State University Student Handbook, the specific graduate program handbook..

Delaware State University reserves the right to make changes in the course offerings, degree requirements, charges and regulations, and procedures contained herein as educational and financial considerations require, subject to and consistent with established procedures and authorizations for making such changes.

The colors of the University are colonial blue and red.
The mascot is the hornet.

A MESSAGE FROM THE PRESIDENT

Delaware State University is committed to offering you the highest quality programs and excellent service. The University has a dedicated faculty to assist you with the best in instruction, research, and academic decision-making. The staff is knowledgeable and dedicated to aiding you in their areas of expertise. Our team of administrators is deploying new processes and procedures, technology, equipment and protocols, which will enhance productivity and serve you better as we enhance the great tradition of Delaware State University.

We are pleased that you have decided to matriculate here. As you experience campus life, you will find that DSU has much to offer, from its academic programs, research and service, to sports and entertainment. It is up to you to invest in your future by learning as much as possible and by taking advantage of the academic, cultural, civic and social tools available at this University. I challenge you to do so.

This catalog is the first step in preparing your roadmap – one that will guide you during your educational journey. It encompasses useful information that will assist you from the admissions process, to course selections, and on to graduation. Use it wisely and it will lead the way.

Welcome to Delaware State University. I am sure that success will continue to follow you as you pursue your educational aspirations!

Sincerely,

Allen L. Sessoms
President

DELAWARE STATE UNIVERSITY
TENTATIVE ACADEMIC CALENDAR
FALL 2007 SEMESTER (200801)

August 20 (Monday) ..... Residence Halls Open (Orientation #5New Students Only)
August 20-August 22 (Monday- Wednesday)..... New Student Orientation #5
August 22 (Wednesday).....Registration for New Students
August 22 (Wednesday)…….....……Check-in for all Remaining New Students
August 23 (Thursday).....Check-in for Returning Students
August 23 - 24 (Thursday & Friday) ..... Registration for Remaining Students
August 23 - 28 (Thursday-Monday)..... Welcome Days
August 27 (Monday) ..... Faculty & Staff Institute
August 27 (Monday..... Last Day to Mail-In or Fax Registration
August 27 (Monday) ..... Changes in Class Schedule Begin (Drop/Add)
August 28 (Tuesday) ..... Classes Begin
August 28 (Tuesday) .....Late Registration Begins
September 3 (Monday) ..... Labor Day Recess (University Closed)
September 4 (Tuesday) ..... Last Day for Adding Classes
September 4 (Tuesday) .....Last Day to Change Course(s) to Audit Status
September 4 (Tuesday) .....Late Registration Ends
September 4 (Tuesday)..... Effective date for $10 per drop processing fee
September 4 (Tuesday) ..... Effective date to drop course(s) without receiving a Withdrawal "W"
September 11(Tuesday) .....Opening Convocation
September 11 (Tuesday).....Purge Date for non-payment
September 13 (Thursday).....General Faculty Meeting
October 8 - 11 (Monday-Thursday) .....Mid-Term Evaluations Administered
October 9 (Tuesday) .....Last Day to Remove Incompletes
October 16 (Tuesday)..... Deadline for Filing Application for Graduation
October 16 (Tuesday)..... Mid-Term Grades Due in Chairs' Offices
October 15 - 20 (Monday - Saturday) .....Homecoming Week
October 20 (Saturday) .....Homecoming Game
October 29 – November 21 .....Advisement Period
November 7 (Wednesday) ..... Last Day to Drop Classes
November 10 (Saturday) ..... Parent's Day
November 10 (Saturday) .....Graduate Comprehensive Examination
November 22 (Thursday) – November 25 (Sunday) .....Thanksgiving Recess
November 26 (Monday) ..... Last Day to Withdraw from the University
December 6 (Thursday 4:30pm) .....Last Day of Classes
***** December 6 (Thursday after 4:30pm).....Monday night classes will meet their final time
December 7 (Friday) .....Reading Day
December 10 -14 (Monday-Friday) ..... Final Examinations
December 14 (Friday) .....Winter Recess Begins (Students)
December 14 (Friday)..... Residence Halls Close at 8pm
December 17 (Monday) ..... Final Grades Due in Chairs' Offices
December 17 (Monday).....Final Grades Due in Registrar's Office
December 24 (Monday)..... Winter Recess Begins (University Closed

***NOTE**: Regular scheduled classes will meet for their last time on Thursday Dec 6th, before 4:30. **Monday night classes** will meet their final time after 4:30 on Dec 6th.

DELAWARE STATE UNIVERSITY
TENTATIVE ACADEMIC CALENDAR
SPRING SEMESTER 2008 (200803)

January 7 (Monday)..... Residence Halls Open For New Students Only
January 8-9 (Tuesday-Wednesday) ..... New Student Orientation
January 8 (Tuesday)..... General Faculty Meeting
January 9 (Wednesday)..... Registration for New and Readmitted Students
January 10-11 (Thursday –Friday) ..... Check-In for Returning Students
January 10-11 (Thursday-Friday) ..... On-Site Registration for Remaining Students
January 14 (Monday)..... Last Day to Mail-In or Fax Registration
January 15 (Tuesday)..... Classes Begin
January 15 (Tuesday)..... Late Registration Begins
January 15 (Tuesday)..... Changes in Class Schedules Begin (Drop/Add)
January 21 (Monday)..... Martin Luther King Day Observance (University Closed)
January 22 (Tuesday)..... Last Day for Adding Classes
January 22 (Tuesday)..... Late Registration Ends
January 22 (Tuesday)..... Last Day to Change Courses to Audit Status
January 23 (Wednesday) ..... Effective date for $10 per drop processing fee
January 23 (Wednesday)..... Effective date for receiving a grade of "W" for dropped course
January 29 (Tuesday)..... Purge Date for non-payment
February 18-21 (Monday-Thursday) ..... Mid-Term Evaluations Administered
February 25 (Monday) ..... Mid-Term Grades Due in Chairs' Offices
February 26 (Tuesday) ..... Last Day to Remove Incompletes
March 3 - 7 (Monday-Friday) ..... Spring Break
March 21-24 (Friday-Monday) ..... Easter Recess
March 31 (Mon)-April 17 (Thurs) ..... Pre-Registration (for Summer 08, Fall 08 & Spring 09)
April 1 (Tuesday) ..... Last Day to Drop Classes
April 3 (Thursday) ..... Honor's Day
April 12 (Saturday) ..... Graduate Comprehensive Examination
April 18 (Friday) ..... Last Day to Withdraw from the University
May 1 (Thursday 4:30pm) ..... Last Day of Classes
*****May 1 (Thursday after 4:30pm) ..... Monday night classes will meet an additional time (see note)
May 2 (Friday) ..... Reading Day
May 5-9 (Monday-Friday) ..... Final Examinations
May 9 (Friday) ..... Residence Halls closed @ 8pm
May 12 (Monday) ..... Final Exam Grades Due in Records Office
May 17 (Saturday 6pm)..... Honors Convocation
May 18 (Sunday) ..... Commencement

*** NOTE**: Regularly scheduled classes will meet for their last time on Thursday May 1st, before 4:30. **Monday night classes** will meet their regular scheduled time on Mon Apr 28th and an additional meeting on Thursday May 1st, after 4:30

Delaware State University

MISSION STATEMENT

Delaware State University is a public, comprehensive, 1890 land-grant institution. The mission of the University is to provide for the people of Delaware and others who are admitted, meaningful and relevant education that emphasized both the liberal and professional aspects of higher education. Within this context, the University provides educational opportunities to all qualified citizens of this state and other states at a cost consistent with the economic status of the students as a whole. While recognizing its historical heritage, the University serves a diverse student population with a broad range of programs in instruction, service, and research, so that its graduates will become competent, productive and contributing citizens.

VISION STATEMENT

Delaware State University will be a diverse, selective teaching, research and service university in the land-grant tradition, serving the people of the state of Delaware and the region. It will be a university of first choice for students from the state. It will:

- Excel in the education of undergraduates in the Liberal Arts and in the professional, technical and scientific development of the workforce.
- Attain a significant educational presence in all three Delaware counties, emphasizing also services for adult learners and providing for the re-certification needs of professionals.
- Provide an important engine for research and economic development in Delaware, especially in Kent and Sussex counties.
- Offer an array of master's and doctoral programs in areas of importance to the social and economic development of Delaware. Through those programs graduate leaders in areas such as Education, the Natural, Social and Health-related Sciences and professions, Agriculture, Social Work, Aviation and Business.
- Develop a community of scholars with talent and expertise that will garner regional and national recognition.
- Enhance competition in intercollegiate athletics at the NCAA division I level, with an increasing emphasis on the participation of female student-athletics.
- Develop the arts as an integral part of the University's programs and cultivate relationships in the arts across the state and region.
- Continue to build a culture of global awareness through internationally focused teaching and learning activities and by cultivating collaborative relationships with international programs, higher education institutions and global communities.

BASIC PHILOSOPHY AND VALUES

Delaware State University is committed to excellence. It seeks to be the best in all that it does. The University believes that this uncompromising pursuit of excellence is best achieved through teamwork.

The University is committed to providing students with a complete and high quality educational experience. The University, therefore, not only seeks to provide high quality academic programs, but also seeks to provide students with an excellent campus life experience and opportunities to participate in extra-curricula activities of quality.

Delaware State University is an 1890 land-grant institution committed to the philosophy on which it was founded. Thus, the mission can be simply stated as involving, teaching, research and outreach.

The University is committed to providing all undergraduate students with a strong liberal arts education. This essential part of the student's education serves as the foundation for studies in the major areas.

Delaware State University considers the changing needs of students as a major institutional priority. The University believes that (1) students must receive the education required for employment and upward mobility; (2) more minority students must be prepared for graduate and professional education, especially in areas in which they are traditionally under-represented; and (3) students should be exposed to new developments in currently existing curricula using diverse teaching strategies. Delaware State University places major emphasis on quality teaching. At the same time, the University recognizes that the faculty are obligated to engage in research to increase the storehouse of knowledge in various disciplines and fields and, as appropriate, to apply that knowledge to the solution of community, regional, national, and international problems. The University also believes that faculty involvement in research substantially enhances the quality of teaching and expects that students will be provided opportunities to engage in research. Through research, faculty members can continually expand their professional knowledge base and maintain the vitality of their teaching.

In addition to the primary emphasis on high quality teaching and the accompanying obligation to engage in research and outreach, the University is committed to serving the surrounding communities, the State of Delaware, and the nation.

HISTORY

The State College for Colored Students, now known as Delaware State University, was established May 15, 1891 by the Delaware General Assembly under the provisions of the Morrill Act of 1890 by which land-grant colleges for blacks came into existence in states maintaining separate educational facilities. Through the conservative and practical planning of the Board of Trustees appointed by Governor Robert A. Reynolds, the College was launched upon its mission of education and public service on February 2, 1892. Five courses of study leading to a baccalaureate degree were offered: Agricultural, Chemical, Classical, Engineering, and Scientific. A Preparatory Department was established in 1893 for students who were not qualified to pursue a major course of study upon entrance. A three-year normal course leading to a teacher's certificate was initiated in 1897. The College graduated its first class of degree candidates in May 1898. The normal course of study was extended to four years in 1911 and the Bachelor of Pedagogy degree was awarded to students on satisfactory completion of the curriculum. In 1912, the courses of study were changed to Academic, Agricultural, Mechanic Arts, and Domestic Science. The Bachelor of Pedagogy degree was awarded on completion of the academic curriculum. A certificate of graduation was granted on completion of the other courses of study.

In the 1916 to 1917 school year, the Preparatory Department was phased out, a Model Grade School was established, and a high school diploma was granted on completion of a four-year course of study. In 1923, a Junior College Division was added. Four –year curricula in the Arts and Sciences, Elementary Education, Home Economics, Agriculture, and Industrial Arts were established in 1932. The College graduated the first class of bachelor's degree candidates completing one of the courses of study in June 1934.

In 1944, the College received provisional accreditation by the Middle States Association of Colleges and Schools. In 1947, the name of the institution was changed to "Delaware State College" by legislative action. In November 1949, the Middle States Association revoked the accreditation of the institution. This was a severe blow to the prestige of the College. Strenuous efforts were exerted to maintain the existence of the College and to make it an accredited four-year, land-grant institution. At the end of the 1951-52 school year, the High School Division was discontinued. In April 1957, the College was fully accredited by the Middle States Association of Colleges and Schools. This accreditation was reaffirmed in 1962, 1972, 1982, 1987, 1992, 1997 and 2002. The University also maintains certification of its teacher education programs by the Delaware State Board of Education.

On July 1, 1993, Delaware State College turned another chapter in its history, when then Governor Thomas Carper signed a name change into law, renaming the College to Delaware State University.

The University has grown in stature as a center for teaching, research, and public service. The purpose and objectives of the University have broadened in keeping with changing times. While recognizing its historical heritage, the University provides higher education today for a diverse student population. Academic units are organized into the College of Humanities and Social Sciences, the College of Mathematics, Natural Sciences and Technology, the College of Agriculture and Related Sciences, the College of Education and Sport Sciences, the School of Management, and the College of Health and Public Policy. The University offers 66 undergraduate degrees, 16 graduate degrees, and two doctoral degrees. Degree options include the disciplines of mathematics, natural and social sciences,

education, airway science, visual and performing arts, management, accounting and finance, agriculture, natural resources, nursing and others. The University also offers master's degrees in biology, business administration, chemistry, education, physics, social work, plant science and natural resources, and doctorates in Applied Mathematics and Theoretical Physics, and Educational Leadership.

The undergraduate programs in airway science, chemistry, education, nursing and social work are approved by the Federal Aviation Administration, American Chemical Society, The National Council for Accreditation of Teacher Education, the National League for Nursing Accreditation Commission and the Commission for Collegiate Nursing Education and the Council on Social Work Education, respectively.

The underpinning of the growth and development of Delaware State University has been the leadership of eight presidents, including Wesley P. Webb (1891-1895); William C. Jason (1895-1923); Richard S. Grossley (1923-1942); Howard D. Gregg (1942-1949); Oscar J. Chapman (1949-1951); Jerome H. Holland (1953-1960); Luna I. Mishoe (1960-1987); and William B. DeLauder (1987-2003). Allen L. Sessoms become the ninth president of the University on July 1, 2003. Maurice E. Thomasson served as acting president from 1951-1953. As a result of their efforts, the University is well positioned to reach new levels of prestige and respect in the new millennium.

THE SETTING

The Campus and Facilities

Delaware State University is located in Dover, Delaware, in Kent County, 45 miles south of Wilmington on the Delmarva Peninsula. The campus is adjacent to U. S. Highway 13 which provides direct access to Norfolk, Virginia; Salisbury, Maryland; Wilmington, Delaware, Philadelphia, Pennsylvania; and Camden, New Jersey. Other connecting highways in the Dover area provide access to the Chesapeake Bay Bridge; Washington, D. C.; Baltimore, Maryland, and points west. The New York Metropolitan Area can be reached via the Delaware Memorial Bridge and the New Jersey Turnpike, which intersect Highway 13 just south of Wilmington. The city of Dover is located on bus routes to major cities.

Dover, the capital of Delaware, is a community of approximately 36,000 people situated in the heart of the Eastern Shore within easy reach of the resort areas of Rehoboth Beach, Delaware; Ocean City, Maryland; and Cape May, New Jersey. Founded in 1703, the city of Dover features many colonial buildings and several historical sites, including the home of John Dickinson, signer of the Declaration of Independence and the Constitution of the United States.

The physical facilities support various University programs. Major administrative and academic facilities are listed below.

Alumni Stadium serves as the site for many university activities, including football, track and field contests and commencement.

Arts Center/Gallery provides a venue for cultural enrichment with various exhibits during the academic year. The gallery, located on the north wing of the William C. Jason Library, traditionally features the works of critically acclaimed artists from the United States and abroad.

William W. W. Baker Center for Agriculture and Natural Resources houses classrooms, laboratories, workshops, and offices of the Department of Agriculture and Natural Resources and the Dean of the College of Agriculture and Related Sciences.

Conrad Hall is the University's primary dining facility but also serves as a site for various student support services.

Delaware Hall, renovated in 1987, houses classrooms and the departments of Psychology and Sociology.

Education and Humanities Center accommodates the departments of Visual and Performing Arts, English, Foreign Languages and Education. This facility also houses the Child Development Laboratory and the office of the Dean of the College of Humanities & Social Sciences. It is also the site for the University's wide-ranging cultural enrichment programs.

ETV Building houses the Department of History, Political Science, and Philosophy and the Department of Mathematics. The University's Mass Communications program is also housed in this facility.

Grossley Hall houses the offices of the Administrative and Academic Computer Centers, the Office of Strategic Planning and Institutional Research, and the Copy Center, which serves the printing needs of the University.

Herbarium houses the most extensive collection of plants that is indigenous to the Delmarva Peninsula.

William C. Jason Library and Comprehensive Learning Center is the academic hub of the University. It contains a collection of books, periodicals, microfilm, microfiche, and audio and videotapes. The Comprehensive Learning Center, which provides various academic support services to students, is also located in this building.

Martin Luther King, Jr. Student Center is the home for the Student Government Association, the Hornet (student newspaper), the Office of Career Planning and Placement and the University Bookstore. Extramural activities for students are also held in the facility.

Loockerman Hall, built circa 1720, is often referred to as "the birthplace of Delaware State University." Though it has undergone a massive renovation, its architectural integrity has been preserved. It is listed on the National Register of Historic Places.

MBNA America Building is equipped with state-of-the-art technology and houses the School of Management as well as the University's program in Hospitality Management. The Delaware Center for Enterprise Development is also housed in this facility.

Memorial Hall houses the Department of Sport Sciences. Among its many features are an indoor swimming pool, two gymnasia, a dance studio, racquetball and handball courts, faculty offices, classrooms, and laboratories.

Luna I. Mishoe Science Center houses offices, classrooms, and facilities for natural sciences and the Office of the Dean of the College of Mathematics, Natural Resources, and Technology.

John R. Price Building houses the College of Health and Public Policy. The Department of Social Work is also located in this facility.

Maurice Thomasson Center, once served as the University Library, houses the Division of Adult and Continuing Education, the Office of Alumni Affairs, and the Office Testing and Assessment. The Office of the Assistant Academic Vice President for Instructional Support is also housed in this facility.

Ulysses S. Washington Cooperative Extension Center houses the University's outreach programs that include youth development, family life education, community resource development and agriculture education.

The Graduate Degree Programs of Delaware State University

The goals of the graduate programs are:
(1) to provide advanced study in certain academic disciplines, and
(2) to promote inquiry that contributes toward the solution of social, economic, and educational problems and issues.

Degree Programs

MASTER OF ARTS
Biological Sciences
Education with concentrations in:
- Adult Literacy and Basic Education
- Curriculum and Instruction
- Science Education
- Special Education

French
Spanish
Teaching

MASTER OF BUSINESS ADMINISTRATION
MASTER OF EDUCATIONAL LEADERSHIP
MASTER OF NURSING

MASTER OF SCIENCE
Applied Chemistry
Biological Sciences
Biological Education
Chemistry
Mathematics, Applied
Mathematics Education
Molecular and Cellular Neuroscience
Natural Resources
Physics
Physics Teaching
Plant Science

MASTER OF SOCIAL WORK
MASTER OF SPORT ADMINISTRATION

DOCTOR OF EDUCATION

DOCTOR OF PHILOSOPHY
Applied Mathematics
Mathematical Physics

Policies of the Graduate Programs

APPLICATION, ADMISSION POLICIES, DEADLINES AND PROCEDURES

Eligibility

For admission to graduate study, applicants must show evidence that they have earned the baccalaureate degree at a regionally accredited college or university and possess the ability to carry out graduate work of high quality. An official transcript of all previous undergraduate and graduate work must be submitted. Applicants for degree status should have a minimum cumulative undergraduate grade point average of 2.50 (on a 4-point scale) and a scholastic average of 3.00 in their undergraduate major. They should have successfully completed specific courses at the undergraduate level in the field in which they plan to pursue a graduate degree and a minimum number of courses in a designated area approved by the specific department. For certain graduate programs, official scores on the Graduate Record Examination (GRE) and the Graduate Management Admission Test (GMAT), or the Miller Analogies Test (MAT) are required. The test scores must not be more than five years old. Applicants who have not taken the required test(s) can be admitted conditionally, but must satisfy this requirement during the first year of graduate study in order to continue.

Standardized Examinations

The schedules for standardized examinations such as the Graduate Record Examination (GRE), National Teacher's Examination (NTE), Graduate Management Admission Test (GMAT), and the Miller Analogies Test (MAT) can be obtained from the Office of Graduate Studies.

International Students

Non-English speaking international students applying for admission to graduate study must demonstrate a satisfactory level of proficiency in the English language. This proficiency requirement may be satisfied by meeting the criteria in any one of the following categories:

1. Foreign applicants who hold the baccalaureate degree from a regionally accredited college or university within the United States are presumed to be proficient in the English language.
2. Foreign applicants who hold the baccalaureate degree or its equivalent from a foreign institution in which English is the language of instruction are presumed to be proficient in English.

3. Foreign applicants who do not meet the requirements outlined in 1 and 2 above must take the Test of English as a Foreign Language (TOEFL). Applicants should attain a score of at least 550 on the TOEFL.
4. All applicants must show evidence of medical insurance prior to admission.

After acceptance, international students must place an Affidavit of Support Form on file with the Director of the Office of International Studies.

Application Procedures

Application for admission to all graduate studies programs should be made to: Graduate Program, Office of Admissions, Delaware State University, 1200 North DuPont Highway, Dover, Delaware 19901-2277.

Application procedures, supporting credentials, and requirements vary among the graduate programs. Prospective graduate students should contact their respective departments for additional requirements. A non-refundable application fee must accompany all applications submitted.

Degree-seeking applicants must submit a completed application package that includes the application, the application fee, three letters of recommendation by persons who are acquainted with their potential for graduate study in their discipline, one (1) official transcript from each college or university attended, and a completed essay (if required). Prospective students must arrange for the official transcript and standardized examination scores to be forwarded to the above address.

Application Deadlines

Applications will be accepted at any time. However, specific graduate programs may have specific admittance deadlines. The respective Graduate Program Director will inform applicants of the action taken on their application. Only graduate students who have applied for admission will be permitted to register for graduate courses, except in the case of undergraduate students enrolling in graduate courses.

Retention of Applications

The application and credentials of applicants, including transcripts of their academic records from other institutions, are placed in a student's personnel file. They are not returned to the student.

In cases where application materials are incomplete with respect to required credentials (including test scores), an applicant has not been accepted for admission, or an applicant does not register for the term to which she/he has been admitted, the application and its accompanying credentials will be retained for two years by the University.

Classification

Applicants for graduate degrees are considered for admission and, if admitted, classified in one of three categories. Successful applicants are notified of their classification at the time of admission.

Unconditional Admission requires:

a. A bachelor's degree from a fully accredited four year college or university;
b. A minimum of 2.50 cumulative quality point average (G.P.A.) on a 4.00 point system of grading (or the equivalent in another grading system);
c. An acceptable score, as determined by the respective school or college, on the General and Subject Tests of the Graduate Record Examination (GRE), the Graduate Management Admission Test (GMAT), the Miller Analogies Test (MAT), or other specified qualifying examination;
d. Completion of all undergraduate prerequisites for the selected graduate program; and
e. Acceptance in the program selected for graduate study.

Conditional Admission includes:

a. Those who have a limited number of deficiencies in undergraduate course prerequisites but who have attained baccalaureate degrees. These deficiencies must be removed before enrollment in graduate courses of the same series;
b. Graduate of an accredited college or university who has a cumulative G.P.A. of 2.5 or higher and has not taken the GRE, the GMAT, the MAT, or other specified qualifying examination before admission. Applicants admitted to degree programs must take the GRE, GMAT, the MAT, or other specified qualifying examination prior to admission to candidacy;
c. Students who present a cumulative grade point average of less than 2.50 must at the time of application submit GRE, GMAT, MAT, or other specified qualifying examination scores at an acceptable level as determined by respective graduate program requirements which qualify them for conditional admission. To be considered for admission, those students are required to take nine (9) semester hours of course work specified by the Chairperson and/or Program Director. If a 3.00 quality point average is attained, the students are permitted to petition for a change of classification;

Non-degree admission is granted to those who wish to enroll in courses but who do not intend to qualify for a degree. The non-degree admission category includes those enrolling in graduate study for any of the following purposes:

a. To complete certification requirements,
b. To earn hours beyond the Masters degree;
c. To enrich their professional development; or
d. To transfer earned credits to a degree program at another institution.

If a student classified as non-degree is subsequently accepted into a Delaware State University graduate degree program, the student may petition to carry forward not more than nine (9) semester hours of credit earned as a non-degree seeking student. Approval/authority rests with the Chairperson and/or Program Director of the degree program.

Submitting an Appeal Regarding Admission

Appeals concerning denial of admission to a graduate program should be submitted as follows:

1. Graduate students should file, in writing, the complaint or appeal to the appropriate Chairperson, Program Director, or Graduate Director for resolution. The Chairperson, Program Director, or Graduate Director shall reply to the student within 10 working days;

2. If the disposition is not favorable, graduate students may appeal to the respective Dean.

Change of Status

Conditionally admitted students and non-degree students may apply for a change of status upon satisfying all admission requirements. Application for change of status must be submitted to the respective Graduate Program Director in writing. The respective Chairperson, in conjunction with the Graduate Program Director will determine acceptability.

Transfer of Credit

Applicants admitted to graduate programs may transfer a maximum of nine (9) graduate credits from another accredited institution toward the master's degree, provided they earned a grade of "B" or higher in the courses for which transfer credit is sought. Supporting documentation must be provided by the student with the request for transfer of credit. The respective Chairperson, in conjunction with the Graduate Program Director, must give written approval at the time of admission for the transfer credits.

The transfer credit must be directly related to the graduate student's program of study, and must have been completed not more than five (5) years prior to the graduate student's date of application. Some graduate programs have special transfer of credit regulations. Students must check with their respective departmental chair.

Readmission

An application for readmission, together with a $30.00 non-refundable application fee, must be submitted to the Office of Admissions by students who wish to return after the elapse of three (3) consecutive terms between the last date of attendance and the next registration. Applicants for re-admission must update their credentials by providing information relevant to any courses taken at other institutions during their absence from the University.

ENROLLMENT POLICIES AND PROCEDURES

Health Records

The University requires that all graduate students file a personal health and immunization record with the Student Health Center at the time of first enrollment. Appropriate forms are sent directly to newly enrolled graduate students. Forms are also available at the Student Health Center.

Registration

Graduate students register for courses at the time specified on the Academic Calendar. After the schedule is approved by the advisor, a student receives a pin number and is then allowed to register. Course lists are published each semester by the Registrar's Office and are available for viewing at the student services web site at **http://www.desu.edu.**

All charges, such as tuition and applicable fees for the ensuing semester, must be paid at the time of registration, or arrangements made with the Office of Student Accounts, before registration is official.

Graduate students not officially registered for a course will not be permitted to attend the course and will not receive credit at the end of the semester.

Delaware State University regularly mails schedule/bills to students, but cannot assume responsibility for their receipt. If students do not receive a bill on or before the beginning of each semester, it is the students' responsibility to contact the Office of Student Accounts or to go on-line to obtain information relative to their bill.

Graduate Course Levels

Courses which may apply towards a graduate program are numbered 500 and above.

Course Loads

A full-time course load is a minimum of nine (9) semester hours. Students enrolled in less than nine (9) semester hours are considered part-time students.

Auditing Classes

Courses may be taken for audit with the permission of the instructor and the respective Chairperson, in conjunction with the Graduate Program Director. No credits are earned for auditing courses. A grade of "AU" is entered on the graduate student's record for the course. Graduate students are charged tuition for the credit hours.

Add/Drop

Courses may be added or dropped online or by using a drop/add slip during the periods prescribed in the Academic Calendar. Courses dropped during the official drop/add period will not appear on the student's transcript.

From the end of the late registration period through the last day to drop courses, graduate students who wish to withdraw from a course must complete the drop/add form, consult with their advisor, and submit the form to the instructor for signature. The graduate student is then responsible for delivering the form to the Registrar's Office no later than 4:00 p.m. of the Last Day to Drop Courses (as prescribed in the Academic Calendar). The graduate student will be assigned a grade of "W" for the course by the Registrar's Office.

Withdrawal from Courses

After the last day to drop courses, withdrawal requires graduate students to petition their Dean, and then the Provost and Vice President for Academic Affairs, explaining that they are interested in withdrawing from the course due to extenuating circumstances beyond their control. Such a petition must contain conclusive evidence, properly documented, of the situation that prevents completion of the course. Acceptable reasons do not include dissatisfaction with performance in a course or with an expected grade. If the petition is approved, the graduate student will receive a grade of "WA" (Administrative Withdrawal) in the course.

Withdrawal from Graduate Program

A graduate student who wishes to withdraw from the graduate program must obtain a Withdrawal Form for Graduate Students from the respective Graduate Program Director's Office. Withdrawal from a graduate program is complete when all necessary signatures have been obtained. All withdrawals must be completed on or before the last day to withdraw from the University as indicated on the Academic Calendar for each term. All courses enrolled will be assigned a grade of "W".

Grading Policies

Graduate students are issued grades at the end of each term. For each course in which the graduate student was enrolled, either a letter grade or a symbol will be entered on the graduate student's academic record. Only courses completed with a grade of "A," "B," or "C" can be used toward fulfilling the graduation requirements for a Master's degree.

The following letter designations are used to indicate the quality of achievement in a graduate course:

Grade	Interpretation	Quality Points	Symbols	
A	Excellent	4.0	I*	Incomplete
B	Good	3.0	Q	Thesis/Dissertation Incomplete
C	Fair	2.0	W	Withdrawn
D	Poor	1.0	AU	Audit
F	Failure	0.0	S/U	Field Experience
			WA	Administrative Withdrawal

*An "I" will automatically convert to an "F" if not removed within the first six (6) weeks of the following term. An Incomplete Documentation Form must be submitted by the course instructor to the respective program director.

Academic Probation

Graduate students who do not achieve a cumulative grade point average of 3.0 or greater at the end of a semester are placed on academic probation for the following term.

Dismissal

Any of the following situations will result in the academic dismissal of a graduate student working toward a graduate degree:

- Receiving a grade of "D" or "F" in a graduate course;
- Failure to achieve a cumulative grade point average of 3.0 or greater while on academic probation;
- Being placed on academic probation more than one term; or
- Receiving three (3) or more grades of "C" or lower.

Enrollment of Undergraduate Students in Graduate Courses

Undergraduate seniors in good academic standing at Delaware State University (a student who has successfully completed 90 semester hour credits) with an overall grade point average of 2.75 or higher, with a 3.00 in the major, will be permitted to register for graduate courses in the senior year with the approval of the Department Chairperson, the appropriate Graduate Director, and the corresponding Dean.

The undergraduate students may enroll in only one graduate course at each registration period. Over a 12-month period students may enroll in a maximum of six (6) hours in a graduate program requiring 36 hours or less for completion, or a maximum of nine (9) hours in a graduate program requiring more than 36 hours for completion.

Credits for these courses can count toward the requirements for the baccalaureate degree with the respective department chairperson's approval, or toward a graduate degree, but not both. No student may receive graduate credit for any course taken when the student has not formally applied for admission to the graduate school.

After conferral of the baccalaureate degree and change of status to graduate student, graduate credits may be included in the graduate record of the student if the following criteria are met:

(1) the grade is A or B;
(2) the course(s) is/are appropriate for the program, and the time-lapse has not exceeded the allotted time allowed by the program.

Veterans in Continuing Education Programs

All eligible persons desiring to receive educational assistance through the Veterans Administration are required to apply for admission to the University as a degree

candidate.

Change of Major or Personal Data

Changes in major and personal data (address or telephone number) must be submitted to the Office of Records and Registration on the appropriate forms. Personal data may also be updated at **http://www.desu.edu.**

Automobile Registration and Parking Regulations

Graduate students must register their vehicles promptly with the University Police Department in order to park on the Dover campus. Official car registration, proof of insurance, and the appropriate parking fee are required at the time of registration. Graduate students will receive a parking decal that must be displayed on their vehicle as directed at all times to avoid being towed or ticketed.

ACADEMIC POLICIES AND REGULATIONS

Academic Advisement

Students accepted into a graduate program are assigned a faculty advisor by their Chairperson, Program Director, or Student Services Director. Graduate students should consult with their advisor in selection of courses, degree requirements, and related matters.

Admission to Candidacy

Application for admission to candidacy is to be made after the graduate student is admitted to a specific program, completes all prerequisites for the designated graduate program, and completes at least nine (9) hours of graduate course work with at least a "B" average. No graduate student will be allowed to register for a course after completion of fifteen (15) fifteen hours at Delaware State University unless he/she has been admitted to candidacy.

Applications for admission to candidacy must be approved by the respective departmental chair, and the appropriate Program Director/Coordinator. Applications for Admission to Candidacy must be submitted for approval to the Office of the respective Dean no later than two semesters prior to graduation. It is the primary responsibility of graduate students to become familiar with the policies and procedures governing admission to candidacy.

Degree Requirements and Application for Graduation

In order to earn a master's or a doctorate degree, graduate students must satisfy all of the institutional requirements as well as the specified requirements of the program in which they are enrolled. Graduate students who expect to graduate must file an Application for Graduation with the Office of Records and Registration by January 15 of the year in which the degree is to be conferred.

The graduate student must have a cumulative grade point average of 3.0 or higher (on a 4.0 scale) for all work taken on the graduate level.

Participation in Graduation Exercises

Graduate students may participate in the annual graduation exercises in May only if the following conditions are met:

1) File the application for graduation by January 15;
2) Enroll in all courses required to complete degree requirements;
3) Complete those courses of current enrollment and satisfy all degree program requirements; and
4) Satisfy all financial obligations to the university.

Submitting an Appeal

Appeals concerning dismissal from a graduate program or reevaluation of a final course grade should be submitted as follows:

1. Graduate students should file, in writing, the complaint or appeal to the appropriate Chairperson or Graduate Program Director for resolution. The Chairperson, Program Director, or Graduate Director shall reply to the student within 10 working days;

2. If the disposition is not favorable, the graduate student may appeal to the respective Dean.

Thesis/Dissertation

A graduate student who elects or is required to complete a thesis/dissertation should have a Thesis or Dissertation Committee approved by the Academic Advisor, Chairperson, and/or Graduate Program Director. The Committee shall consist of a minimum of four (4) members at the rank of Assistant Professor or above, one of whom shall be from outside the department.

A graduate student electing the thesis/dissertation option should select a topic in consultation with the Advisor and the appropriate Chairperson or Graduate Program Director. The style manual to be used in writing the thesis will be designated by the respective department. A graduate student must file for and receive approval from the Thesis Committee during the semester prior to beginning work on the thesis, dissertation or other capstone. The application for approval of the Thesis Committee is available in the Office of the respective Chairperson or Director of Graduate Studies. A graduate student who requires more than one semester to complete the thesis/dissertation will receive the symbol Q (Thesis/dissertation incomplete) until the thesis/dissertation is satisfactorily completed. A graduate student who has previously registered for thesis/dissertation may choose not to register for, or work on the thesis/dissertation, but must pay a Sustaining Fee of $20.00 for each semester until the degree is completed. Semesters not registered will count toward the time limit allotted to complete the degree. A graduate student electing the thesis option must satisfactorily defend the thesis in an oral examination by the Thesis Committee. The oral examination should be scheduled at least three (3) weeks in advance. The thesis/dissertation defense must be taken during the last semester. All members of the committee shall be given a copy of the final draft of the thesis/dissertation at least one week (7 days) prior to the examination.

Graduate students who elected the thesis/dissertation option must have the thesis/dissertation completed and approved four (4) weeks prior to the end of the anticipated term of graduation. For further information relative to the thesis/dissertation, a copy of the Thesis/Dissertation Handbook may be requested from the respective Office of Graduate Studies.

The thesis/dissertation and all related procedures must be completed by April 15 for those planning to graduate at the conclusion of the Spring Semester. The finished thesis/dissertation, which includes changes resulting from the oral examination along with a completed approval form, must comply with criteria described in the thesis/dissertation handbook. Once completed, the student will distribute the thesis/dissertation as follows:

1) one bound original to the Chairperson and/or Program Director
2) one bound copy to the University Library
3) one bound copy to the respective Office of the Dean
4) one copy to each committee member (binding not required)
5) one copy to the student (binding not required)

Change of Program

If an admitted student wishes to change to a different program offered at DSU, a request must be made by the student, in writing, to the respective Director of Graduate Studies. Upon receipt of the request, the student's file will be forwarded to the Chairperson of the desired program for review. If both the Chairperson of the desired program and the respective Director of Graduate Studies approve, the formal transfer of program will be made in the respective Graduate Studies Offices with notification to the former program Chairperson, new program Chairperson, the student, and the Registrar. The time limit for completion of the degree runs from the date of acceptance into the new program, with credit brought in subject to the appropriate transfer limitation.

Time Limitation

A maximum of seven years is permitted to complete Masters degree requirements. The Social Work Program allows four years. A maximum of ten years is permitted to complete Doctoral degree requirements.

Summer and Winter Sessions

Some graduate programs offer courses during the Summer sessions for graduate students who wish to accelerate their degree programs.

Directory Information

The Family Educational Rights and Privacy Act permits the release of directory-type information to third parties outside the institution without written consent of the student provided the student has been given the opportunity to withhold such disclosure.

The University releases, upon inquiry to third parties outside the University, directory information without written consent of the student. Directory information at Delaware State University includes:

Name
Address (including e-mail address)
Telephone number
College/school
Classification
Major field of study
Dates of attendance
Enrollment status
Honors
Degree(s) conferred (including dates)

Graduate students who do not wish to have the above information released should fill out an information exclusion card at the Records Office.

Notification of FERPA

The Family Educational Rights and Privacy Act (FERPA) provides graduate students with certain rights with respect to their education records: They are:

1. The right to inspect and review the graduate student's education records within 45 days of the day the University receives a request for access. Graduate students should submit to the Registrar, respective Dean, head of the academic department, or other appropriate official, written requests that identify the record(s) they wish to inspect. The University official will make arrangements for access and notify the student of the time and place where the records may be inspected. If the records are not maintained by the University official to whom the request was submitted, that official shall advise the graduate student of the correct official to whom the request should be addressed.

2. The right to request the amendment of the graduate student's education records that the graduate student believes to be inaccurate or misleading. Graduate students may ask the University to amend a record that they believe is inaccurate or misleading. They should write the University official responsible for the record, clearly identify the part of the record they want changed, and specify why it is inaccurate or misleading. If the University decides not to amend the record as requested by the graduate student, the University will notify the graduate student of the decision and advise the graduate student of his or her right to a hearing. Procedures will be provided to the graduate student when notified of the right to a hearing.

3. The right to consent to disclosures of personally identifiable information contained in the graduate student's education records, except to the extent that FERPA authorizes disclosure without consent. One exception which permits disclosure without consent is disclosure to school officials with legitimate educational interests. A school official is a person employed by the University in an administrative, or support staff position (including law enforcement unit personnel and health staff); a person or company with whom the University has contracted (such as an attorney, auditor, or collection agent); a person serving on the Board of Trustees; or a student serving on an official committee, or assisting another school official performing his or her tasks. A school official has a legitimate educational interest if the official needs to review an education record in order to fulfill his or her professional responsibility. Upon request, the University discloses education records without consent to officials of another school in which a student seeks or intends to enroll.

4. The right to file a complaint with the U.S. Department of Education concerning alleged failures by Delaware State University to comply with the requirements of FERPA. The name and address of the Office that administers FERPA is:

Family Policy Compliance Office
U. S. Department of Education
400 Maryland Avenue, SW
Washington, D.C. 20202-4605

Educational Expenses

The tuition and fees listed here are for 2007-2008 only and are subject to change in future years by the action of the Board of Trustees.

GRADUATE STUDENT FEES

Tuition

Rates for the 2007-2008 academic year are as follows: For Delaware residents, $344.00 per credit hour; for nonresidents of Delaware, $762 per credit hour; for all Doctorial candidates , $400 per credit hour.

Other Fees:

Application Fee	$40.00
Technology Fee* (per term)	$55.00
Residential Fee** (per term)	$375.00
Registration Fee (per term)	$ 60.00
Late Registration Fee (per term)	$ 50.00
Sustaining Fee*** (per term)	$ 25.00
Graduation Fee	$ 175.00
Wellness Fee	$200

* Entitles full-time students to the same benefits as undergraduate students this has nothing to do with insurance; entitles part-time students to receive a card for use of the library.

** Includes the activity fee and entitles graduate students residing on campus to all benefits as undergraduate students, including health services and insurance. Fee does not include regular room charges.

*** Charged to graduate students who have completed all course work for the Master's degree except the thesis. All students in this category must register in sustaining status.

Housing and Living Expenses

Matriculating graduates students are offered an exclusive housing opportunity with the University Courtyard Apartments located within a mile of the main campus. Students interested in residing there must contact the manager of the complex directly at:

University Courtyard Apartments
Manager
430 College Road
Dover, Delaware 19904

Graduate students may participate in a variety of meal plans through the University provided by Thompson Hospitality. Students may use their plans at a number of locations around campus. The Office of Student Accounts has information about the various meal plans. You will have a 12-month lease. If you are paying out of pocket, please pay the courtyard directly. If you receive financial aid, you can

complete a Release of Funds Form on the Student Services web page authorizing the Office of Student Accounts to send any access credit covering your total rent for your lease period directly to the University Courtyard.

Refund Policy/Bill Adjustment

Graduate students who wish to withdraw officially from a graduate course must complete a Withdrawal Form available in the office of the chairperson or director for each graduate program. Withdrawals are not permitted after the date indicated on the Academic Calendar for each term. An official withdrawal will result in a grade of "W". Failure to withdraw officially will result in a grade of "F".

Except for the Application Fee and the Advance Deposit, students withdrawing from a course or the University will be credited for the tuition and fees, if any, in accordance with the following schedule:

Period from the 1st Day of Instruction	**Refundable Tuition**
Fall and Spring Semester:	
Prior to 1st day	100%
Two weeks or less	80%
After two weeks	No Refund
Summer Sessions:	
Prior to 1st day	100%
2nd day or less	80%
3rd day and beyond	No Refund

Note: After the first day of classes, all fees are non-refundable.

Withdrawal refunds for students receiving Title IV Loans will be prorated according to student Financial Aid Regulations. Funds will be returned to the grantor(s) proportionately, in accordance with these regulations.

Withdrawals

Students who voluntarily withdraw from the University will receive a refund in accordance with the refund policy outlined above. Date of withdrawal normally will be the date the withdrawal notice is received by the Registrar.

Drop Fee

Students may drop courses during the first eight (8) weeks of the current semester. Only in exceptional cases and with the permission of the Provost and Vice President for Academic Affairs will a student be permitted to drop a course later than the eight-week drop period. A Drop Fee of $10.00 per course will be assessed to effect a change in registration. The change in registration is effective on the date the form is submitted to the Records Office.

Payment of Fees

All tuition and fees must be paid by July 10 for the fall semester and by December 10 for the spring term. Payments may be made by VISA, MasterCard, Discover

Card, certified/cashier's check or money order payable to Delaware State University. Payments in cash must be made in person to the University Cashier. DO NOT SEND CASH IN THE MAIL. Certified/cashier's checks or money orders should be made payable and mailed to:

Delaware State University
Attn: Cashier
1200 North DuPont Highway
Dover, DE 19901

All payments sent by mail should include the student's name and social security number. Checks drawn on out of state banks must be a cashier or certified check.

Correspondence or credit card payments should be mailed to:

Delaware State University
Attn: Cashier
1200 N. DuPont Highway
Dover, Delaware 19901-2277

All authorized third-party billings such as military tuition assistance, vocational rehabilitation, veteran's rehabilitation assistance, tuition exchange and other programs must be submitted and approved by the Office of Student Accounts.

Students are officially registered for courses only when they have compiled with all of the procedures applying to registration, including full payment of tuition and fees, or satisfactory financial arrangements through the Office of Student Accounts and the validation of the student identification card.

Student Health Insurance

All full-time registered students taking twelve (12) or more credit hours are automatically enrolled in a health insurance plan that covers sickness and injury.

Students must actively attend classes for at least the first thirty-one (31) days of the semester for coverage to be in effect.

Contact the Student Health Service at (302)857-6393 for additional information on available services.

Deferred Payment Plan (AMS Tuition Pay Plan)

Delaware State University has partnered with Academic Management Services (AMS), providers of the Tuition Pay Monthly Plan. AMS works with Delaware State University to set up your monthly Plan Account, collect your tuition payments and forward them to the university. In addition, AMS offers personalized counseling to help you budget your tuition payments, as well as, tools to track your payment history and the next due date.

To use this service, simply call AMS at (800) 635-0120 to enroll or visit www.TuitionPay.com/dsu for more information. Tuition Pay Consultants will help you pick the right plan and budget for your situation. A low annual enrollment fee is required which includes Tuition Protection Coverage (life insurance). The Tuition Pay Monthly plan allows you to spread your expenses over the semester or year in

your choice of 4 or 5, 9, 10, or 12 interest-free monthly payments.

Delaware State University is pleased to offer this service from AMS and we encourage you to take advantage of the Tuition Pay Plan. We believe it is a responsible tool for managing debt and making education more affordable.

Delinquent Accounts

Delaware State University will not issue a degree or transcript to any student who has a delinquent account. A student with a delinquent account will not be readmitted to the University until all balances are paid.

Students who have not paid all financial obligations by November for the fall semester, and April for the spring semester will not be permitted to pre-register for classes for the next term.

Past due accounts will be referred to the State Division of Revenue, the University's collection agencies or attorneys and will be reported to the credit bureau.

Each account will be charged an additional amount that approximates the administrative costs incurred in collecting the past due amount, any attorney fees and reasonable collection costs.

Billings

The University will send monthly statements to students who have an outstanding balance or have activity on their accounts. The statement will show the balance from the prior month, detail activity of the current month, and the ending balance. These statements are mailed on the 25th of the month to the student at the mailing address on file with the Records Office. If you do receive a bill, please view your account summary on the student services website.

Although the University regularly mails bills to students, it cannot assume responsibility for their receipt. Students are reminded that it is their responsibility to notify the Records Office of any change and/or correction to an address.

If a bill is not received on or before the beginning of each semester, it is the student's responsibility to obtain a copy of the bill from the Office of Student Accounts, Monday through Friday 9:00 a.m. - 4:00 p.m.

The first bill mailed prior to the beginning of the semester may not include deductions of grants, scholarships or loans.

Payments and financial aid awards applied to accounts will be listed in the credit column. Questions pertaining to bills should be directed to the Office of Student Accounts, (302) 857-6240/6241.

Questions pertaining to financial aid credits or adjustments on monthly statements should be directed to the Office of Financial Aid at (302) 857-6250.

Cashier Services

The Cashier's Office is located on the first floor of the administration building. The hours of operation are 9:00 a.m. to 4:00 p.m., Monday thru Friday.

Students may make payments on their accounts at the Cashiers's Office. The following services are available to students currently enrolled at Delaware State University:

1. Payment can be made on a student account by check, money order,

cash, credit card (Visa, Mastercard & Discover), and debit card (including MAC).

2. All student paychecks may be picked up from the cashier's office between the hours of 10:00 a.m. and 4:00 p.m. on payday.
3. Credit/debit card payments can be made via telephone:
   (302)857-6220 from 9:00a.m. to 4:00p.m.
   Or
   (302)857-6200 from 4:00p.m. to 4:30p.m.
4. All payments, except cash, can be made online at www.desu.edu. Please allow 24 – 72 hours for this information to be applied to the student account.

The University recommends that students use one of the local banks for their banking needs. Automatic teller machines (ATMs) are located on the campus in the Martin Luther King Student Center and the William C. Jason Library. Please note: Any check made payable to Delaware State University and the student must be applied to the student's account. Any amount that exceeds what the student owes may be refunded to the student within 14 business days and mailed that following Friday to the mailing address on file with the Records Office.

Refunds of Credit Balances

Refunds for overpayments or credit balances as a result of dropping a course will be processed thirty (30) days after the end of late registration, or within fourteen (14) business days during the semester. Refunds cannot be issued from credit card payments. Credit balances will be transferred back to the credit card. All charges and payments must be stated on the account before a refund will be processed. After the refund is processed, students are liable for any additional charges that may result from reductions in financial aid awards and/or other adjustments to tuition and fees.

Students who drop courses may do so online at **http://dsuweb.dsc.edu** or obtain a Drop Slip and return the completed form to the Office of Records. The effective date of the change in registration is the date the change was made online or that the drop slip(s) is filed in the Records Office.

Students due a refund will be eligible for a refund in accordance to the following policy:

Period from the 1st Day of Instruction	**Refundable Tuition**
Fall and Spring Semester:	
Prior to 1st day	100%
Two weeks or less	80%
After two weeks	No Refund
And/or	
Summer Sessions:	

Prior to 1st day..... 100%
2nd day or less 80%
3rd day and beyond ..... No Refund

Note: After the first day of classes, all fees are non-refundable.

Financial Aid Regulations

Delaware State University applicants for financial aid must use the Free Application for Federal Student Aid (FAFSA). The FAFSA is used to determine the need for financial assistance and as a mechanism for non-need based loan certification.

Financial Aid at the University is made available for graduate students through tuition fee waivers, loans and part-time employment opportunities.

Students applying for Financial Aid must maintain a 3.0 grade point average at all times.

Federal Family Educational Loan Program (FFELP)

Considered one form of self-help aid. Under the FFELP Loan Program students are able to borrow directly from their choice of lenders. Students may apply by completing the Free Application for Federal Student Aid (FAFSA) and ensuring that the results of the application (Student Aid Report) are submitted to the Financial Aid Office. FELP loans are either subsidized or unsubsidized. A subsidized loan is awarded on the basis of financial need. The federal government pays the interest on the loan until the borrower begins repayment and/or during authorized periods of deferment.

A student can borrow an unsubsidized loan regardless of financial need. Interest will be charged from the time the loan is disbursed until it is paid in full. If the interest is allowed to accumulate, the interest will capitalize - that is, the interest will be added to the principal amount of the loan which will increase the amount of the borrower's outstanding balance.

To apply for a FELP loan, students should submit a Free Application for Federal Student Aid at www.FAFSA.ed.gov by April 15th for the Fall Semester and October 1st for the Spring Semester.

Applications filed later than the deadline indicated above will receive consideration for funds available.

Financial Aid applicants should note that FAFSA should be completed and mailed according to the instructions in January prior to the academic year the student expects to receive financial aid. Financial aid award announcements will begin in June for the Fall semester and continue as students apply for Spring semester.

Your financial aid application must be submitted to Delaware State University electronically. To ensure that we receive your application from the Department of Education, use our School Code 001428 in the section requesting the school's address and Title IV School Code.

Federal guidelines stipulate that the University must determine that the student has maintained eligibility for the loan before each disbursement of loan proceeds. Reaffirmation of loan eligibility includes establishing that the student has maintained satisfactory academic progress; has at least half-time enrollment status and progressed to next classification level for increased annual borrowing amounts.

Students who do not progress to the next classification level must borrow at the prior year level.

Financial Aid will be returned to the grantor(s) proportionately, in accordance with federal regulations.

Federal College Work Study Program (FWS)

A work study job can be a source of valuable work experience as well as financial aid. Under the work study program, the employer pays a small part of the student's wages, and the government pays the rest. Work study positions are on campus. Students can work part-time while they are in school, and they can work full time during the summer and other vacation periods. The basic pay rate is usually the current minimum wage. This may vary, depending on the skill and experience needed for the job.

UNIVERSITY RESIDENCY:
IN-STATE STATUS REGULATIONS

The State of Delaware Legislature has established a lower rate of tuition for students who are Delaware residents. These regulations define eligibility requirements for in-state status classification. All students at Delaware State University shall be assigned in-state or out-of-state status classification consistent with these regulations. A Delaware domicile must be established for in-state status.

In-State Status Classification Rules

1. Domicile shall mean a person's true, fixed, and permanent home. It is the place at which one intends to remain indefinitely and to which one intends to return when absent.
2. As one element of domicile, a student must reside in Vermont continuously for one year prior to the semester for which in-state status is sought.

3. A residence established for the purpose of attending DSU shall not by itself constitute domicile.
4. An applicant becoming a student within one year of first moving to the State shall have created a rebuttable presumption that residency in Delaware is for the purpose of attending DSU and/or acquiring in-state status for tuition purposes.
5. A domicile or residency classification assigned by a public or private authority neither qualifies nor disqualifies a student for DSU in-state status. Such classification may be taken into consideration, however, in determining the student's status at DSU.
6. It shall be presumed that a student who has not reached the age of twenty-four (24) holds the domicile of his/her parents or legal guardian(s).
7. Receipt of financial support by a student from his/her family shall create a rebuttable presumption that the student domicile is with his/her family, regardless of whether the student has reached the age of 24.
8. A student who has not reached the age of 24 whose parents are legally separated or divorced shall be rebuttably presumed to hold the domicile of the parent with legal custody.
9. A student of parents legally separated or divorced may be granted in-state status if a non-custodial or joint custodial parent is domiciled in Delaware and has contributed more than 50 percent of financial support for at least one year prior to the semester for which in-state

status is sought.
10. The burden of proof as to eligibility for in-state status rests with the student. Eligibility must be established by clear and convincing evidence.

In-State Status Classification Documentation

1. The student must submit with the applicant form all relevant information
2. The classification decision shall be based upon information furnished by the student, information requested of the student, and other relevant information available consistent with University policies and procedures and legal guidelines.
3. Testimony, written documents, affidavits, verifications, and/or other evidence may be requested.
4. The student's failure to produce information requested may adversely affect the decision for in-state status.
5. A student or other furnishing information may request the deletion from documents of irrelevant private data.

In-State Status Classification Appeals

1. The decision or others furnishing information may request the deletion from documents of irrelevant private data.

In-State Status Reclassification

1. A student who does not qualify for in-state status may reapply for such classification each subsequent semester.
2. In-state status classification becomes effective the first semester following the date of successful application.

Re-Examination of Classification Status

1. Classification status may be re-examined upon the initiative of the Residency Officer in the exercise of sound discretion. Circumstances such as periodic enrollment may be cause for re-examination.

Adopted by the Board of Trustees, December 14, 1999.

The Degree Programs of
the Graduate School

Mission Statement
The mission of the School of Graduate Studies and Research is to provide the environment for high quality graduate education by invigorating, stimulating and supporting intellectual and professional development of students and faculty, which is consistent with the University's mission. The graduate programs offered by Delaware State University are designed to serve the needs of individuals who wish to pursue scholarship and career development beyond the baccalaureate degree.

The goals of the graduate programs are:
(1) to provide advanced study in certain academic disciplines, and
(2) to promote inquiry that contributes toward the solution of social, economic, and educational problems and issues.

Vision for Graduate Education
The Graduate School envisions in the 21st century that graduate education will accommodate more part-time students, more working adults, more minorities, more women, and more individuals who will not fit the traditional model of full-time, residential students. There will be more demand for off-campus programs, programs addressing the needs of specific clienteles and courses via the Internet. The Graduate School also envisions offering additional academic programs at the masters level and the addition of doctoral programs.

The Graduate Council
The basic standards for all graduate programs are determined by the Graduate Council, chaired by the Dean of the School of Graduate Studies and Research. The Council is composed of the Dean of Graduate Studies, Research and Continuing Education, Academic Deans, the Director of Libraries, the Registrar, the Chairpersons of departments offering degree programs, Directors of graduate programs, four faculty members not affiliated with graduate programs, a student representative from each graduate area, and Chairperson of the Faculty Senate, the Academic Affairs Committee, and Faculty Affairs Committee.

The School of Graduate Studies and Research offers the following programs:

MASTER OF ARTS
- Education with concentrations in:
  - Adult Literacy and Basic Education
  - Curriculum and Instruction
  - Early Care/Montessori Education
  - Science Education
  - Special Education
- Historic Preservation
- French
- Spanish

MASTER OF SCIENCE

Biology
Biology Education
Chemistry
Applied Chemistry
Mathematics
Mathematics Education
Natural Resources
Physics
Physics Teaching
Plant Science

MASTER OF BUSINESS ADMINISTRATION

MASTER OF SOCIAL WORK

DOCTOR OF PHILOSOPHY

Interdisciplinary Applied Mathematics and Mathematical Physics

Doris E. Wooledge, Ed.D., Dean

Professors:
Anaradha Dujari, Ed.D., Wilmington College (Educational Innovation and Leadership)
Gholam Kibria, Ph.D., Southern Illinois University (Higher Education and Special Education)
William J. McIntosh, Ed.D., Temple University (Science Education)
Rayton Sianjina, Ph.D., University of Mississippi (Educational Administration/Technology)

Associate Professors:
Joseph Falodun, Ph.D., University of Pennsylvania (Reading, Writing, Literacy Education)
Billie Friedland, Ph.D., West Virginia University (Special Education)
Adjai Robinson, Ph.D., Columbia University (Early Field Experience)

Assistant Professors:
Chandra Aleong, Ph.D., University of Pennsylvania (Business Education)
Everard Cornwall, Ph.D., University of Minnesota (Vocational and Technical Education)
Rebecca Fox-Lykens, Ed.D., Wilmington College (Educational Leadership)

PROGRAM PHILOSOPHY

Purpose:

Students will be prepared with the competencies to perform responsibilities related to their program area's professional standards and certification requirements. Human and physical resources are provided to insure a deep understanding of important facts and issues and to develop higher order thinking skills in an environment that promotes cooperation and tolerance. Students have the ability to express themselves effectively in written and oral presentations and can use technology to enhance their teaching, communication and administrative functions.

ADMISSION AND DEGREE REQUIREMENTS

All applicants must submit a completed University graduate program application, official transcripts of all academic work and three (3) letters of recommendation. Some programs may have additional applicant requirements. Application materials should be submitted to the Director of Graduate Studies, College of Education and Sports Sciences, Education and Humanities Building, room 112.

All applicants must have earned a Bachelor's degree from an accredited college or university or have completed prerequisite courses as designated by the Department of Education. The quality of academic performance in undergraduate and graduate studies will be considered in evaluating applicants for admission to a graduate program at Delaware State University. All admission criteria must be satisfied prior to being granted degree candidacy.

Applicants are required to take the general test of the Graduate Record Examination (GRE) or Miller Analogies Test (MAT). Applicants are asked to provide evidence that they have taken or are scheduled to take one of these tests as part of the application process. GRE and MAT scores submitted for application must have been taken no more than five (5) years earlier than the application date.

CAPSTONE EXPERIENCE:

Graduate students must complete a Capstone experience as one of the exit criteria for award of the degree. Each degree program defines the options available for the Capstone. Options may include: (a)

comprehensive examination; (b) research thesis/dissertation; and/or (c) scholarly multi-media presentation. Details about each option are described in detail in the Education Department's Graduate Student Handbook.

GRADUATE PROGRAM OPTIONS:

Delaware State University offers the following graduate degree programs in the following concentrations areas:

Master of Arts in Teaching
Master of Arts in Curriculum and Instruction
Master of Arts in Educational Leadership
Master of Arts in Special Education
Master of Arts in Science Education
Master of Arts in Adult Education and Basic Literacy
Doctorate in Education (Ed.D) in Educational Leadership

A certification only program in Administration and Supervision is also provided.

MASTER OF ARTS DEGREE IN EDUCATION
Concentration in:

TEACHING

Purpose:
This program is a pedagogical degree leading to initial certification in a content area. Applicants to this program must have an earned bachelor's degree with a minimum GPA of 2.5, in one of the following non-teaching fields: Biology, Chemistry, Physics, Science, Math, English, French, Spanish, Physical Education, Business or History. Students must pass PRAXIS I to be admitted.

Goals and Objectives:
To provide students with the pedagogical skills and experiences to obtain initial teacher certification in their content area.

Requirements:
This program of study is a 30 credit hour program. Students must take and pass the PRAXIS II in the respective content area prior to student teaching.

Capstone:
Student teaching and presentation of professional portfolio.

Required Courses in Program of Study:

12-522. TEACHING READING IN THE SECONDARY SCHOOL.
This course is designed to develop the basic principles, concepts, and skills which will enable the classroom teacher in grades 9 - 12 to integrate the teaching of reading into the content areas. The goal of instructional strategies that incorporate listening, speaking, reading, writing, and viewing processes is to support both the literacy progress of students as well as their content knowledge acquisition. Current research on the development of comprehension, vocabulary, fluency and metacognition will be covered in addition to the application of technology within the curriculum. Ten hours of field experience is required. Prerequisite: Students must have passed PRAXIS I and be admitted to the Master of Arts in Teaching program to enroll in this graduate course. 3 credits.

12-557. EFFECTIVE TEACHING SKILLS AND CLASSROOM MANAGEMENT.
This course combines effective teaching skills and classroom management into one comprehensive course. It is designed to provide basic pedagogical tools and conceptual frames necessary for creating effective teaching and learning environments. Students will be introduced to the current research on best practices that inform teachers/practitioners. Students will be required to demonstrate through individual and small group experiential activities, the critical teaching skills that are embodied in the Delaware Teaching Standards, multiple assessment strategies, micro-teaching, mastery teaching, cooperative le4arning strategies and other instructional models. Additionally the student will have the opportunity to develop reflective teaching skills in the planning, delivery and evaluation of their cohort's teaching performances. In a convivial atmosphere, the instructor and peers will provide feedback on an individual's teaching related to performance-based objectives and learner outcomes.

This course incorporates current research on the most effective strategies for improving classroom discipline, motivation, interpersonal relationships and academic performance on all grade levels. Attention is given to aspects of diversity and/or cultural factors that influence perceptions about classroom management and also factor which may assist in facilitating mainstreaming efforts. 4 credits.

12-611. THEORIES AND PRACTICIES IN EXCEPTIONALITIES.
This course is designed to identify exceptional learners and provide an understanding of their educational needs. Specific teaching techniques will be explored, as well as principles and practices of program development. 3 credits.

12-614. HUMAN GROWTH AND DEVELOPMENT.
Educational implications of human development over the life-span are examined. Students will survey research with special attention to the applications to teaching and developmentally appropriate school programs. 3 credits.

12-625/688. INTRODUCTION TO STATISTICS AND RESEARCH/ACTION RESEARCH.
This course covers application of basic statistical techniques and research methodologies employed in qualitative and quantitative research in education. The focus of the course is primarily on action research and students will develop an action research plan as a course requirement. 3 credits.

12-640. DIVERSITY IN EDUCATION.
This course explores the use of knowledge about culture in the schooling process. It presents specific teaching strategies, classroom management techniques and communication strategies that have proven effective with culturally diverse student populations. Students explore ways to identify and alleviate negative bias and prejudice in teaching materials, assessment instruments, school practices and school organization. 3 credits.

12-644 TECHNOLOGY IN TEACHING
This course presents current technological trends that will assist teachers in classroom instruction. Special emphasis is placed on the integration of multi-media software web-based materials. Students will plan and produce multi-media/Internet project in their content area using a systems approach. 3 credits.

xx-5xx. METHODS AND MATERIALS IN CONTENT AREA. 3 credits.

12-516. ANALYSIS OF STUDENT TEACHING.
Students are required to take this course prior to Student Teaching. Passage of Praxis I is required. 0 credits.

12-500. PRE-SERVICE/STUDENT TEACHING.
Pre-service/Student teaching is a 12 week capstone experience that provides opportunities for students to integrate content, strategies, and theories into practice. The student teacher is expected to assimilate the culture of teaching, practice reflective teaching, function effectively in diverse class situation, manage a class of the 21St century, demonstrate content knowledge and work effectively with students, cooperating teacher and University supervisor. Students are placed in one or two student teaching settings according to the requirements of certification. Teaching responsibility is gradually increased from one or two lessons daily up to a full day of lessons and then decreases gradually to one or two lessons daily. 5 credits.

MASTER OF ARTS DEGREE IN EDUCATION
Concentration in:

CURRICULUM AND INSTRUCTION

Purpose:

The purpose of the Curriculum and Instruction (C&I) graduate program is to increase the knowledge and competence of educators and to prepare graduates for leadership roles as department chairs and curriculum directors. The focus of the program is on development, improvement and assessment of curricula, materials and instruction at all levels of the educational system. The program will provide opportunities to develop knowledge, skills, and attitudes to understand the educational needs of individuals with differing economic, social, racial, ethnic, religious backgrounds and handicapping conditions. This program is a course of advanced study and does not lead to certification.

Goals and Objectives:

The Master of Arts degree in Curriculum and Instruction goals are:

1. Provide opportunities for advanced study in the area of Curriculum and Instruction
2. Prepare educators to assume leadership roles in improving the curriculum and design of instruction at all levels of schools and types of school (elementary, secondary, post-secondary, public and private, trade and professional schools).
3. Prepare educators to assume leadership roles in improving the design of classroom instruction for special populations of students (exceptional children, minorities, low-income).

Requirements:
This program requires the completion of 36 graduate credits in the program of study.

Capstone Options:

Students may choose one of the following options for completing the Capstone Requirement.

1. **Global Comprehensive Examination:** This option is designed to provide students to demonstrate mastery of advanced knowledge and skills in their area of concentration by responding to a battery of essay questions related to their area of concentration. Students are eligible to take the Global Comprehensive Examination after admission to candidacy, completion of 24 credit hours and obtaining a grade point average of 3.0 or greater on a 4.0 scale.

2. **Research Thesis:** Students selecting the thesis option must satisfactorily conduct an empirical research study and successfully defend the thesis before a faculty committee.

3. **Scholarly research and multimedia presentation:** This option requires students to write a scholarly research paper and present the contents of the paper in a multi-media presentation to a faculty committee.

Required Courses in the Program of Study:

12-603. HISTORY AND PHILOSOPHY OF AMERICAN EDUCATION.
This course systematically explores the history of American education from colonial times to the present. Students examine selected educational theories and philosophies with particular emphasis on their application to instruction. 3 credits.

12-641. DIVERSITY IN EDUCATION.
This course explores the use of knowledge about culture in the schooling process. It presents specific teaching strategies, classroom management techniques and communication strategies that have proven effective with culturally diverse student populations. Students explore ways to identify and alleviate negative bias and prejudice in teaching materials, assessment instruments, school practices and school organization. 3 credits.

12-614: HUMAN GROWTH AND DEVELOPMENT.
Educational implications of human development over the life-span are examined. Students will survey research with special attention to the applications to teaching and developmentally appropriate school programs. 3 credits.

12-625/688: INTRODUCTION TO STATISTICS AND RESEARCH METHODS/ACTION RESEARCH.
This course covers application of basic statistical techniques and research methodologies employed in qualitative and quantitative research in education. The focus of the course is primarily on action research and students will develop an action research plan as a course requirement. 3 credits.

12-604: THEORIES AND METHODS OF INSTRUCTION.
This course is a study of educational theories as applied to curriculum and instruction with emphasis on current trends and the identification of the instructional process, organizing operations and skills for teaching. 3 credits.

12-605: CURRICULUM ORGANIZATION AND DESIGN.
This course analyzes the historical, philosophical, sociological, epistemological and pedagogical bases of curriculum patterns with emphasis on relationships to contemporary designs. Students explore models of curriculum organization by which to effect curriculum change. 3 credits.
Elective Courses in the Program of Study:

12-601: CONTEMPORARY ISSUES IN AMERICAN EDUCATION
This course analyzes current trends, problems and theories based upon examination of recent educational literature. Students critically explore topics related to the formulation of curriculum, instructional policy and methodology in education. 3 credits.

12-602: IDENTIFICATION AND INSTRUCTION OF THE DISADVANTAGED.
This course identifies the school population classified as disadvantaged and explores the classroom, problems affecting instruction of the rural and urban disadvantaged. Students examine techniques of classroom instruction that have been successful locally and nationally. 3 credits.

12-606. CAREER EDUCATION IN THE ELEMENTARY AND SECONDARY CURRICULUM.
This course explores resources for career information, instruments for assessing career awareness curricula,, programs and centers and examines application of techniques for career education. 3 credits.

12-607/633. THEORIES AND PRACTICIES OF CLASSROOM MANAGEMENT.
This course explores the application of theories, practices and identification of management skills, using the dynamics of interpersonal relations in planning and facilitating classroom instruction. 3 credits.

12-608. DIAGNOSTIC TEACHING OF READING.
This course consists of a review of current research and opinion, evaluation of materials techniques and programs for assessment and prescription of reading techniques. A Practicum provides students the opportunity to implement and evaluate a diagnostic-prescriptive reading program. 3 credits.

12-609. IDENTIFICATION AND INSTRUCTION OF THE GIFTED.
This course addresses the characteristics of the gifted and talented child. Students will analyze national and state programs for the gifted and talented and explore techniques of instruction to meet the needs of the

gifted and talented student. 2 credits.

12-610. DEVELOPMENT OF INSTRUCTIONAL MATERIALS.
This course reviews the theory and practice in selection and use of educational media, equipment and materials. Students will review the research literature concerned with effective use of instructional materials. Each student will complete an individualized instructional materials package to be presented to the class. 3 credits.

12-611. THEORIES AND PRACTICES OF EXCEPTIONALITIES.
This course is designed to identify exceptional learners and provide an understanding of their educational needs. Specific teaching techniques will be explored, as well as principles and practices of program development. 3 credits.

12-614/683. USING TECHNOLOGY TO ENHANCE STUDENT LEARNINGAND ORGANIZATIONAL MANAGEMENT.
This course addresses current technologies from a practitioner's point of view. The Internet, World Wide Web and production software are sued with the intent to make informed decisions both administratively and instructionally. Advance students will have the opportunity to focus on emerging technologies in their applications from the viewpoint of planning, enhanced communications, managing information, delivery of instruction and the latest technologies used by professionals in their respective fields. 3 credits.

12-627. SURVEY OF PRE-COLLEGE SCIENCE INSTRUCTION.
This course reviews contemporary issues and trends in science instruction and explores the methodologies and philosophies of the teaching of science, including various interdisciplinary characteristics of science instruction. 3 credits.

12-641/682. SUPERVISION AND EVALUATION OF STAFF/ASSESSMENT OF INSTRUCTION.
This course emphasizes the role of assistant principals and principals as the instructional leaders of the school and the official in charge of promoting a safe, secure student environment to make possible student learning and staff professional growth. Reflective assessment practices are thoroughly reviewed and discussed. Research is conducted by advanced students on the following topics: (1) identifying effective models of instruction; (2) student achievement; and (3) frameworks for identifying and analyzing models of teaching, decision-making, and assessment. Additionally, the course focuses on defining supervisor responsibilities, understanding and implementing controls, solving problems and making decisions, effective communications, effective leadership, motivational techniques, problem-solving, and the supervisor's role in labor relations. 3 credits.

12-644. TECHNOLOGY IN TEACHING.
This course presents current technological trends that will assist teachers in classroom instruction. Special emphasis is placed on the integration of multi-media software web-based materials. Students will plan and produce multi-media/Internet project in their content area using a systems approach. 3 credits.

12-699. THESIS OPTION : 6 credits.

MASTER OF ARTS DEGREE IN EDUCATION
Concentration in:

EDUCATIONAL LEADERSHIP

Purpose:

The Master of Education degree in Educational Leadership program designed for the development and certification of educational leaders who can lead and manage local and district educational organizations while adapting to changing social, political and economic influences. The program is a cohort with classes scheduled in an accelerated format (seven week sessions) on Thursday evenings from 5:00-9:50. The cohort approach means that all classmates who begin the program commit to completing all course requirements in sequence with the other cohort members.

Goals and Objectives.

This program adheres to the Interstate School Leaders Licensure Consortium (ISSLC) standards. Students completing this program will meet the State of Delaware certification requirements for School Leader I and Principal/Assistant Principal.

Requirements:

This program of study requires the completion of 33 graduate credit hours over a two year (24 month) period. Included as an integral component of the program is a six (6) credit hour Applied Educational Internship.

Capstone Options

Students in this program option must complete a three-pronged Capstone. Each candidate will present a multimedia presentation outlining the results of an action research study they conducted as one component of the internship, reflections on their internship experience along with a portfolio documenting the internship experience.

All of the following courses are required.

12-605. THEORIES AND METHODS OF INSTRUCTION.

A study of educational theories as applied to curriculum and instruction with emphasis on current trends and the identification of the instructional process, organizing operations and skills for teaching. 3 credits.

12-680. LEADERSHIP WITH A VISION FOR CHANGING SCHOOL CULTURE IN A CHANGING SOCIETY.

This course focuses on the educational administrator's development of a vision for the creation of effective teaching that is shared by the school community. The course presents the conceptual underpinnings regarding building of effective learning organizations. The importance and relevance of (1) decision-making; (2) problem solving; (3) effective verbal and written communication skills; (4) relationship-building skills; (5) good listening skills; (6) ability to manage conflict; (7) creation of a safe and secure learning environment; and (8) ongoing effective reflective practice are discussed.
3 credits.

12-681. HUMAN RELATIONS IN DIVERSE POPULATIONS

This course examines how administrators must react, understand and respond to a changing society to foster a true sense of community in school. The course primarily addresses three dimensions: 1) developing academic partnerships with parents and the members of the community; 2) creating learning organizations (communities of practice)among teachers; and 3) nurturing the development of personalized learning environments for students. 3 credits.

12-682. SUPERVISION AND EVALUATION OF STAFF/ASSESSMENT OF INSTRUCTION

This course emphasizes the role of assistant principals and principals as the instructional leaders of the

school and the official in charge of promoting a safe, secure student environment to make possible student learning and staff professional growth. Reflective assessment practices are thoroughly reviewed and discussed. Research is conducted by advanced students on the following topics: (1) identifying effective models of instruction; (2) student achievement; and (3) frameworks for identifying and analyzing models of teaching, decision-making, and assessment. Additionally, the course focuses on defining supervisor responsibilities, understanding and implementing controls, solving problems and making decisions, effective communications, effective leadership, motivational techniques, problem-solving, and the supervisor's role in labor relations. 3 credits.

12-683. USING TECHNOLOGY TO ENHANCE STUDENT LEARNINGAND ORGANIZATIONAL MANAGEMENT.

This course addresses current technologies from a practitioner's point of view. The Internet, World Wide Web and production software are sued with the intent to make informed decisions both administratively and instructionally. Advance students will have the opportunity to focus on emerging technologies in their applications from the viewpoint of planning, enhanced communications, managing information, delivery of instruction and the latest technologies used by professionals in their respective fields. 3 credits.

12-684. LEGAL ISSUES, ETHICAL CONDUCT AND SOCIAL JUSTICE IN TODAY'S SCHOOLS

This course examines the following: (1) prudent strategies, safe environments, ethical principles in decision making, and fair practices in a litigious society; 2) school district judicial policies and student/employee rights; (3) legal issues that impact today's schools; and; (4) students' and teachers practices. 3 credits.

12-685. SUPPORTING A SCHOOL VISION THROUGH EFFECTIVE BUSINESS AND FINANCE PRACTICES

This course provides advanced students with an understanding of the issues and challenges facing administrators with regards to the financing of education in an era of intense change. Some of the issues facing practicing school administrators, teachers, school board members, legislators and other interested parties include, but are not limited to: The No Child Left Behind Act; budget cuts at the federal, state, local and school levels; and changes in legislation allowing for school choice, voucher plans and charter schools. This course also addresses the various principles relating to the fiscal operations of a school's management and the entrepreneurial acts required to support the continuous improvement of instruction and learning for all students. Strategic planning, budgeting, accounting, auditing, and human resource management at the school level will be discussed through case studies. 3 credits.

12-686. SUPERVISON AND LEADERSHIP IN ELEMENTARY AND SECONDARY SCHOOLS.

This course focuses on the knowledge, dispositions and performance skills required of school principals that include, but are not limited to, the following: (1) development, articulation, implementation and stewardship of a vision of learning in a pluralistic society; (2) encouraging and achieving high standards of learning; (3) effective communication, consensus building and negotiation skills; (4) continuous school improvement; (5) involvement of the school community; (6) continuous staff professional growth; (7) effective instruction(learning theories, motivational theories, assessment strategies and recognizing student growth and development); (8) technology in promoting student learning and professional growth; (9) valuing student diversities and school cultures; (10) creating a safe and supportive learning environment; (11) implementing and evaluating curriculum and instruction; (12) management of school operations; and (13) selecting, supervising and evaluating staff. 3 credits.

688. ACTION RESEARCH IN EDUCATION

This course addresses the fundamentals of evaluating and designing educational research with an emphasis on applied and action research. Types of research, their advantages and disadvantages, the research process and the similarities and differences between action research and formal quantitative and qualitative research will be examined. Participants will have hands-on opportunity to develop an action research proposal and use statistical software to analyze and interpret data. This course facilitates assessment of school programs and the accomplishment of knowledge and skills. This is not an accelerated format course. 3 credits.

690. APPLIED EDUCATONAL INTERNSHIP.

The internship experience is a supervised field experience that enables Masters degree candidates to practice knowledge and skill performances acquired in coursework and professional experiences in an authentic setting. The Masters degree candidate will experience first hand the everyday challenges of making management decisions with the enhancement of learning and teaching in mind. Advanced students will develop and apply organizational techniques and communication and problem solving abilities in a field setting. In conjunction with the field-based administrator, master's degree candidates will execute an action- research project to examine possible solutions and to provide data to support data-based decision-making. 6 credits.

MASTER OF ARTS DEGREE IN EDUCATION
With a concentration in:

SPECIAL EDUCATION

Purpose:

The advanced program in special education is an NCATE/NASDTEC (1998-99) approved, rigorous, non-categorical program, with emphasis on serving the needs of school students with high incidence disabilities. The program has been designed to enhance leadership, critical thinking/problem solving, and instructional skills of certified or certifiable teachers and teacher educators. The philosophy of the program is based on the following tenets that emanate from the stipulations of the Individuals with Disabilities Education Act (IDEA), and it's subsequent reauthorizations and amendments, these are such that:

All children are entitled to a free and appropriate public education (FAPE);
Children with disabilities should be educated with age grade peers to every extent possible (LRE); and that the Zero Reject policy allows that all students with disabilities be educated to reach their individual potentials.

The advanced program in special education is also based on the inclusion philosophy, such that students with disabilities are afforded the opportunities to engage in the same routines, activities, and lifestyles as students without disabilities. The advanced program also addresses preparation for meeting the needs of students who have exceptional gifts and talents. In addition, the advanced program aims to strengthen educators' collaboration, team work, integration of technology, and research as applicable to provide necessary supports and services for students with disabilities in today's educational settings. The advanced program in special education, therefore, primarily focuses on the sound rationale that extensive opportunities should be provided to program participants for the exploration of varied theoretical orientations and ideologies that significantly impact upon the development and utilization of best practices in the field of Special Education.

The advanced program in special education at Delaware State University is aligned with the Professional Education Unit's conceptual model, with its component standards as follows: Diversity, Interpersonal Communication, Reflection, Effective Instruction/Assessment Strategies, Content and Pedagogical Knowledge and Skills (DIRECT), Delaware State Teaching Standards (DSTS), and with the National Council for Exceptional Children (CEC) Professional Practice Standards for instruction, assessment, behavior management, communication, consultation, and collaboration, inclusion, multi-cultural education, transition, the integration of technology to provide supports for all students to access the curriculum, and research necessary to maintain and further the field of Special Education.

Goals of the Program:

The goals of the advanced program in special education are to:

1. Prepare certified or certifiable educators to engage in the responsibilities of leadership in special education in both public and private sectors.
    a. Develop an understanding of program planning, funding, and implementations of programs and projects.
    b. Conduct program evaluations.
    c. Develop supervisory skills
    d. Understand multidisciplinary service delivery, including inter and intra-agency communication, consultation, and collaboration.
    e. Facilitate parent participation in the assessment and education decision making processes
    f. Accurately and effectively implement the legal aspects of special education.

2. Prepare certified or certifiable educators to employ critical thinking and problem solving knowledge and skills as they relate to working in a variety of special education and inclusive settings.
    a. Conduct quantitative and qualitative research utilizing various appropriate methodologies
    b. Develop analytical and synthetical skills
    c. Conduct research and assessment with diverse populations that is not culturally biased.

3. Prepare certified or certifiable educators to apply theoretical knowledge, to the development and implementation of current best practices in instruction, assessment, behavior management, materials selection and development, communication, consultation and collaboration, working with families and community agencies, inclusion, multicultural education, transition, technology, and research.
    a. Understand the historical, philosophical, and legal foundations of special education
    b. Serve a diverse community of learners as it relates to special education
    c. Demonstrate an in-depth knowledge of assessment procedures
    d. Develop the necessary linkages between assessment and effective instruction in relation to program planning
    e. Design and implement effective instructional strategies and curricula
    f. Plan and manage classroom routines and behaviors
    g. Consult and collaborate with various constituencies
    h. Develop and implement plans and strategies to facilitate effective transitions from school to adult living
    i. Integrate technology to enhance student learning.

Program Requirements:

A special education masters program candidate must have completed nine to twelve (9-12) credit hours of masters level work, applied for candidacy, and been accepted into the Masters in Special Education Program. The program requirements component of the advanced program in special education includes courses of study that provide a strong foundation in knowledge of educational principles, practice and current trends, with emphasis on research in education. The required component also focuses on skills and practices that all students in the program must know and be able to perform as special educators and teacher educators. Whereas, the elective component of the program provides a window for participating graduate candidates to prepare in one or more areas of special education as specified by their choices related to their future professional goals. Thus, required course work provides depth and breadth in special education, while elective courses provide opportunities to specialize in one or more aspects of special education. The current Master of Arts in Special Education requires that candidates take nine (9) three credit hour courses in the required component, and three (3) electives, covering a variety of topics (see program curriculum), for a total of thirty six (36) credit hours.

This program, in and of itself, does not lead to certification in special education. It is designed for certified or certifiable participants, who have taken the prerequisite courses that prepare them for certification in special education (see Masters of Arts in Teaching Elementary Special Education, and/or Master of Arts in Teaching Secondary Special Education. These programs require 55 and 51 credit hours respectively because they include the required content strands that lead to certification). Certification is determined by the Delaware State Department of Education. Note: Additional content area course work may be necessary for Secondary Special Educators who wish to be considered highly qualified in the areas they teach.

Capstone Options:

Program candidates have the option to choose between a six-hour research thesis, or complete 30 program credit hours and either a global comprehensive exam, or a scholarly multi-media research presentation as their capstone experience. These options are as follows:

1. **Global Comprehensive Examination**
   This option is designed to provide candidates the opportunity to demonstrate mastery of advanced knowledge and skills in their area of concentration by responding in writing to a battery of essay questions related to special education. Students are eligible to take the global comprehensive examination after having been admitted to candidacy, completion of 24 credit hours, and having obtained a quality point average of 3.0 or greater on a 4.0 scale.

2. **Research Thesis**
Students selecting the research thesis option must satisfactorily conduct an empirical research study and successfully defend the research study before a duly convened faculty committee.

3. **Scholarly Research and Multi-media Presentation**
This option requires students to write a research paper and present the contents of the paper in a multi-media presentation to a faculty committee.

Required Courses in the Program of Study (9 courses for 27 credit hours):

12-611. THEORY TO PRACTICE IN EDUCATING INDIVIDUALS WITH EXCEPTIONAL NEEDS.
This course assists educators to identify, understand, and develop curriculum for meeting the exceptional needs of learners across ages and levels of intensity. Principles of practice and program development will be explored in light of accepted models and theoretical structures. 3 credits.

12-621. TECHNOLOGY IN SPECIAL EDUCATION
This course examines the infusion of technology in special education and general education classrooms and settings to support the learning of students who require special educational services. Students in this course will compare and analyze the utilization of technology for this purpose in the Unites States of America and other countries. Human factors and resources will be considered in the selection of devices, adaptation, and modification to accommodate the instructional and curriculum access of learners with disabilities. Prerequisite 12-611. 3 credits.

12-625. INTRODUCTION TO STATISTICS AND RESEARCH METHODS IN EDUCATION

This course covers application of basic statistical techniques and research methodologies employed in qualitative and quantitative research in education. Students will be introduced to descriptive and inferential statistics and the design of research. The focus of the course will be primarily on action research. 3 credits.

12-628. CURRICULUM, METHODS, AND MATERIALS IN SECONDARY SPECIAL EDUCATION
This course is designed to impart knowledge and skills in curriculum development, transition assessment and program planning, adaptations, modifications, and accommodations needed for individual students with disabilities to access curricula and make successful transitions to adult living and career development. (This course is for Secondary Special Education only.) 3 credits.

12-629. ASSESSMENT OF INDIVIDUALS WITH EXCEPTIONAL NEEDS
This course imparts specific knowledge and skills involved in utilizing formal and informal instruments and techniques to assess the strengths, needs, interests, and preferences of individuals with exceptional social and learning needs. Emphasis is placed on providing students with knowledge and skills necessary for selecting, administering, interpreting, evaluating, and reporting results from measurement and/or screening instruments and techniques commonly employed by professionals to facilitate special education placement, accommodations, and program decisions. 3 credits.

12-630. CURRICULUM, METHODS, AND MATERIALS IN ELEMENTARY SPECIAL EDUCATION
This course is designed to impart knowledge and skills in curriculum development, adaptations, modifications, and accommodations for individuals with exceptional needs in a variety of elementary educational settings. Students will model and practice the selection and use of commercially available and teacher-made materials. (This course is for Elementary Special Education only.) 3 credits.

12-633. CLASSROOM MANAGEMENT AND POSSITIVE BEHAVIORAL SUPPORT
This course demonstrates various approaches, programs, and methods for assessing and implementing behavior change in classrooms and related settings. Emphasis is placed on the creation of a safe and conducive learning environment for all learners. Students model and demonstrate individual and group management techniques. Consideration is given to age and developmental level, cultural and familial expectations, and learning characteristics. 3 credits.

12-640. MULTI-CULTURAL EDUCATION
This course explores the use of knowledge about cultures in the schooling process; presents specific teaching strategies, classroom management techniques, and communication strategies that have proven to be effective with culturally diverse populations; explores ways to identify and alleviate negative bias and prejudice in teaching materials, assessment instruments, school practices, and school organization. 3 credits.

12-644/683. USING TECHNOLOGY TO ENHANCE STUDENT LEARNINGAND ORGANIZATIONAL MANAGEMENT
This course addresses current technologies from a practitioner's point of view. The Internet, World Wide Web and production software are sued with the intent to make informed decisions both administratively and instructionally. Advance students will have the opportunity to focus on emerging technologies in their applications from the viewpoint of planning, enhanced communications, managing information, delivery of instruction and the latest technologies used by professionals in their respective fields. 3 credits.

12-648. THEORIES OF INSTRUCTION AND CURRICULUM DESIGN
The course design provides an opportunity for graduate candidates to supplement their theoretical knowledge of curriculum and instruction by developing units or courses in step-by-step fashion. Participants design an actual course of instruction with the asset of guidelines and theoretical base. This combination of theory and process provide educators with a unique approach to learning curriculum development and enhancement skills. 3 credits.

Electives in the Program of Study: (9 credit hours) Note: Select three courses OR 12-699 and one additional course from the following list of course.

12-602. IDENTIFICATION AND INSTRUCTION OF STUDENTS WHO COME FROM DISADVANTAGED SITUATIONS
In this course, students learn to identify characteristics of the school population which have been classified as disadvantages. Students model and demonstrate approaches and techniques to ensure that all students access the curriculum which have proven successful at local and National levels. 3 credits.

12-607/-633. THEORIES AND PRACTICES OF CLASSROOM MANAGEMENT
Study of techniques for managing the special education classroom. Behavioral and humanistic approaches are examined and evaluated in relation to managing both instructional programs and student behaviors. Individual and group management techniques will be explored. Consideration will be given to age, developmental level, behavioral, and learning characteristics of school students. 3 credits.

12-608 . DIAGNOSTIC TEACHING OF READING
Analysis of the diagnostic teaching of reading and literacy; a review of current research and opinion; evaluation of materials, techniques, and programs for assessment and prescription of reading techniques. Practicum in implementing and evaluating a diagnostic-prescriptive reading program. 3 credits.

12-609. IDENTIFICATION AND INSTRUCTION OF STUDENTS WITH EXCEPTIONAL GIFTS AND TALENTS
In this course, participants will learn and discuss the process and issues involved with identifying, instructing, and providing social and learning supports for students who are classified as having exceptional gifts and talents. They will become familiar with national incentives and various statewide programs for

students in this category of special education services. 3 credits.

12-632. ADMINISTRATION AND SUPERVISION OF SPECIAL EDUCATION

This course is focused on the areas of program planning, project development, and budgeting for special education programs and services using federal, state, and local funding sources, faculty and staff development in-service programs, program evaluation, and supervision of special education and related service personnel. Additional topics addressed in this course are the relationships among special educators, general educators, and vocational educators in transition and program planning, working with families and advocates, inter-agency collaboration and cooperation in meeting the exceptional needs of individuals with disabilities. 3 credits.

12-634 CONTEMPORARY ISSUES IN SPECIAL EDUCATION

This course provides for an intensive study of the educational implications and ramifications of current issues in the fields of special education, human services, employment, and housing for persons with disabilities. An in-depth study of a particular problem area is required of each student. 3 credits.

12-635 COUNSELING AND GUIDANCE FOR INDIVIDUALS WITH DISABILITIES AND THEIR FAMILIES

This course is designed for special educators, general educators, and vocational educators who need to be involved with research, methods, and techniques of guiding and counseling students, and their families. Topics include programming, services, and supports for students who are considered to have social and emotional maladjustment. Engineering group dynamics and structuring classroom activities to develop social awareness, knowledge, and skill-streaming are emphasized. Increased collaboration and cooperation with community mental health and developmental disabilities resources is promoted. 3 credits.

12-636 LEGISLATION, LITIGATION, AND FINANCE IN SPECIAL EDUCATION

Students in this course examine the impact of legislation, litigation, and funding that provides the basis for providing special education supports and services. Students explore and examine the roles of parents, educators, other professionals, and community representatives. They analyze how special education supports are financed at federal, state, and local levels. 3 credits.

12-637 ISSUES IN SECONDARY TRANSITION AND VOCATIONAL EDUCATION

Students in this course identify current issues related to secondary transition and vocational education (i.e., development and implementation of curriculum, using instructional strategies, infusing technologies, collaborating and coordinating to promote the development of self-determination skills and career development of individuals with disabilities.) Participants intensely study the educational implications and issues in relation to increasingly diverse, inclusive educational settings and classroom learning environments. Special emphasis is placed on life-long career development, vocational education, the role of rehabilitation services, and transitions of students with disabilities from school to adult living. Program candidacy is required. 3 credits.

12-638 SEMINAR IN SPECIAL EDUCATION RESEARCH AND PRACTICE

Candidates in this course undertake a comprehensive study of specific topics in the education of individuals with disabilities. This study will be announced periodically and offered through the graduate seminar. Permission of the Program Coordinator or Department Chair must be secured in writing and filed in the Office of Graduate Programs prior to enrolling in this course. 3 credits.

12-699 THESIS OPTION

Candidates seeking the Master of Arts Degree in Special Education at Delaware State University will complete one of the following options: 1.) An approved program consisting of thirty six (36) credit hours, or (2.) a thesis plus and approved program consisting of 30 credit hours. Said thesis must be prepared according to the specifications of the Education Graduate Program Office. A preliminary application must be submitted to the Education Graduate Program Director in the semester prior to registration for the thesis credit. 6 credits.

MASTER OF ARTS DEGREE IN EDUCATION

With a concentration in

SCIENCE EDUCATION

Purpose:
Our purpose is to prepare students to successfully interact within the society they will enter upon termination of their formal schooling. This purpose is served by offering the human physical resources required to support the opportunity to acquire deep understandings about important facts and issues. Higher order thinking skills are provided in an environment that promotes cooperation and tolerance. Students are prepared to enter the work force with adequate communication skills. Minimal training for the work force will be required.

Goals and Objectives:
The Science Education Master's Degree program is designed to provide a middle and senior high school science teachers with additional training in at least two science disciplines, as well s, in the methodologies and techniques appropriate to the teaching experience. The goals of this program are:

1. To provide an exemplary program for the education of science teachers.
2. To provide a contemporary methodological foundation in science education.
3. To provide an opportunity for science teachers to broaden their understanding of concepts and issues related to their major discipline.
4. To provide an interdisciplinary perspective of the relationship between science, technology, and society.
5. To provide an opportunity to participate in the rigors of research and to appreciate its implications in classroom situations.

Requirements:
This program requires the successful completion (3.0 grade point average) of thirty-six (36) semester hours of graduate level courses including 15 hours of Science Education core courses, 15 hours of Science Electives and six hours of Science Education electives.

Capstone Options:
Students may choose one of the following options for completing the Capstone Requirement.

1. **Global Comprehensive Examination:** This option is designed to provide students to demonstrate mastery of advanced knowledge and skills in their area of concentration by responding to a battery of essay questions related to their area of concentration. Students are eligible to take the Global Comprehensive Examination after admission to candidacy, completion of 24 credit hours and obtaining a grade point average of 3.0 or greater on a 4.0 scale.

2. **Research Thesis:** Students selecting the thesis option must satisfactorily conduct an empirical research study and successfully defend the thesis before a faculty committee.

3. **Scholarly research and multimedia presentation:** This option requires students to write a scholarly research paper and present the contents of the paper in a multi-media presentation to a faculty committee.

Required Courses in Program of Study:

27-626. SCIENCE, TECHNOLGY, AND SOCIETY.
This course is designed to investigate the linkages that exist among science, technology, and society. An interdisciplinary approach will be assumed to convey the interrelationships that exist among science,

technology and the humanities, with a focus on various historic, current and ongoing ethical issues in science an social policy. 3 credits.

27-627. RESEARCH EXPERIENCE IN SCIENCE.
This course will provide a field experience for science teachers that are designed to present science as dynamic problem-solving endeavors. Students will work towards the resolution of a problem with a practicing scientist in his or her discipline. 3 credits.

27-628. ANALYSIS OF RESEARCH ON TEACHING SCIENCE.
This course provides the student with the means by which they may systematically evaluate current classroom teaching practices, and analyze the dynamics of student-teacher interactions. Methods of educational research in naturalistic settings will be examined. This course will consist of classroom instruction, field work in various school settings, and laboratory work, on the SPSS-X computer system at the college. 3 credits.

27-629. CONTEMPORARY METHODS OF SCIENCE TEACHING.
A survey of methodologies will be presented that research has indicated are most effective for teaching science. Methods will be presented from a constructed perspective. Contemporary curriculum and assessment philosophies and materials will also be discussed. 3 credits.

27-630. INTERDISCIPLINARY SCIENCE.
This is an interdisciplinary approach to the study of scientific principles. Common concepts and themes such as atomic theory, systems and energy will be studied in a context that relates the concept to multiple scientific disciplines. 3 credits.

12-615. EDUCATIONAL MEASUREMENT AND STATISTICS.
The nature of measurement and types of scales, unites, scores, norms, sampling, item analysis, batteries and profiles will be explored. Principles of reliability and validity and the use of test scores in decision making as well as descriptive and inferential statistics and the design of educational research are course topics. 3 credits.

Elective Courses in Program of Study:

27-625. MATHEMATICS FOR SCIENCE TEACHERS.
This is a predominantly methods-based course in which various means of presenting mathematical concepts are developed/devised/researched. Application of math principles to science topics will be stressed. The concepts to be dealt with will include, but not be limited to: factor-label (unit-analysis), metrics, proportionalities, triangulation, graphing, data analysis, etc. The integration of NCTM standards with science instruction will be addressed. 3 credits.

27-631. SELECTED TOPICS IN SCIENCE EDUCATION.
This course is designed to allow flexibility in the selection of specific educational topics to meet students' needs and interests, as well as professor expertise. Topics will be posted prior to the first class meetings. 1 credit.

27-632. SELECTED TOPICS IN SCIENCE EDUCATION.
As per above. 2 credits.

27-633. SELECTED TOPICS IN SCIENCE EDUCATION.
As per above. 3 credits.

27-634. COMPUTERS AND OTHER TECHNOLOGIES IN SCIENCE TEACHING.
This course is an introduction to the use of the computer and other technologies in interactive modes in the science classroom and laboratory. Emphasis will be placed upon the construction of inexpensive equipment and review of currently available software to accompany the equipment. 3 credits.

27-636. THE SCIENCE OLYMPIAD AND OTHER COMPETITIONS.
The course is designed to give science teachers background information needed to prepare an Olympiad team for competition within the individual classroom, school, state or nation. It consists of an overview of the activities, with emphasis upon specific curricular topics that will help the teacher better prepare their team. 3 credits.

12-614. HUMAN GROWTH AND DEVELOPMENT.
This course focuses upon the educational implications of human development throughout the life span. Students will survey research giving special attention to application to teaching and development of school programs. 3 credits.

12-611. THEORIES AND PRACTICES IN EXCEPTIONALITIES.
This course is designed to identify exceptional learner and provide an understanding of their educational need. Specific teaching techniques will be explored as well as principles and practices of program development. 3 credits.

12-699. THESIS OPTION. 6credits.

MASTER OF ARTS DEGREE IN EDUCATION

With a concentration in:

ADULT EDUCATION AND BASIC LITERACY

Purpose:
The purpose of the Adult Literacy and Basic Education Graduate Program is to increase the knowledge and competence of those who are working or will work with adult learners and lack a high school credential. The courses are designed to prepare highly qualified adult educators who will in a variety of settings such as business or industry, community recreation organizations, correctional facilities, religions education organization, human service organization, public schools and community-based programs. The program of study leads to certification in Adult Education.

Goals and Objectives:

The goals of this program are to facilitate an understanding of the philosophy, theory and successful practices needed for productive teaching and administration in adult basic, adult secondary, and ESL education. The goals of this program are to:

1. Provide a balanced curriculum of theory, practice, research and issues that will improve adult education delivery system and the teaching-learning process.
2. Provide self-directed learning experiences that prepare participants to assist adult learners with special needs and manage problems affecting learning.
3. Complete the Delaware Department of Education requirements for certification in Adult Education.

Requirements:
Students seeking the Masters of Arts Degree in Education with Concentration in Non-Traditional Adult Education at Delaware State University shall complete an approved program consisting of thirty-six (36) semester hours of credit.

Capstone:
Students may choose one of the following options for completing the Capstone Requirement.

1. **Global Comprehensive Examination:** This option is designed to provide students to demonstrate mastery of advanced knowledge and skills in their area of concentration by responding to a battery of essay questions related to their area of concentration. Students are eligible to take the Global Comprehensive Examination after admission to candidacy, completion of 24 credit hours and obtaining a grade point average of 3.0 or greater on a 4.0 scale.

2. **Research Thesis:** Students selecting the thesis option must satisfactorily conduct an empirical research study and successfully defend the thesis before a faculty committee.

3. **Scholarly research and multimedia presentation:** This option requires students to write a scholarly research paper and present the contents of the paper in a multi-media presentation to a faculty committee.

Required Courses in Program of Study:

12-612/625. RESEARCH METHODS IN EDUCATION
Historical, descriptive, and experimental methods of research. Methods for locating evaluation, interpreting and reporting of data. Each student prepares a research prospectus. 3 credits.

12-640. MULTI CULTURAL EDUCATION
Explores the use of knowledge about culture in the schooling process. Presents specific teaching strategies, classroom management techniques, and communication strategies that have proven to be effective with culturally diverse student populations. Explores way to identify and alleviate negative bias and prejudice in teaching materials, assessment instruments, school practices and school organizations. 3 credits.

12-658. UTILIZING TECHNOLOGY IN ADULT EDUCATION.
The course will examine current trends in the use of technology to assist in adult instruction and programming. The major emphasis will be computers and computer software packages. An exploration of multi-media and supplemental audio-visual techniques will be included. Students will be required to submit lesson plans with an emphasis on using technology. 3 credits.

12-655. PHILOSOPHICAL FOUNDATIONS OF ADULT EDUCATION.
The unique philosophical foundations/principles of adult basic/secondary education will be discussed. The reasons for Delaware's model James H. groves Adult High School will be explored, as well as the current federal attitude toward adult literacy/education. 3 credits.

12-659. ADULT LEARNING CHARACTERISTICS & ALTERNATIVE DELIVERY SYSTEMS.
This course is designed to describe and analyze three broad dimensions of adult learning: motivation, cognition and socio-cultural content. Teaching approaches that address these areas will be explored. Teachers will learn how to plan lessons that apply these three dimensions of adult learning. 3 credits.

12-657. COUNSELING THE ADULT LEARNER.
This course will explore developmental characteristics through adulthood and relate those characteristics to adult students who are educationally at-risk. Counseling theories that are appropriate in the classroom with adult learners will be considered. Specific behaviors that help the teacher identify adult student with problems will be identifies and used to help determine when, and to who a student should be referred. 3 credits.

Elective Courses in Program of Study:

12-660. INSTRUCTIONAL STRATEGIES IN ADULT BASIC EDUCATION
This course will explore the process of helping adults learn basic academic and life skills. Topics covered will include: enhancing learning; assessing learner needs to set instructional objectives; choosing and implementing effective learning activities; building supportive and active learning environments; and strategies for improving instruction. 3 credits.

12-661. APPROACHES TO ADULT ENGLISH FOR SECOND LANGUAGE (ESL INSTRUCTION).
This course will consider the appropriate use of both structural and communicate ESL. ESL materials will be provided and reviewed. Model lessons (video) will be observed and analyzed. A variety of teaching strategies will be presented. 3 credits.

12-651. OUTCOME-BASED CURRICULUM DESGIN IN ADULT EDUCATION.
This course will look at outcome-based instruction not just as a current trend, but as an efficient way to meet educational goals and to promote student interest. Participants will learn to look critically at classroom goals to determine educational and real-life relevancy. They will learn to develop appropriate goals that become outcome of the educational process. 3credits.

12-662. DEVELOPING HIGHER LEVEL THINKING/READING SKILLS IN ADULTS.
This course will cover such areas as analyzing written materials to determine what higher order thinking/reading skills would be required to complete a task. The thinking/reading skills tested on the GED will receive special emphasis. Strategies for teaching and reinforcing these skills will be presented3 credits.

12-663. ORGANIZATION, ADMINISTRATION, AND SUPERVISION OF ADULT EDUCATION

PROGRAMS.

This course will identify the current adult education programs, from the Secondary Initiative Alternative School and the unique James H. Groves Adult High School, to Literacy Volunteers, Adult Basic Education (ABE) and work place ESL programs. Planning supervising and the complex administration of these and other nontraditional education programs will be discussed and explored. 3 credits.

12-652. PROGRAM EVAULATION AND OUTCOMES IN ADULT EDUCATION

This course focuses on theoretical background and practical application of program evaluation in Adult Basic Education. Program providers will design and apply evaluation techniques and strategies to program management or teaching adults who are educationally disadvantaged. Participants will learn to determine the extent of program outcomes, quality and impact on success in ABE programs. 3 credits.

12-653. PRACTIUM IN ADULT EDUCATION EVALUATION.

This course provides an opportunity for students who have taken 652 to apply their learning, in depth, by evaluating a part or an entire adult education program from start to finish. Students design instruments, conduct interviews, analyze and report the information collected. This authentic experience is designed to consolidate and extend their learning from the previous course. 3 credits.

12-699. THESIS OPTION

Students seeking the Masters of Arts Degree in Education with Concentration in Non-Traditional Adult Education at Delaware State University shall complete one of the following options: an approved program consisting of thirty-six (36) semester hours of credit; or a thesis plus an approved program consisting of (30) semester hours of credit. 6 credits.

DOCTORATE IN EDUCATION

Concentration in:

EDUCATIONAL LEADERSHIP

Purpose:
This program is designed for the development and certification of educational leaders who can lead and manage private and public K-12 systems, higher education programs, and state, national and international educational organizations. The program emphasizes the mastery of skills and processes for adapting to social, political and economic influences when faced with human, financial and structural demands. The program requires the completion and defense of a dissertation research project.

(1) The cohort program is scheduled around an accelerated weekend format to accommodate the schedules of working adults.
(2) The weekend scheduling provides opportunities for concentrated, in-depth study of course topics.
(3) Courses integrate "real-world" field experiences.
(4) Cohort members complete a six credit, full semester internship on a project with a mentor in the area they wish to pursue after degree completion.
(5) The dissertation process is treated as an integral part of the program, enabling students to complete the program, including defense of the dissertation, within three years.
(6) Interstate School Leaders Licensure Consortium (ISSLC) accreditation standards provide the base model for the program.
(7) The program is designed to meet the State of Delaware certification requirements for School Leader II (Superintendent/Assistant Superintendent).*

***NOTE**: Students without an earned master's degree in Educational Leadership may have course requirements in addition to those for the Ed.D. to meet the State of Delaware's academic requirements for School Leader II certification.*

Requirements:
The Doctor of Education in Educational Leadership (Ed.D.) is a 51 credit hour, three year program, including a 6 credit hour Applied Educational Internship.

Courses are conducted in an accelerated weekend format. Courses span six weeks. Class sections are normally held the first, third and sixth weekends of a six week session. Normally a two week break is provided between courses, so that students can prepare for the next course. Sessions are held Friday nights from 5:00-9:00pm; Saturdays from 9:00 a.m. to 4:00 p.m. and Sundays from 10:00 a.m. to 3:00 p.m.

Capstone:
Doctoral candidates must complete and orally present and defend a doctoral research dissertation. Candidates are also responsible for presenting a professional portfolio reflecting their experiences and skills related to ISSLC standards.

All of the following courses are required in this program of study:

12-800. THE Superintendent as CEO- Effective Management and Executive Skills.

This course gives an overview and provides the foundation for developing and cultivating the leadership skills and values that superintendents will find helpful to move from a theoretical base to becoming an effective practicing CEO. This course addresses district vision, school culture, politics and governance, internal and external communication, organizing for high performance, curriculum design and delivery, and human resource management for student learning. ISLLC Standards 1-6, NCATE and AASA professional standards for the superintendency are used to define the role of a superintendent as CEO**.** 3 credits.

12-801.CONTEMPORARY ISSUES IN AMERICAN EDUCATION.

This course assists advanced students to further analyze current trends, problems and theories based upon an examination of recently surfacing educational events and/or topics from a historical perspective. Discussions focus on a critical exploration of topics related, but not limited to, the formation of curriculum, instructional policy and methodology, and assessment of student success in education. Additionally, current issues that involve students with challenges, No Child Left Behind, state standards and teacher certification, state testing, the state student testing program (DSTP), full inclusion, school choice, charter schools, and accreditation are typical topics of discussion. Components that relate to administrative handling of current issues and challenges in the educational system, found in ISLLC Standards 4 and 6, are addressed. 3 credits.

12-888. ACTION RESEARCH IN EDUCATION.

This course addresses the role of action research in studying the underlying problems that occur in educational organizations. The types of action research, their advantages and disadvantages, the action research process, and the similarities and differences between action research and formal quantitative and qualitative research are examined in detail. 3 credits.

12-803. HUMAN RESOURCES MANAGEMENT/PERSONNEL ADMINISTRATION.

This course addresses the role and functions, strategic planning, information technology, recruitment, selection, and induction of employees, staff development, performance appraisal, compensations, employment continuity, and unionism from the human resource administrator's standpoint. Additionally, this course addresses the human relations aspects intrinsically involved in and through the human resource parameters. The relationship of the human resources office to the effective, safe, and efficient operation of an educational organization's vision for the promotion of student success are further examined. 3 credits.

12-804. EFFECTIVE ADMINISTRATION, STAFF DEVELOPMENT, SCHOOL PLANT AND FACILITIES.

This course explores the major issues that impact administrative policies, decisions, and one's effectiveness as a school leader. The following topics are examined: district vision and school culture: developing a staff development/in-service program that addresses the improvement of the educational program and assesses its effectiveness; strategic planning for future plant and facility needs; politics and school governance; internal and external communication; organizational processes for effective and efficient performance; curriculum design and delivery; human resource management for student learning; and leadership values and skills. 3 credits.

12-805. QUANTITATIVE AND QUALITATIVE RESEARCH METHODS.
This course is designed to prepare doctoral students to understand, interpret, evaluate and design qualitative and quantitative research and to develop the ability to select and use appropriate research methods. This course integrates the major concepts and practices of qualitative and quantitative research methodology and introduces descriptive and inferential statistics. This course focuses on the development and application of research for the purpose of writing the doctoral capstone. Topics addressed in this course include choice of research methods, developing a problem statement and proposal, preparing questionnaires, conducting research, tabulating data, and reaching conclusions from qualitative and quantitative data. Additionally, this course includes readings on methodology, lectures, discussions, presentations, and in-class exercises that are designed to highlight various issues. 3credits.

12-806. EDUCATIONAL POLICY: POLITICAL, SOCIAL, ECONOMIC, LEGAL, AND CULTURAL ISSUES.
This course provides the framework and content by which the doctoral student as an aspiring administrator can affect school governance and policy. Major issues influencing administrative practices are addressed, including, but not limited to, school autonomy versus government control, state legislated learning effects on the teaching profession, democratic versus professional authority in the teaching profession, lack of minorities in administration, the effects of economics on the educational system, society's cultural views, desires, and ramifications, and comprehending the diverse theories of school change. In this course, doctoral students have opportunities to develop their skill sets that will enable them, as aspiring administrators, to build the requisite interlocking and collaborative relationships among school personnel, the community, and state and federal agencies for the purpose of creating better schools. Advanced students will focus upon current issues and challenges that impact the formation of educational policy in today's ever changing society. 3 credits.

12-807. LEADING SCHOOL CHANGE AT A TIME OF INCREASING DEMANDS, PRESSURES, AND SOCIETAL CHANGE.
This course focuses on a review and discussion of current methods used to change school cultures, curriculums, and parent/community involvement. The course is used to enhance collegiality, professionalism, instructional strategies, classroom management techniques, effective classroom designs, student motivational techniques, and to create a safe and orderly environment. Additionally, the course focuses on making staff development a worthwhile endeavor and using systems thinking as the key to continuous improvement. It focuses on envisioning desired results, defining reality through data, developing action plans while welcoming accountability. 3 credits.

12-808. STRATEGIC PLANNING AND PROGRAM ANALYSIS.
This course explores the steps of the strategic planning process in educational organizations. The benefits of involving a broad range of personnel in the process are discussed. The doctoral student will examine the following strategic planning steps: the development of a mission statement; completion of an environmental scan; development of key objectives and initiatives; design of programs and activities to accomplish the key objectives; and determination of performance measures to monitor and evaluate the organization's progress toward accomplishing its key objectives. 3 credits.

12-809. TECHNOLOGY APPLICATIONS.
The course addresses the latest technologies from a practitioner's point of view. The Internet and World Wide Web are used with the intent to make informed decisions. Fifty percent of the semester is assigned to an on-site field experience, in which the student demonstrates the ability to report research, security, data collection, etc. Doctoral candidates complete a project focusing on the applications of technology to the unique area of their administrative interest within educational administration, leadership or supervision and

teaching fields. Doctoral candidates will have the opportunity to focus on emerging technologies and their applications from the viewpoint of planning, enhancing communications, managing information and the latest technologies used by professionals in their respective fields. 3 credits.

12-812. INTERNSHIP: APPLIED EDUCATIONAL ADMINISTRATION/

The internship experience is a supervised field experience that enables the doctoral candidate to practice knowledge and skills acquired in coursework and professional experiences in an authentic setting. The doctoral candidate experiences the everyday life of an administrator and how everyday challenges are solved, such as time management strategies, organizational techniques, successful secretarial relationships, appropriate interpersonal skills and human relations, communication vehicles, problem solving, negotiation, instructional leadership, management, professional dispositions, and leadership. In conjunction with the field-based administrator, doctoral candidates will identify an educational problem in the organization and design an action-based research project to examine possible solutions. 6 credits.

12-817. DISSERTATION SEMINAR I
12-818. DISSERTATION SEMINAR II
12-819. DISSERTATION SEMINAR III

Three one-hour Dissertation Seminars are required. The dissertation seminar is designed to address doctoral candidates' progress in the choice of topic, determination of their research format, and dissertation chapter requirements. Assistance is given to clarify the candidate's research question(s), determine the appropriate research design, methodologies and analysis of data. Doctoral candidates meet with the course professor as a cohort group and/or on an individual basis with their respective dissertation committee chair. Discussion of policies and procedures of the dissertation process is addressed in this course. One credit each.

12-820. DISSERTATION RESEARCH I.
12-821. DISSERTATION RESEARCH II.
12-822. DISSERTATION RESEARCH III .
12-823. DISSERTATION RESEARCH IV.

This course provides candidates in the doctoral program of Educational Leadership with advisement and support while carrying out their dissertation study. Doctoral candidates are required to address one or more ISLLC standards through their choice of dissertation research. Each course is three credits hours. A minimum of 12 credit hours of Dissertation Research are required.

12- 899. SUSTAINING DISSERATION RESEARCH.

Students must be continuously enrolled until their dissertation research and oral defense requirements have been completed. This course provides the vehicle for completion of those requirements.

ADMINISTRATION AND SUPERVISION PPROGRAM

CERTIFICATION ONLY

Purpose:
The purpose of this program is to provide advanced courses of study for those who have completed a Master of Arts in Education degree program who wish to seek certification as school leaders and certification in the state of Delaware as Principals/Assistant Principals.

Goals and Objectives:
To provide advanced students with the coursework and associated knowledge and skills for Principal/Assistant Principal certification.

Requirements:
Completion of a Masters degree and Delaware Department of Education requirements for certification (18 credits)

Capstone:
None required.

Required Courses in Program of Study:

12-605. CURRICULUM ORGANIZATION AND DESIGN.
This course analyzes the historical, philosophical, sociological, epistemological and pedagogical bases of curriculum patterns with emphasis on relationships to contemporary designs. Students explore models of curriculum organization by which to effect curriculum change. 3 credits.

12-639/681. HUMAN RELATIONS IN DIVERSE POPULATIONS.
This course examines how administrators must react, understand and respond to a changing society to foster a true sense of community in school. The course primarily addresses three dimensions: 1) developing academic partnerships with parents and the members of the community; 2) creating learning organizations (communities of practice)among teachers; and 3) nurturing the development of personalized learning environments for students. 3 credits.

12-641/686. SUPERVISON AND LEADERSHIP IN ELEMENTARY AND SECONDARY SCHOOLS.
This course focuses on the knowledge, dispositions and performance skills required of school principals that include, but are not limited to, the following: (1) development, articulation, implementation and stewardship of a vision of learning in a pluralistic society; (2) encouraging and achieving high standards of learning; (3) effective communication, consensus building and negotiation skills; (4) continuous school improvement; (5) involvement of the school community; (6) continuous staff professional growth; (7) effective instruction(learning theories, motivational theories, assessment strategies and recognizing student growth and development); (8) technology in promoting student learning and professional growth; (9) valuing student diversities and school cultures; (10) creating a safe and supportive learning environment; (11) implementing and evaluating curriculum and instruction; (12) management of school operations; and (13) selecting, supervising and evaluating staff. 3 credits.

12-643/684. LEGAL ISSUES, ETHICAL CONDUCT AND SOCIAL JUSTICE IN TODAY'S SCHOOLS
This course examines the following: (1) prudent strategies, safe environments, ethical principles in decision

making, and fair practices in a litigious society; 2) school district judicial policies and student/employee rights; (3) legal issues that impact today's schools; and; (4) students' and teachers practices. 3 credits.

12-645/685. SUPPORTING A SCHOOL VISION THROUGH EFFECTIVE BUSINESS AND FINANCE PRACTICES.

This course provides advanced students with an understanding of the issues and challenges facing administrators with regards to the financing of education in an era of intense change. Some of the issues facing practicing school administrators, teachers, school board members, legislators and other interested parties include, but are not limited to: The No Child Left Behind Act; budget cuts at the federal, state, local and school levels; and changes in legislation allowing for school choice, voucher plans and charter schools. This course also addresses the various principles relating to the fiscal operations of a school's management and the entrepreneurial acts required to support the continuous improvement of instruction and learning for all students. Strategic planning, budgeting, accounting, auditing, and human resource management at the school level will be discussed through case studies. 3 credits.

12-650/682. SUPERVISION AND EVALUATION OF STAFF/ASSESSMENT OF INSTRUCTION.

This course emphasizes the role of assistant principals and principals as the instructional leaders of the school and the official in charge of promoting a safe, secure student environment to make possible student learning and staff professional growth. Reflective assessment practices are thoroughly reviewed and discussed. Research is conducted by advanced students on the following topics: (1) identifying effective models of instruction; (2) student achievement; and (3) frameworks for identifying and analyzing models of teaching, decision-making, and assessment. Additionally, the course focuses on defining supervisor responsibilities, understanding and implementing controls, solving problems and making decisions, effective communications, effective leadership, motivational techniques, problem-solving, and the supervisor's role in labor relations. 3 credits.

GRADUATE PROGRAM IN HISTORIC PRESERVATION

Full-Time Faculty

Bradley Skelcher, Director, Ph.D., Southern Illinois University at Carbondale
Sam Hoff, Professor, Ph.D., S.U.N.Y. at Stoney Brook
Akwasi Osei, Associate Professor, Ph.D., Howard University
Yohuru Williams, Assistant Professor, Ph.D., Howard University
John Gardner, Associate Professor, Ph.D., St. Johns University

Adjunct Faculty

Robin Bodo, M.A., University of Northern Colorado

Robin Hubbel, M.A., University of Georgia
Michael Best, J.D., Boston University

OBJECTIVES:

The Master of Arts degree program in Historic Preservation has an emphasis in broadening knowledge in America's heritage. Through a concentration in either Museum Studies or African American Heritage Preservation, the program seeks to provide students with the necessary training and preparation for professional employment in their related chosen fields.

ADMISSION AND DEGREE REQUIREMENTS:

To be admitted into the M.A. Program in Historic Preservation, students must (1)hold a bachelor's degree in History, Art History, Architectural History, Architecture, Folk Studies, Black Studies, Historical Archaeology, Urban Studies, Community Development, or related area from an accredited college or university; (2)submit results from the Graduate Record Examination (G.R.E.); (3)present an official transcript of all previous college work with a minimum grade point average of 3.00 in the major field and 2.50 overall grade point average on a 4.00 grade scale at the undergraduate level; (4)and submit three letters of recommendation.

Admission into Candidacy

Students must complete nine (9) hours of graduate level course work with a minimum of a B average or 3.00 and complete the admission process into the Graduate School and the M.A. Program in Historic Preservation. Students may not enroll in any of the last 15 hours of the M.A. Program with candidacy approval.

Degree Requirements:

The Master of Arts Degree in Historic Preservation requires a minimum of thirty-six (36) credit hours. Mandatory within the thirty-six credit hours of course work will be eighteen hours of core courses and nine (9) hours of internship following the completion of twenty-seven (27) hours of required course work in the Historic Preservation program. Students will complete nine (9) hours of course in a either Museum Studies or African American Heritage Preservation concentrations.

COURSE DESCRIPTIONS

(34)

CORE COURSES

600. AMERICAN ARCHITECTURAL HISTORY.
This course covers the rich history of the development of architectural styles in America through the mid-twentieth century. Prerequisites: None. Credit, three hours.

601. AMERICAN HISTORIC CONTEXTS TO 1865.
This course focuses on the historic context of the American built environment and cultural heritage of the Colonial Era and Early America during the eighteenth century through the first half of the nineteenth century. Emphasis will be placed on the heritage of Delaware. Prerequisites: None. Credit, three hours.

602. AMERICAN HISTORIC CONTEXTS SINCE 1865.
This course focuses on the historic context of the built environment and cultural heritage of America from the second half of the nineteenth century through the first half of the twentieth century. Emphasis will be on the development of cultural examples in Delaware. Prerequisites: None. Credit, three hours.

603. INTRODUCTION TO HISTORIC PRESERVATION AND MUSEUM STUDIES.
This course will introduce graduate students in their first year to the fields of historic preservation and museum studies. Students will investigate the history of each field and how they relate to each other such has historic house preservation and historic house museums or historic villages and museum interpretations. Students will develop solid foundations for further study in their selection concentrations in either Museum Studies or African American Heritage Preservation. Prerequisites: None. Credit, three hours.

604. HISTORIC PRESERVATION LAW AND PRESERVATION POLICY.
This course covers important legal precedents through the history of court cases associated with historic preservation and is also designed for students who wish to enter Public administration. In part it focuses on zoning laws and issues, the economics of historic preservation, the politics of historic preservation, and the shaping of policy.

Prerequisites: None. Credit, three hours.

606. RESEARCH METHODS IN HISTORY.
Prerequisites: None. Credit, three hours.

Option I: Museum Studies

609. MUSEUM STUDIES: MUSEUM CURATORIAL ROLE.
This will show the student acquisition, maintenance and utilization of collections. Curators also sometimes are involved with educational programming and research for exhibit design. Prerequisites: None. Credit, three hours.

610. MUSEUM STUDIES: MUSEUM HISTORIANS AND EXHIBITORS ROLE.
This course will establish the role of a Historian in the museum by establishing character and nature of a museum and its development. It also will take the student through transformation of a concept into visual representation for public education.
Prerequisites: None. Credit, three hours.

611. MUSEUM STUDIES: MUSEUM MANAGEMENT.
This course is a comprehensive study of museum management. This course will also define the museum, the role of administrator, fund raising, budget control and all aspects of museum management. It will cover the administration of museums including educational programming, volunteer management, staff management, exhibit development, fundraising such as grant writing, and other facets of museum management.
Prerequisites: None. Credit, three hours.

Option II: African American Heritage Preservation Emphasis

631. AFRICAN-AMERICAN HISTORIC CONTEXTS TO 1865.
This course focuses on the historic context of the African American architectural environment and cultural heritage of the colonial era and early national period during the eighteenth through the first half of the nineteenth century. Emphasis will be placed on the rich heritage of the Mid- Atlantic region. Prerequisites: None. Credit, three hours.

632. AFRICAN-AMERICAN HISTORIC CONTEXTS SINCE 1865.
This course focuses on the historic context of the African American material culture and cultural heritage from the second half of the nineteenth through the first half of the twentieth century. Particular attention will be given to the presence of African American examples in the Mid-Atlantic region. Prerequisites: None. Credit, three hours.

633. SURVEY AND EVALUATION OF AFRICAN-AMERICAN HISTORIC RESOURCES.
Students will learn how to survey historic resources of the African-American built environment and cultural heritage and then evaluate them for historical aesthetic, and cultural significance. Prerequisites: None. Credit, three hours.

Internship

608. HISTORIC PRESERVATION INTERNSHIP.

Students in the graduate program in historic preservation must complete an internship experience with a private historical group or a local, state, or federal government agency with the approval of the director of the graduate program and the chair of the department. Students must work closely with director to ensure all requirements are met. All students must complete a portfolio of information derived from the internship experience along with a mid-semester report and a concluding report with a satisfactory evaluation from the immediate supervisor from the private organization or government agency. The portfolio and pertinent reports will be submitted to the Graduate Committee for final approval consisting of the director of the graduate program, chair of the department, and three faculty members from the department and the Dean or representative of the Graduate School. Prerequisites: Completion of twenty-seven (27) hours of graduate level course work. Credit nine hours.

Core Courses

YEAR I

First Semester

34-603	Introduction to Historic Preservation & Museum Studies	3*
34-601	American Historical Contexts to 1865	3*
34-606	Research Methods	3*
		9

Second Semester

34-602	American Historical Contexts since 1865	3*
34-600	American Architectural History	3*
34-604	Historic Preservation Law & Policy	3*
		9

YEAR II

First Semester

34-6**	Area of Emphasis	3**
34-6**	Area of Emphasis	3**
34-6**	Area of Emphasis	3**
		9

Second Semester

34-608	Historic Preservation Internship	9***
		9

* Core Courses
** Area of Emphasis
*** Internship

CIRRICULUM

Option I: Museum Studies

YEAR I

First Semester

34-603	Introduction to Historic Preservation & Museum Studies	3*
34-601	American Historical Contexts to 1865	3*
34-606	Research Methods	3*
		9

Second Semester

34-602	American Historical Contexts since 1865	3*
34-600	American Architectural History	3*
34-604	Historic Preservation Law & Policy	3*
		9

YEAR II

First Semester

34-610	Museum Studies: Museum Historians and Exhibitors Role	3**
34-609	Museum Studies: Role of the Curator	3**
34-611	Museum Studies: Museum Management	3**
		9

Second Semester

34-608	Historic Preservation Internship	9***
		9

* Core Courses
** Emphasis
*** Internship

CURRICULUM

Option II: African American Heritage Preservation Emphasis

YEAR I

First Semester

34-603	Introduction to Historic Preservation & Museum Studies	3*
34-601	American Historical Contexts to 1865	3*
34-606	Research Methods	3*
		9

Second Semester

34-602	American Historical Contexts since 1865	3*
34-600	American Architectural History	3*
34-604	Historic Preservation Law & Policy	3*
		9

YEAR II

First Semester

34-632	African-American Historic Contexts since 1865	3**
34-631	African-American Historic Contexts to 1865	3**
34-633	Survey and Evaluation of African-American History Resources	3**
		9

Second Semester

34-608	Historic Preservation Internship	9***
		9

* Core Courses
** Emphasis Courses
*** Internship

GRADUATE PROGRAM IN BIOLOGICAL SCIENCES

Professors:

Fatma Helmy, Ph.D., Tulane; Cell Biology, Lipid Metabolism; Histochemistry
Gustav Ofosu, Ph.D., (Chairperson) Michigan State; Cell Biology; Cytochemistry

Associate Professors:

Leonard Davis, Ph.D., Univ. of Illinois Medical School; Molecular Neuroscience
Stan Ivey, Ph.D., University of Denver; Glycomics
Andrew Lloyd, Ph.D., University of Virginia; Microbiology
Robert MacBride, Ph.D., Case Western Reserve; Developmental Biology

Charlie Wilson, Ph.D., University of Delaware; Molecular Biology

Melissa Harrington, Ph.D., Stanford University; Neuroscience

Assistant Professors:

Sabrina Brougher, Ph.D., University of Maryland at College Park, Physiology and Behavior

Harbinder Singh Dhillon, Ph.D., Rutgers University, Molecular Neurobiology
Richard Driskill, M.S. University of Delaware; Biological Sciences
Vincent Fondong, Ph.D., University of the Witwatersrand, Johannesburg, South Africa, Virology
Cynthia van Golen, Ph.D., University of Michigan, Neuroscience
Clytrice Watson, Ph.D, University Maryland Eastern Shore, Microbiology

OBJECTIVES:

The Department of Biological Sciences prepares students for career opportunities, research positions in state or federal agencies, health care, private industry, and teaching. The program strives to develop a clear and unbiased method of critical and logistic thinking, an appreciation and understanding of the natural world, and a knowledge of biological principles required to make intelligent and effective decisions. We offer four different graduate degree programs: **Master of Science (MS) in Biological Science; Master of Arts (MA) in Biological Sciences; MS in Cellular and Molecular Neuroscience; and MS in Biology Education.**

The Department of Biological Sciences is comprised of dedicated and well-prepared faculty with diverse educational backgrounds and areas of research specialization. The faculty are serious and talented teachers; have published in their respective fields; and, maintain active research projects. Small class sizes for graduate courses ensures that students interact closely with faculty in the learning experience. All faculty have published in their respective fields, and they maintain active research involvement. Scholarly involvement and continuous professional development in research keeps the faculty current and able to offer exciting research opportunities to the students in a variety of areas. The Department's faculty are involved not only with individual research projects but also participate in joint collaborative research themes, for example in neuroscience. The students have the opportunity to select their projects from these various arenas.

ADMISSION AND DEGREE REQUIREMENTS:

Admission Requirements:

For admission to the graduate degree programs in Biology, applicants must have a Bachelor's degree in Biological Science or a related field from an accredited college or university. Applicants must have earned a cumulative grade point average of at least 2.75 with 3.00 minimum in the major. Official scores (not be more than five years old) on the Graduate Record Examination (General Test and Biology Test) and two letters of reference must be submitted.

Degree Requirements:

Master of Science Degree Program in Biological Sciences

The MS Degree Program in Biological Sciences is designed to prepare students for further advanced study in biology. Faculty with expertise in various areas (ranging from molecular and cellular biology to systemic biology and to ecological systems) have expanded the breadth of scientific backgrounds of students desiring to advance their careers in industry and government or to prepare themselves for other professional endeavors. The degree requirements include, and emphasize, a thesis based on mentored research that is conducted in an individual laboratory in the department, or an approved research laboratory. The program requires 30 DSU graduate credits and is designed for completion by full-time students within two years.

Master of Arts Degree Program in Biological Sciences

The MA Degree Program in Biological Sciences is designed to prepare students for expanded knowledge in the biological areas of interest to the student and is overseen by a faculty mentor within the Department. The degree requirements emphasize a research-review thesis based on literature information. This program is particularly of value to advance the competencies of secondary school teachers, and to advance the careers of persons in industry, government agencies, and related positions. The program requires 30 credits and is designed to allow completion over a three-year period on a part-time basis.

Master of Science Degree Program in Molecular and Cellular Neuroscience

The MS Degree Program in Molecular and Cellular Neuroscience is a specialty degree program designed to prepare students for advanced study in the area of neuroscience. The program capitalizes on the neuroscience expertise of a number of faculty who are active in this area of research. The degree requirements include and emphasize a neuroscience-based research thesis based on mentored research conducted in one of our neuroscience research laboratories. This program is supplemented by a partnership with Drexel University. The program requires 33 graduate credits, including taking two classes at Drexel University, and is designed to allow completion over a two-year period on a full-time basis.

Master of Science Degree Program in Biology Education

The MS Degree Program in Biology Education is designed for certified secondary or middle school teachers who desire a course of study which is strongly based in Biology, yet includes coverage of current areas of significance in Science Education. The program requires 36 DSU graduate credits and is designed for completion over a three-year period

on a part-time basis.

FACILITIES:

The Department of Biological Sciences is housed in the Mishoe Science Center which contains six laboratory classrooms, eleven well-equipped research laboratories that are designed for individual faculty research and facilitate our faculty's ability to mentor graduate student research projects. The Department also has two prep rooms, faculty offices, a computer center, and shared biotechnology and research equipment rooms. In addition, the Department is a cosponsor of the Claude E. Phillips Herbarium located in Thomasson Hall, Department of Agriculture and Natural Resources. The herbarium is the largest collection of preserved plant materials at any historically black institution in the country and the only such collection on the Delmarva Peninsula. These facilities provide strong support capabilities in teaching and research areas of modern Biology. (See also www.bio.desu.edu)

CURRICULUM FOR MASTER OF SCIENCE (MS) IN BIOLOGICAL SCIENCES

The Master's Degree in Biological Sciences is designed to prepare students for further advanced study in Biology, to expand the scientific backgrounds and competencies, and to advance the careers of persons in industry, government agencies, and other related positions. The degree requirements include and emphasize a research thesis based on individual laboratory or field study in biology. The program requires 30 credits and is designed to allow completion over a two-year period on a full-time basis.

Year 1

Course #	Course name	Graduate Credit Hours
23-520	Cell Biology	3
23-505	Experimental Design and Biostatistics	3
23-590	Professional Development Workshop I	2
23-521	Molecular Biology	3
23-635	Methods in Experimental Biology II	3
23-591	Professional Development Workshop II	1

Year 2

Course #	Course name	Graduate Credit Hours
23-650	Biological Mechanisms	3
23-690	Thesis Research I	3
23-xxx	Electives (2)	6
23-691	Thesis Research II	3

Total credit hours for graduation: 30

Allowed electives

Any Graduate course offered in Department of Biological Science

Or, any of the below graduate courses:

24-521 Biochemistry
24-510 Environmental Chemistry
24-562 Chemical Toxicology
26-655 Computational Methods (or equivalent)
29-504 Population Biology
29-642 Advanced Wildlife Biology
29-643 Marine Biology
29-644 Wetlands Biology
30-502 Habitat Management: Theory
30-503 Habitat Management: Practice

And other 'biological' course approved by Research Advisor and Department Chair

CURRICULUM FOR MASTER OF ARTS (MA) IN BIOLOGICAL SCIENCES

The Master of Arts Degree Program in Biological Sciences is designed to expand the scientific backgrounds and competencies of secondary school teachers and to advance the careers of persons in industry, government agencies, and other related positions. The degree course requirements are the same as the MS degree, however, in place of a laboratory research thesis an extensive literature review article is required.

CURRICULUM FOR MASTER OF SCIENCE (MS) in MOLECULAR and CELLULAR NEUROSCIENCE

The Master's Degree in Molecular and Cellular Neuroscience is designed to prepare students to pursue a PhD in Neuroscience at Drexel University or another institution. Students in the program attend full time and are required to pursue a research project beginning in their first year. Of six required courses, five will be taken at DSU, one at Drexel. One of the three required elective classes must also be taken at Drexel. A thesis, based on individual laboratory research related to neuroscience, is required and may be conducted in a lab at either DSU or Drexel.

Core Courses (required for all students pursuing M.S. degrees)
- Cell Biology (23-520)
- Molecular Biology (23-521)
- Experimental Design and Biostatistics (23-505)
- Professional Development Workshops I and II (23-590, 23-591)
- Thesis Research I at DSU (23-690) or Drexel is REQUIRED
- Thesis Research II at DSU (23-691) or Drexel is REQUIRED

Addition Required Courses for Neuroscience M.S.
- Neuroscience Principles and Techniques* (Drexel - NEUR 508S)
- Functional Neuroanatomy (23-610)
- Neurochemistry (23-612)
- The Physiology of Excitable Cells (23-622)

Total 33-38 credit hour

Allowed electives

DSU	Drexel
23-600 Molecular Endocrinology	NEUR 505S Adv. Molecular Neurobiology
23-651 Proteins: Structure and Function	NEUR 511S Adv. Cell & Devel Neuroscience
23-635 Experimental Methods in Biology	NEUR 512S Adv Cell & Systems

23-515 Behavior	NEUR 607S Integrated Neuroscience
23-511 Pharmacology	NEUR 609S Advanced Neuroscience
23-605 Cell Morphogenesis	PHRM 512S Graduate Pharmacology
24-521 Biochemistry	PHRM 507S Principles of Neuropharmacology
23-650 Biological Mechanisms	PHRM 516S Special Topics
23-625 Immunology	ANAT 533S Anatomy & Kinesiology
	ANAT 602S Medical Neuroscience

Year 1

Course #	Course name	Graduate Credit Hours
23-520	Cell Biology	3
23-505	Experimental Design and Biostatistics	3
23-590	Professional Development Workshop I	2
NEUR 508S	Neuroscience Principles & Techniques (Drexel)	2
23-521	Molecular Biology	3
23-610	Functional Neuroanatomy	3
23-612	Neurochemistry	3
23-591	Professional Development Workshop II	1

Year 2

Course #	Course name	Number of Credits
23-622	The Physiology of Excitable Cells	3
23-xxx	Neuroscience elective (DSU or Drexel)	2 - 3
23-xxx	Neuroscience elective (DSU or Drexel)	2 - 6
23-690	Thesis research I	3
23-691	Thesis research II	3
	Total credit hours for graduation:	33-38

CURRICULUM FOR MASTER OF SCIENCE (MS) IN BIOLOGY EDUCATION

The Master's Degree Program in Biology Education is designed for secondary or middle school teachers who desire a course of study which is strongly based in Biology, yet includes coverage of current areas of significance in Science Education. The program curriculum requirements are currently being updated with state review. It is designed to allow completion over a three-four year period on a part-time basis.

The curriculum for an MS degree in Biology-Education is currently under review for upgrading.
TOTAL HOURS: 36 (minimum)

COURSE DESCRIPTIONS (23)

All courses require that students have, as minimal prerequisites, one year of Biology courses on the undergraduate level. Additional prerequisites are noted in each course description. While a degree in Biological Sciences or its equivalent is an admission requirement for the graduate degree programs in Biology, not all courses require this extensive background. Certain courses will thus also be appropriate for graduate students in other fields who may not have undergraduate degrees in Biology.

505. EXPERIMENTAL DESIGN and BIO-STATISTICS.
A survey of statistical methods used in biological research. Topics include parametric and nonparametric statistics, aspects of experimental design, and use of the computer in statistical analysis. Two lectures and one two-hour laboratory per week. Credit, three hours.

507. LABORATORY/FIELD TEACHING METHODS IN BIOLOGY.
A practical experience in planning, developing, organizing and conducting laboratory and field activities in the life sciences. Two two-hour class periods. Credit, three hours.

511. PHARMACOLOGY.
A study of how drugs are used to achieve therapeutic benefits. The mechanism of action of various drug types at the molecular, cellular and interactive-system levels will be addressed. Topics will include the basis for rationale uses of medically-relevant drugs in biological systems and detailing their effectiveness in various diseases and disorders. Focus will be on understanding the balance between pharmacodynamic, pharmacokinetic, and toxicological side-effects that underlies effective treatments.

515. BEHAVIOR.
This course explores the broad and diverse spectrum of behaviors demonstrated by living things. The scope of this course is, taxonomically speaking, broad-based, although most of attention will be directed within the animal kingdom. The course will examine behaviors in both proximate and ultimate contexts and will include analysis of their mechanisms, origins, transmission, development, and significance. Thus it is clear that the study of behavior is multidimensional and embraces many primary biological arenas including anatomy, physiology, heredity, ontogeny, ecology, and evolution. Many approaches have been employed in the study of behavior. These include comparative and physiological psychology, neurobiology, ethology, behavioral ecology, and sociobiology. In this course our study will consider all of

these elements, but the focus will concentrate on the ethological and ecological perspectives.

520. CELL BIOLOGY.
A study of cellular and subcellular biology. This is the first course in a series. Three-50 minute lectures. Prerequisites: Cell Biology 215; Molecular Biology 310; Genetics 210, or equivalent at graduate level.

521. MOLECULAR BIOLOGY.
Molecular biology can now be found in ALL areas of science, and is truly the study of life at the molecular level. This molecular biology course is rooted in the most basic understanding of life, at the molecular level. This is the second course in a series. Three-50 minute lectures. Prerequisites: Cell Biology 215; Molecular Biology 310; Genetics 210, or equivalent at graduate level.

535. RESEARCH LAB ROTATION.
The student will spend at least 8 weeks participating in the ongoing research in each of two Biology research laboratories. In addition to becoming acquainted with the research project, the student becoming. The primary goal is to expand the research experience for the student while assisting in the selection of a Thesis project. Prerequisites – none.

552. ENVIRONMENTAL EDUCATION WORKSHOP.
Opportunity for practical experience in development and implementation of environmental education concepts from pre school to adult. May be elected whenever offered. Credit, three hours per semester.

555. POPULATION-ENVIRONMENT CURRICULUM, K-12.
The integration of a conceptual framework for population-environmental studies in school curriculum as a part of a program in environmental studies. Prerequisites: consent of instructor. Credit, three hours.

590. PROFESSIONAL DEVELOPMENT WORKSHOP I.
The course focuses on developing professional skills and experiences by participation and presentation in workshops, seminars, grant writing, and research reviews.

591. PROFESSIONAL DEVELOPMENT WORKSHOP II.
This course assigns credit for continued participation as described in 23-590 and for the student to identify a research advisor to initiate a faculty-supervised research leading to development and writing of a thesis project proposal.

600. MOLECULASR ENDOCRINOLOGY
This graduate level course is designed to (1) engage students in mastering a working knowledge of advanced principles in endocrinology, (2) broaden student comprehension and discussion of current topics in endocrinology, in particular current journal articles, and (3) develop experimental design / grant writing techniques relevant to endocrinology.

605. CELL MORPHOGENESIS.
Current topics related to basic processes of molecular aspects of differentiation and development in living cells. Prerequisite: Cell Biology. Two hours lecture, two hours lab. Credit, three hours.

610 FUNCTIONAL NEUROANATOMY.
This course is designed for graduate students in the life sciences who are interested in becoming familiar with the structure and function of the vertebrate nervous system at both the gross and microstructure levels.

The course will include computer exercises and microscopic examinations.

611. ADVANCED GENETICS.
An in depth exploration of principles of modern genetics as they apply to plants, animals, and micro-organisms ranging from the molecular to the population level. Prerequisite: A course in Genetics or permission of the instructor. Four hours lecture/laboratory. Credit, three hours.

612. NEUROCHEMISTRY.
This course is designed for graduate students in the life sciences who are interested in learning the current state of scientific knowledge about neurotransmitters, their receptors and cellular effectors, and their relationship to disease. This course will help students understand the history and development of the current understanding of the chemistry of the nervous system by presenting some of the experimental evidence on which the knowledge is based.

621. ADVANCED MICROBIOLOGY.
The course will emphasize the role of micro-organisms in the diseases of man. The history of microbiology, and the anatomy, physiology, ecology, and applications of bacteria will be emphasized. Two one-hour lectures, one two-hour lab. Prerequisite: Microbiology/Bacteriology or consent of the instructor. Credit, three hours.

622. THE PHYSIOLOGY OF EXCITABLE CELLS.
This course is designed for graduate students in the life sciences who are interested in learning the current state of scientific knowledge of the physiology of nerve, muscle and sensory cells. This course will help students understand this the history and development of the current understanding of excitable cell physiology by presenting some of the experimental evidence on which the knowledge is based.

625. IMMUNOLOGY.
A study of cellular, humoral, and molecular aspects of immune reactions. There will be an introduction to immunobiology and immunochemistry. The use of antigen-antibody reactions will be emphasized. Prerequisite: (Microbiology or Bacteriology). Four hours of lecture and laboratory each week.

631. CELL BIOCHEMISTRY/HISTOCHEMISTRY.
A comparative and correlative study of cellular chemistry as related to the physiological functions and metabolism of various tissues and organs from a diverse range of vertebrates. Some human biomedical correlations will be included. Demonstrations and laboratory exercises. Two lectures and one two-hour laboratory per week. Prerequisites: Histology and organic chemistry or biochemistry, or the consent of the instructor. Credit, three hours.

635. METHODS IN EXPERIMENTAL BIOLOGY.
An introduction to the history, development, theory and practical application of a variety of techniques (simple and sophisticated) in quantitative and qualitative biochemical analysis. In depth emphasis will be given to techniques such as chromatography, densitometry, and in situ and in vitro enzymology. This course is intended to provide laboratory experience in selective aspects of modern biotechnology and their applications in bioassays. Prerequisites: consent of the instructor. Four hours of lectures/laboratory per week. Credit, three hours.

650. BIOLOGICAL MECHANISMS.
An integration of the molecular and cellular functions within a cell and how these relate to overall system operations. The course will emphasize regulatory, homeostatic, and biochemical approaches to

understanding cell function. Three-50 minute lectures. Prerequisites: Cell Biology 215; Molecular Biology 310; Genetics 210, or equivalent at graduate level.

651. PROTEINS: STRUCTURES AND MOLECULAR PROPERTIES.
This course will examine the chronological events in the life of a protein. These events include protein composition, biosynthesis, and molecular dynamics. Evolutionary aspects of ancestral proteins will be used to explore the origins of contemporary primary structures. A laboratory will be included to examine the various protein separation schema that are currently used in modern molecular labs. Background in genetics, molecular and cell biology required. Credit, three hours.

666. BIOTECHNOLOGY.
A series of lecture presentations featuring speakers from academics and industry in the expanding field of Biotechnology. An extensive research paper will be required of each study. Credit, 3 hours.

689. PROBLEMS IN BIOLOGY
An in-depth individualized literature investigation of a research problem conducted under supervision of advisor. Includes use of library, integrating data from various sources and conceptual thinking to produce a final Review paper. The outcome will be reviewed by a faculty Committee and the student must pass a comprehensive examination. Prerequisites: Graduate Biology student in MA program, typically second year

690, 691. THESIS RESEARCH
An in-depth individualized investigation of a research problem conducted under close supervision of the thesis advisor. Includes training in experimental techniques, problem design, testing, data collection, data analysis, and preparation of thesis. University and departmental guidelines are to be followed in preparing and defending the thesis. It is expected that the research will be of sufficient quality to be published as a scholarly paper coauthored by the thesis advisor in an appropriate refereed journal. Typically three credit hours each, but may be taken for 1 to 6.

698. THESIS SUSTAINING.
An in-depth individualized literature investigation of a research problem conducted under supervision of advisor. Includes use of library, integrating data from various sources and conceptual thinking to produce a final Review paper. The outcome will be reviewed by a faculty Committee and the student must pass a comprehensive examination. Prerequisites: Graduate Biology student in MA program, typically second year

Courses offered by other Departments as approved electives for Biological Sciences

29-503 Population Biology
29-541 Evolution of Vascular Plants
29-642 Advanced Wildlife Biology
29-643 Marine Biology
29-644 Wetlands Biology
24-562 Toxicology
30-502/3 Ecological Land Use Planning

(other courses with advisor approval)

GRADUATE PROGRAM IN CHEMISTRY

Professors:
Andrew Goudy, Ph.D., University of Pittsburgh; Physical Chemistry
(Program Director/Chairperson)
Sadiq H.Wasfi, Ph.D., Georgetown University; Inorganic Chemistry
Associate Professors:
Peter R. DiMaria, Ph.D., Temple University; Biochemistry
H. Preston Hayward, Ph.D., Temple University; Physical Chemistry
Bizuneh Workie, Ph.D., Tuffs University; Analytical Chemistry
Assistant Professors:
Juliet Hahn, Ph.D., SUNY- Stony Brook; Organic Chemistry
Qiquan Wang, Ph.D., Zhejiang University; Environmental Chemistry

OBJECTIVES:

A. Master of Science in Chemistry

The conventional Master's Degree Program in Chemistry is designed to prepare students for further advanced study in Chemistry, to expand the chemical knowledge and skills of secondary school and junior college teachers, and to advance the careers of persons in industry, government service, and other fields of endeavor.

B. Master of Science in Applied Chemistry

The Master of Science Degree Program in Applied Chemistry is a specific degree program designed to provide the student with a broader understanding of the areas of chemical laboratory practices and advanced concepts for the educator. Courses will enhance the student's professional skills and capabilities for dealing with the complex laboratory hardware common to the chemical industry. Additionally, the student will be informed of recent trends in research, industrial, and environmental chemistry. Students involved in teaching will be exposed to the latest innovations in computer technology as related to laboratory practices and safety. This program is designed for individuals employed in industrial or educational positions, as well as those planning to enter such positions.

ADMISSION AND DEGREE REQUIREMENTS:

A. Master of Science Degree in Chemistry or Applied Chemistry

For admission to these programs applicants must have a B.S. degree or its equivalent in Chemistry from an accredited college or university, with a minimum 2.5 overall grade point average. Official scores on the Graduate Record Examination, or its equivalent, a Diagnostic Entrance Examination, will be required.

Degree Requirements:

Both the Master's Degree in Chemistry and the Master's Degree in Applied Chemistry Programs require the completion of thirty (30) credit hours. Thesis Research (6 credit hours) is required in the Master of Science in Chemistry Program and is an elective in the Master of Science in Applied Chemistry Program. Specific course requirements are available upon request.

Facilities:

The chemistry department is housed primarily on the second floor of Mishoe Science Center North and the third floor of Mishoe Science Center South. The Science Center South are includes nine (9) spacious research

laboratories, a 900ft^2 instruments laboratory, computer laboratory, work room with a refrigerated walk-in laboratory, seminar and chemistry resource rooms, six faculty offices and a department chair suite of offices. The Science Center North area houses four (4) newly renovated undergraduate teaching laboratories and two (2) faculty offices. The department has a wide selection of modern instruments and equipment to support teaching and research. Available equipment includes numerous gas chromatographs with a variety of detectors, a head space auto sampler for gas chromatography, a gas chromatograph/mass selective detector/infrared detector/computer system; a nuclear magnetic resonance spectrometer (400 mHz), instrumentation for flame and flameless atomic absorption, a dispersion infrared and FTIR (2), several ultraviolet-visible spectrophotometers; a capillary electrophoresis unit, a microwave digestion/extraction system, a high performance liquid chromatograph with data collection system; thermal gravimetric analyzers (2), gas reaction controllers (2), electro-analytical systems and an X-ray powder diffraction unit.

Curriculum for Master of Science Degree Program in Chemistry

Course Number	**Course Name**	**Credit Hours**
24-506	Structural Inorganic Chemistry	3
24-508	Theory and Application of Chromatography	3
24-509	The Chemical Bond	3
24-518	Molecular Spectroscopy	3
24-520	Advanced Organic Chemistry	3
24-521	Biochemistry	3
24-556/557	Seminar	2
24-560	Chemical Literature	1
24-573	Advanced Physical Chemistry	3
24-590/591	Thesis Research	6
	Total Hours	30

Curriculum for Master of Science Degree Program in Applied Chemistry

Course Number	Course Name	Credit Hours
24-507	Theory and Application of Spectroscopy	3
24-508	Theory and Application of Chromatography	3
24-510	Environmental Chemistry	3
24-520	Advanced Organic Chemistry	3
24-521	Biochemistry	3
24-556/557	Seminar	2
24-560	Chemical Literature	1
24-562	Chemical Toxicology	3
24-569	Polymer Chemistry	3
	Electives	6
	Total Hours	30

Electives

Course Number	**Course Name**	**Credit Hours**
24-506	Structural Inorganic Chemistry	3
24-509	The Chemical Bond	3
24-511	Selected Topics in Chemistry	3
24-573	Advanced Physical Chemistry	3
24-590/591	Research and Thesis	6

COURSE DESCRIPTIONS

501. ADVANCED LABORATORY TECHNIQUES.
Advanced techniques and sophisticated equipment used in the preparation and/or purification of chemical compounds. Two lectures and one 150-minute laboratory period per week. Prerequisites: Chemistry 301-302, 306 and 308 or equivalent courses. Credit, three hours.

502. PHYSICAL METHODS IN INORGANIC CHEMISTRY.
Advanced methods in inorganic preparations and compound analyses via physical methods. Two lectures and one 150-minute laboratory period per week. Prerequisites: Chemistry 301-302, 303-304, 306 and 308 or equivalent courses. Credit, three hours.

503. PHYSICAL METHODS IN BIOCHEMISTRY.
Advanced methods in the study of biochemical molecules and the use of physical methods in their investigations. Two lectures and one 150-minute laboratory period per week. Prerequisites: Chemistry 301-302, 303-304, 306 and 403 or equivalent courses. Credit, three hours.

504. PHYSICAL METHODS IN ORGANIC CHEMISTRY.
Advanced studies in organic preparations and reactions, and chemical analyses via physical methods. Two lectures and one 150-minute laboratory period per week. Prerequisites: Chemistry 301-302, 303-304, and 306 or equivalent courses. Credit, three hours.

505. INORGANIC SOLUTION CHEMISTRY.
A study of the chemical kinetics of chemical forces and their effects on structure and reactivity of coordination compounds. Two 75-minute lectures per week. Prerequisite: Chemistry 308 or equivalent. Credit, three hours.

506. STRUCTURAL INORGANIC CHEMISTRY.
Detailed discussions of the nature of chemical forces and their effects on structure and reactivity of coordination compounds. One 150-minute lecture per week. Prerequisite: Chemistry 308 or equivalent. Credit, three hours.

507. THEORY AND APPLICATIONS OF SPECTROSCOPY.
A presentation of molecular spectra and structure correlations demonstrating the use of IR, Visible UV, NMR, and AA. One 150-minute lecture per week. Credit, three hours.

508. THEORY AND APPLICATIONS OF CHROMATOGRAPHY.
Investigations of the separation and identification of substances via packed and capillary column gas chromatography. HPLC and GLC using various detectors. One 150-minute lecture per week. Prerequisite: Chemistry 306 or equivalent. Credit, three hours.

509. THE CHEMICAL BOND.
The study of electronics in atoms, molecular orbitals bonding in organic compounds, and "d" valence orbitals. One 150-minute lecture per week. Prerequisite: Chemistry 308 or equivalent. Credit, three hours.

510. ENVIRONMENTAL CHEMISTRY.
The analyses of water, soil, plant and animal tissues for various parameters including traces organics and metals using classical and instrumental methods of analysis. One lectures 150-minute per week. Credit, three hours.

511. SELECTED TOPICS IN CHEMISTRY.
Advanced topics in the various fields of chemistry. Topics may vary from year to year. One 150-minute lecture per week. Credit, three hours.

516. QUANTUM CHEMISTRY.
The wave equation and approximate treatments of the hydrogen molecular ion, the hydrogen molecule, diatomic molecules, and polyatomic molecules. Two 75-minute lectures per week. Prerequisite: Chemistry 303, 301 or equivalent courses. Credit, three hours.

518. MOLECULAR SPECTROSCOPY.
The use of molecular symmetry and group theory to study rotational, vibrational, and electronic spectra of molecules. One 150-minute lecture per week. Prerequisite: Chemistry 301-302 or equivalent. Credit, three hours.

519. APPLICATIONS OF SPECTROSCOPY.
An introduction to chemical research. The use of spectroscopy as a research tool and a review of the literature in this area will be conducted. Projects may be assigned. Two 75-minute lectures per week. Prerequisite: Chemistry 507 or equivalent. Credit, three hours.

520. ADVANCED ORGANIC CHEMISTRY.
An advanced study of reaction mechanisms, stereochemistry, and organic chemical bonding. One 150-minute lecture per week. Prerequisite: 301-302. Credit, three hours.

521. BIOCHEMISTRY.
An advanced study of biochemical reactions and reaction mechanisms. One 150-minute lecture per week. Prerequisite: Chemistry 403 or equivalent. Credit, three hours.

540. ADVANCED METHODS OF TEACHING CHEMISTRY.
Discussions and problem solving sessions concerning improved techniques of teaching high school chemistry. Two 75-minute lectures per week. Credit, three hours.

552. TECHNIQUES IN PHYSICAL CHEMISTRY.
A study of the use of physical measurements in determining composition, structures, and properties of matter. Two lectures and one 150-minute laboratory per week. Credit, three hours.

556-557. SEMINAR.
Presentation of current topics and/or research by faculty and students. One lecture per week. Credit, one hour.

560. CHEMICAL LITERATURE.
Use of the chemistry library, chemical journals, reference works, other technical publications, assembling and data use, and computer-assisted literature searches. One lecture per week. Credit, one hour.

562. CHEMICAL TOXICOLOGY.
A study of the adverse effects of chemical substances. Course includes the general principles of toxicology, the toxicology of systems, toxic agents, environmental toxicology, forensic toxicology, applications toxicology and the effect of toxic substances on reproduction and the body. One lecture per week. Credit, one hour.

569. POLYMER CHEMISTRY.
An introduction to the chemistry of macromolecules including biologically molecules, plastics, and other important classes of industrial polymers. One 150-minute lecture per week. Prerequisites: Chemistry 301-302. Credit, three hours.

573. ADVANCED PHYSICAL CHEMISTRY.
An introduction to the thermodynamics of large molecular collections and the quantum statistics of these systems. One 150-minute lecture per week. Prerequisites: Chemistry 303-304. Credit, three hours.

590-591. RESEARCH AND THESIS.
Publishable research work by students and the writing and defense of a thesis. Credit, three hours each.

GRADUATE PROGRAM IN MATHEMATICS AND MATHEMATICS EDUCATION

Professors:
Hanson Umoh, Ph.D., Howard University
Nagaiah R. Nandakumar, Ph.D., University of Illinois at Urbana-Champaign
Mazen Shahin, Ph.D., Lvov State University, USSR
Associate Professors:
Eric Frankl, Ph.D., University. of Illinois
Fengshan Liu, Ph.D., University of Delaware
Dawn Lott, Ph.D
Rodney E. McNair, Ph.D. (Program Director).,, University of Delaware
Assistant Professors:
Paul F. Gibson, M.S., University of Arkansas
Nicola Edward-Omelewa Ph.D University of Delaware

OBJECTIVES:

These programs are designed to fit the needs of students in three different areas--pure mathematics , applied mathematics, and mathematics education. The **Pure Mathematics Program** is designed for students who are interested in either further graduate study in mathematics and related areas or college teaching. The **Applied Mathematics Program** is intended for students who wish to learn the applications of mathematics, with a particular goal of working in industry, government and special programs. The Mathematics Education Program is designed to fit the needs of in-service teachers that want to strengthen their mathematics content and pedagogy skills. This program does not provide certification..

ADMISSION AND DEGREE REQUIREMENTS:

Admission Requirements:

All applicants must submit their Graduate Record Examination scores and two letters of recommendation to the Director of Graduate Program, Delaware State University, Dover, DE 19901. All applicants seeking direct admission should have completed a baccalaureate degree program in mathematics comparable to that offered at this university or a baccalaureate degree in a related field with at least a minimum overall G.P.A. of 3.0 and a G.P.A. of 3.0 in mathematics courses on a 4.0 scale. Depending on the background and career interests of the applicants, the Graduate Committee may recommend candidates with GPAs between 2.5 and 3.0 in Mathematics for direct admission. Applicants who are deficient in the core requirements shall receive only provisional admission for one year at the end of which the Graduate Committee will re-evaluate their applications. Each applicant will be considered by the departmental graduate committee and recommended for admission on the basis of all evidence applicable to the student's admission.

Students who desire to enter this program from baccalaureate degrees must demonstrate competence in the following courses either by successful undergraduate completion, by examination or by successfully completing the undergraduate courses: Advanced Calculus I, Linear Algebra, Differential Equations, Statistics,

Probability, and Algebraic Structures I. The plan of study for this scenario will be agreed upon by the student, his/her advisor, and the Graduate Program Committee. Depending upon the student's educational background, some students may also be requested to take six to nine credits of undergraduate mathematics courses.

Degree Requirements:

Master of Science Degree (MS) in Mathematics (Pure or Applied)

The masters programs in mathematical sciences are flexible enough to accommodate students with diversified background training. In consultation with the Graduate Committee, each student develops a course of study in mathematics areas most relevant to his or her professional and career objectives. Each student must take 15 credit hours of the core courses, and complete an additional 18 hours either in the Thesis Option or the Non-Thesis Option.

Core Courses (Required for both Pure and Applied MS in Mathematics)

All of these five courses:

M500 Foundations of Mathematics		3 Hours
M511 Introduction to Abstract Algebra	3 Hours	
M561 Real Analysis I		3 Hours
M562 Real Analysis II	3 Hours	
M571 Complex Analysis	3 Hours	

Select one of the following two courses:

M541 Advanced Probability Theory		3 Hours
M521 General Topology	3 Hours	

Total: 18 Hours

Thesis Option - <u>Pure Mathematics</u>

Electives of 6 credit hours from the Pure Mathematics Courses:

M504 Modern Geometry		3 Hours
M505 Logic		3 Hours
M531 Number Theory	3 Hours	
M521or M541		3 Hours
M611 Topics in Pure Mathematics		3 Hours
M621 Introduction to Functional Analysis	3 Hours	

M699 Thesis or Directed Project 6 Hours

Electives from Pure Mathematics and/or Applied Mathematics and/or other Graduate Level Courses with the approval of the student's advisor.

3 Hours

Total: 15 Hours

Thesis Option - <u>Applied Mathematics</u>

Electives of 6 credit hours from the Applied Mathematics Courses:

M651 Partial Differential Equations	3 Hours
M661 Numerical Analysis	3 Hours
M551 Ordinary Differential Equations	3 Hours
M643 Statistics	3 Hours
M641 Combinatorics	3 Hours
M631 Operations Research	3 Hours
M663 Topics in Applied Mathematics	3 Hours

M699 Thesis 6 Hours

Electives from Pure Mathematics and/or Applied Mathematics and/or Other Graduate Level Courses with the approval of the student's advisor 3 Hours

Total: 15 Hours

All students who select Thesis Option must defend their thesis before the Departmental Graduate Committee. A student may choose a three credit hour expository thesis or write a six hour research thesis.

Non-thesis Option - Pure and Applied MS in Mathematics

The students who select either one of the following non-thesis options must pass a written examination within two attempts.

The student's advisor together with the Departmental Graduate Committee determines the eligibility, date and time for taking the comprehensive examinations. This written examination is administered in February. A second and final attempt is permitted in the following August. The exam is based on both 25-561 and 25-562 for Analysis, 25-511 for Algebra, and (or 25-651 and 25-643 for Applied Mathematics. Another topic, such as Ordinary Differential Equations, Partial Differential Equations, or Statistics, may be substituted for one of the above by petition to the graduate committee based on two graduate level courses and supported by a faculty member.

Non-thesis Option - <u>Pure Mathematics</u>

Electives from Pure Mathematics Courses 9 Hours

Electives from Pure Mathematics and/or Applied Mathematics and/or Other Graduate Level Courses with the approval of the student's advisor 6 Hours

Total: 15 Hours

Non-thesis Option - <u>Applied Mathematics</u>

Electives from Applied Mathematics Courses: 9 Hours

Electives from Pure Mathematics and/or Applied Mathematics and/or Other Graduate Level Courses with the approval of advisor
6 Hours

Total: 15 Hours

Master of Science Degree (MS) in Mathematics Education

The masters program in Mathematics Education is flexible enough to accommodate students with diversified background training. In consultation with the Graduate Committee, each student develops a course of study in mathematics areas most relevant to his or her professional and career objectives. Each student must take 36 credit hours of course work as depicted below.

Core Courses

Required Mathematics Education Courses --

25-503 Mathematics Teaching Methods I 3 Hours
25-603 Mathematics Teaching Methods II 3 Hours
25-691 History and Philosophy of Mathematics/Mathematics Education
3 Hours

These three Required Mathematics Content Courses --

25-500 Foundations of Mathematics 3 Hours
25-504 Modern Geometry 3 Hours
25-511 Introduction to Abstract Algebra 3 Hours

And One of these two courses:

25-513 Discrete Mathematics 3 Hours
25-531 Number Theory 3 Hours

Required Computers and Technology Course –

25-507 Computers/Technology in Math 3 Hours

Required – TWO of below Education Courses --

12-604 Theories and Methods of Instruction
12-xxx One Course from the Following:
12-605 Curriculum Organization and Design
12-610 Development of Instructional Materials
12-614 Human Growth and Development
12-607/633 Theories and Practices of Classroom Management

Are the above education courses still correct – they've revised many…..

RESEARCH -- 6 Credits -- Students must Complete One of the Following Options

Option I – Take the following two courses:

25-697 Research Methods in Math Education 3 Hours
25-699 Thesis or Directed Project 3 Hours

Option II – Take two additional graduate courses from below list:

25-5XX/6XX One of the following:
25-521 General Topology 3 Hours
25-525 Logic 3 Hours
25-531 Number Theory 3 Hours
25-541 Advanced Probability Theory 3 Hours
25-551 Ordinary Differential Equations 3 Hours
25-561 Real Analysis I 3 Hours
25-562 Real Analysis II 3 Hours
25-571 Complex Analysis 3 Hours
25-581 Operations Research 3 Hours
25-611 Topics in Pure Mathematics 3 Hours
25-621 Introduction to Functional Analysis 3 Hours
25-641 Combinatorics 3 Hours
25-643 Statistics 3 Hours
25-651 Partial Differential Equations 3 Hours
25-661 Numerical Analysis 3 Hours
25-663 Topics in Applied Mathematics 3 Hours
12/5xx/6xx A graduate education course as agreed upon by student, advisor, and graduate committee.

Option III – For students considering the future pursuits of a PhD in Mathematics Education (below two courses *required ?recommended?*)

25-697 Research Methods in Mathematics Education 3 Hours
25-699 Thesis or Directed Project 6 Hours

If this option is selected, the student will be required to take only 3 credits, rather than 6 credits, from the Education Courses listed above.

FACILITIES:

Please *fill in as appropriate – others have this. May want to mention* any linkage/advantages of PhD…..

RESEARCH OR TEACHING ASSISTANTSHIP OR FELLOWSHIP

A limited number of graduate research or teaching assistantships or fellowships are available. Detailed information and application forms may be obtained from the Department of Mathematics.

COURSE DESCRIPTIONS (25)

500. FOUNDATION OF MATHEMATICS.
This course is specifically designed to bridge undergraduate and graduate study in mathematics. This is an introduction to abstract ideas, proofs, set theory, relations, and number systems and their connections. Prerequisites: Undergraduate Calculus II and College Geometry. Credit: 3 hours.

503. MATHEMATICS TEACHING METHODS I.
This course is the first of a two part sequence designed to provide weighty consideration of some of the major topics in middle and secondary school mathematics education. This course covers advanced topics in methods of teaching mathematics. Typical content covered in the course will include current issues in teaching and learning mathematics, philosophy of mathematics and mathematics learning, learning theories, curriculum design, assessment, and multi cultural education**.** Prerequisite: Undergraduate Calculus II, Linear Algebra, Probability, Statistics, and College Geometry**.** Credit**:** 3 hours.

504. MODERN GEOMETRY.
This course covers Menelaus and Ceva's Theorems, Cross Ratio, Elementary Transformations, Euclidean Constructions, and Non-Euclidean Geometry. Prerequisite: College Geometry with Minimum Grade of C. Credit**:** 3 hours.

507. COMPUTERS AND TECHNOLOGY IN MATHEMATICS.
This course considers the utilization of computers and technology within mathematics and the teaching of mathematics. Topics include: programming languages, the sophistication and limitations of computers, LOGO, computer graphing, software evaluation, mathematics and math processing software, problem-solving through programming, spreadsheets and databases, matrices, and computer equipment and networking. This course will be project oriented and will be individualized to meet the needs of graduate students from pure and applied mathematics and mathematics education. Prerequisites: Undergraduate Calculus II, Linear Algebra, Probability, and College Geometry. Credit**:** 3 hours**.**

511. INTRODUCTION TO ABSTRACT ALGEBRA.
This course is concerned with the basic theory of some of the important algebraic systems such as groups, rings and fields with emphasis on homomorphism, isomorphism, integral domain, extension fields and Galois groups. Prerequisite: Undergraduate Algebraic Structures. Credit**:** 3 hours .

513. DISCRETE MATHEMATICS.
This course is an advanced treatment of Boolean Algebras, Proofs, Algorithms, Combinatorics and models of computation. Prerequisite: Undergraduate Calculus II. Credit**:** 3 hours**.**

521. GENERAL TOPOLOGY.
The purpose of this course is to give the students the basic concepts of point-set topology, topological spaces, continuity, connectedness, metric spaces, compactness and lead them to further topics in topology. This course also presents as a related discipline to the proper understanding of various branches of analysis and geometry. The students should become familiar also with fundamental groups and homotopy theory. Prerequisite: Advanced Calculus. Credit**:** 3 hours.

525. LOGIC.
This course examines the scope and logical foundations of mathematics. Formal systems are shown to model real life relationships, and these formal systems are studied and analyzed using advanced mathematical methods and rigor. The results of this study show both the inherent limitation of deductive reasoning and at the same time the richness of what can be expressed and proven. Prerequisites: Calculus I and Linear Algebra. Credit**:** 3 hours**.**

531. NUMBER THEORY.
The course, Number Theory is an introduction to the study of basic properties of integers which allows one to demonstrate how various areas of mathematics play a role in the study of properties of natural numbers, such as divisibility, congruencies, arithmetic functions, diophantive equations and quadratic residues. This course is flexible and fundamental enough to be taken by Mathematics and Mathematics Education Majors. Prerequisite: Undergraduate Algebraic Structures. Credit**:** 3 hours**.**

541. ADVANCED PROBABILITY THEORY.
This course is to provide students with knowledge of probability theory and its applications. Topics covered in the course may include probability spaces, discrete and continuous random variables, expectations, joint distributions and stochastic processes. Prerequisites: Probability and Calculus III. Prerequisite: Calculus III with a Minimum Grade of C. Credit**:** 3 hours**.**

551. ORDINARY DIFFERENTIAL EQUATIONS.
The purpose of this course is to present techniques of solving ordinary differential equations. The students should become familiar with Boundary Value Problems, Systems of Ordinary Differential Equations, Phase Diagrams and Stability. Prerequisite: Calculus III. Credit**:** 3 hours.

561. REAL ANALYSIS I.
To provide the students with the background in those parts of modern mathematics which have their roots in the classical theory of functions of a real variable. These include the classical theory of functions of a real variable, Riemann-Stieltjes integration. Prerequisite: Advanced Calculus I**.** Credit**:** 3 hours.

562. REAL ANALYSIS II.
To provide the students with a continuation of the background in those parts of modern mathematics which have their roots in the classical theory of functions of a real variable. These include Lebeseque measure and integration, absolute continuity and functions of bounded variation, and L^P-spaces. Prerequisite: Math 561. Credit**:** 3 hours.

571. COMPLEX ANALYSIS.
This is a first course concerned with the basic theory of complex variables, analytic functions, Cauchy's Theorem, Cauchy integral formula, Taylor and Laurent series, residues, conformal mapping and contour integration.. The rigorous approach adopted herein will set a firm foundation for leading the students to the next level of Complex Analysis. Prerequisites: Math 561 and Undergraduate Complex Analysis. Credit**:** 3 hours.

581. OPERATIONS RESEARCH.
This course is designed to expose students to linear, nonlinear and integer programming, simplex method,

duality theorem, transport and other application problems, different optimization methods and techniques. Prerequisites: Undergraduate Linear Algebra, Computer Programming I and II. Credit**:** 3 hours.

603. MATHEMATICS TEACHING METHODS II.
This course continues to development of advanced topics in methods of teaching mathematics that begins in 503. Typical content covered in the course will include historical and current issues in teaching and learning mathematics, philosophy of mathematics and mathematics learning, learning theories, curriculum design, assessment and evaluation, and multi cultural education. Prerequisite: Math 503. Credit**:** 3 hours.

611. TOPICS IN PURE MATHEMATICS.
This course leads students into mathematics research. The course description will be given by the instructor. Prerequisite: Given by the Instructor. Credit**:** 3 hours.

621. FUNCTIONAL ANALYSIS.
This is a study of Metric Spaces, Hilbert Spaces and Banach Spaces with emphasis on Hilbert Spaces. Prerequisites: Math 561 and Math 562. Credit**:** 3 hours.

631. DIFFERIENTIAL GEOMETRY.
This course is to provide to students the notion of a differentiable manifold and Calculus on a differentiable manifold. Topics covered in the course may include differentiable manifolds and submanifolds, vector fields on manifolds, tensor and differential forms and integration on manifolds. Prerequisites: Advanced Calculus and Math 521. Credit**:** 3 hours.

641. COMBINATORICS.
From this course, the students will learn Recurrence relations, Graph Theory and Network Algorithms. Prerequisite: Math 513. Credit**:** 3 hours.

GRADUATE PROGRAM IN PHYSICS

Professors

Patrick F. Gleeson, Ph.D., 1981, University of Delaware: Low Temperature Physics.
Gabriel D. Gwanmesia, Ph.D., 1991, SUNY at Stony Brook: Geophysics (Mineral Physics).
Ehsan M. Helmy, Ph.D., 1961, University of California at Los Angeles:
Atomic and Nuclear Physics.
Al-Sameen Khan, Ph.D., 1997, University of Delaware: Semiconductor Materials & Devices.
Noureddine Melikechi, D.Phil., 1987, University of Sussex, England: Atomic, Molecular and Optical Physics.
Arthur E. Purdy, Ph.D., 1973, University of Delaware: Solid State Physics.

Associate Professor

Essaid Zerrad, Ph.D., 1998, University of Connecticut: Theoretical Physics.
Aristides Marcano, Ph.D., 1988, Moscow State University Lomonosov: Physics and Mathematics.

OBJECTIVES:

The Department of Physics and Pre-Engineering offers graduate courses leading to the Master of Science in Physics that provides strong preparation for employment in research and development programs, or for entry into PhD programs in Physics or related fields.

The Master of Science program in Physics Teaching is also available for students teaching at the middle school or secondary level. The Physics Teaching program is designed to provide a deeper understanding of physics principles and applications, as well as to stimulate creative classroom pedagogical techniques for the professional educator.

Physics research is conducted in the areas of Applied Optics and Laser Spectroscopy, Mineral Physics, and Theoretical Physics, in addition to semiconductor materials and devices research (also see www.physics.desu.edu)

ADMISSION AND DEGREE REQUIREMENTS:

A. **Master of Science Degree Program in Physics**

To be eligible for admission to the Physics Graduate Program, an applicant must have received a bachelor's degree in physics or related area from an accredited college or university. The Graduate Record Examination (GRE) General Test is required. Entering graduate students are expected to have a sound background in intermediate level mechanics, electricity and magnetism, thermal physics and mathematical methods of physics. A student found deficient in any of these areas may be required to take appropriate courses to remove the deficiency.

The requirement for a **Master of Science Degree in Physics** is satisfactory performance in a program of study (30 graduate credits) approved by the department. A minimum grade point average of 3.0 (B grade) is required of all graduate courses taken at Delaware State University. Twenty-four (24) of the graduate physics courses must be at the 600 level. A sequence of courses required by all candidates includes the following: 26-652, 26-665, 26- 667, 26-671, 26-672, 26-675. A maximum of six (6) credit hours of graduate credit may be granted for physics courses in the 500 level (above 500), or other graduate level courses in the sciences with the approval of the Physics Department.

For those students electing the Master's Thesis option, a maximum of six (6) credit hours towards a degree can be given for thesis work.

B. **Master of Science Degree Program in Physics Teaching (This program is currently undergoing revision)**

Admission to the Master of Science in Physics Teaching Program requires a baccalaureate degree from an accredited institution and a working knowledge of topics classically addressed by the discipline of physics. This level of proficiency is typically achieved through successful completion of a baccalaureate program in physics, physics education, or a related field, or through experience obtained by teaching physics or related courses at the middle school or secondary level.

The degree, Master of Science in Physics Teaching, requires passing thirty-six (36) credit hours (distributed as outlined below), with a minimum average grade of "B":

a. a minimum of twenty-four (24) credit hours from graduate level physics courses.
b. a maximum of six (6) credit hours may be taken from the graduate level education program.
c. a maximum of six (6) graduate level credits from other sciences with departmental approval.
d. a maximum of nine (9) credit hours may be transferred from other institutions.

Typically, most, if not all, of the physics courses will be taken from the 26- 501 through 26-549 offerings. 26-695 is not available to participants of this program.

A unique feature of the department is the harmonious cooperation of the Physics faculty and staff towards the goal of providing the best education for the students.

COURSE DESCRIPTIONS

PHYSICS (26)

501-502. ELECTRICITY AND MAGNETISM.
An introductory course in the theory and applications of electricity and magnetism. Basic integral calculus is used throughout. Topics covered include electric fields and potentials, DC circuits, magnetic fields and magnetic materials. Three credit hours each.

505-506. MATHEMATICAL METHODS I, II.
An introductory course in the applications of mathematics to the description of physical systems. Specific physical situations from the areas of mechanics, electricity and magnetism, optics and thermodynamics are analyzed using the techniques of differential and integral calculus and vector analysis. Three credit hours each.

511-512. MECHANICS.
Problems in statics, kinematics and dynamics; the study of equilibrium of forces, rectilinear and curvilinear motion, central forces, constrained motion, energy and momentum methods and rotational motion. Three credit hours each.

516. INTRODUCTION TO OPTICS AND LASERS.
A study of geometric and physical optics with particular application to optical instruments and an introduction to lasers and holography. Three credit hours.

523. MODERN PHYSICS.
Important contributions to atomic and nuclear physics since 1900, including electrical discharges in gases, atomic spectra, Bohr's atom, Schroedinger's equation, natural radioactivity, and elementary relativity. Three credit hours.

525. THERMODYNAMICS AND KINETIC THEORY.
Study of first and second laws of thermodynamics, general thermodynamic formulas with application to matter, kinetic theory of gases and Maxwell-Boltzmann statistics. Three credit hours.

531. ENERGY SYSTEMS.
Physical and chemical principles of energy conversion and their application to potential sources of power, fossil fuels, fission and fusion, fuel cells, photovoltaics, photothermal systems. Three credit hours.

535-536. METHODS OF EXPERIMENTAL PHYSICS.
Designed to acquaint students with the principles of basic experiments in all major branches of physics, stressing design of apparatus, procedures and analysis of projects involving mechanical, optical, electronic and thermal techniques, with microcomputers employed to collect and analyze experimental data. Three credit hours each.

563. MATHEMATICAL METHODS III.
An intermediate course in applied mathematics. Topics covered include the solution of differential equations, vector calculus, Fourier series and Laplace transforms. Three credit hours.

565. THERMAL PHYSICS.
Statistical inference is used to deduce the fundamental principles of thermodynamics and kinetic theory. These principles are applied to ideal and real gases, solids, closed and open systems, and black body radiation. Three credit hours.

567-568. INTERMEDIATE ELECTRICITY AND MAGNETISM.
A treatment of electro-statics, dielectric theory, magnetic phenomena, magnetic media, AC circuits and Maxwell's equations. Vector calculus is used throughout. Three credit hours each.

652. CLASSICAL MECHANICS.
Lagrangian formulation, the Kepler problem, Rutherford scattering, rotating coordinate systems, rigid body motion, small oscillations, stability problems, and Hamiltonian formulation. Three credit hours.

655. COMPUTATIONAL METHODS.
Designed to familiarize students with the use of computers in pursuing theoretical research. Numerical analysis techniques and computational methods employed in the study of physical models will be studied. Three credit hours.

657. ADVANCED EXPERIMENTAL METHODS.
A laboratory course designed to acquaint the graduate student with methods and techniques of modern experimental physics. Three credit hours.

661. SOLID STATE PHYSICS.
An introductory study of the structure and physical properties of crystalline solids. Included are topics in crystal structure, lattice vibrations, thermal properties of solids, x-ray diffraction, free electron theory and energy based theory. Three credit hours.

665. STATISTICAL MECHANICS.
Laws of thermodynamics, Boltzmann and quantum statistical distributions, with applications to properties of gases, specific heats of solids, paramagnetism, black body radiation and Bose-Einstein condensation. Three credit hours.

667. MATHEMATICAL METHODS IV.
An advanced treatment of mathematical topics including operators, matrix mathematics, complex variables and eigenvalue problems. Three credit hours.

671-672. ADVANCED ELECTROMAGNETIC THEORY.
Treatment of boundary value problems of electrostatics and magnetostatics, electromagnetic radiation, radiating systems, wave guides, resonating systems and multiple fields. Three credit hours each.

675-676. QUANTUM MECHANICS.
A study of the Schroedinger wave equation, operators and matrices, perturbation theory, collision and scattering problems, classification of atomic states and introduction to field quantization. Three credit hours.

691-692. RESEARCH.
Designed to give qualified students an opportunity to conduct study or laboratory work in a specialized field of interest. One to three credit hours each.

695. MASTER'S THESIS

Research on topic selected in consultation with a Physics faculty resulting in a written thesis. One to six credit hours

GRADUATE PROGRAM IN PLANT SCIENCE

Research Professor
Arthur O. Tucker, Ph.D. Rutgers University

Associate Professors
Richard A. Barczewski, Ph.D. University of Maryland (Program Director)

Randel Peiffer, Ph.D. Pennsylvania State University
Cyril Broderick, Ph.D., University of New Hampshire

Assistant Professors
Mingxin Guo, Ph.D., Pennsylvania State University
Venugopal Kalavacharla, Ph.D., North Dakota State University

Adjunct Professors
Robert Naczi, Ph.D., University of Michigan
Susan Yost, Ph.D., City University of New York

OBJECTIVES:

The Department of Agriculture and Natural Resources Graduate Program prepares students for career opportunities and cooperative ventures with federal and state agencies, private industry, and nearby horticultural institutions. The program strives to generate research designed to solve problems encountered in the study, production and manipulation of plant species and in evaluating various aspects of the plant sciences including plant production, physiology, culture and taxonomy.

ADMISSION AND DEGREE REQUIREMENTS:

In addition to the general Graduate School Requirements, potential candidates must have an undergraduate degree in plant sciences or the equivalent, with (30) credits from the following list of courses: General Botany, Horticultural Plant Materials, Statistics/Biometrics, Organic Chemistry, Biochemistry, Field Crops, Forage Crops, Ecology, Plant Systematics, Soils, Entomology, Weed Science, Genetics, Plant Physiology, Molecular Biology, Plant Pathology and Plant Propagation.

Degree Requirements:

Master of Science Degree Program in Plant Science

The Masters Degree in Plant Science is designed to prepare students for advanced study in plant culture, physiology, management and/or systematics. The degree requires a supervised research program and a thesis. A total of 31 credit hours are required for the degree, including 22 hours of course work and 9 credit hours of research.

FACILITIES:

The Department of Agriculture and Natural Resources is housed in the W.W. Baker Building, which contains classrooms, offices, and laboratories that house the program. Other facilities include the Claude E.

Phillips Herbarium and a 6,000 square foot Research Greenhouse. The Claude E. Phillips Herbarium contains the largest collection of preserved plant specimens at any historically black institution and is the largest public herbarium east of the Mississippi River. A research greenhouse is located to the north side of the Baker building. Several fields and research plots are located on the campus grounds. Hickory Hill Farm, a forage research farm is located approximately 7 miles away in Cheswold, Delaware.

FACULTY:

The faculty in the Department of Agriculture and Natural Resources are dedicated to their fields of study and have a diverse background. Specific areas of research interest of the plant science faculty include plant systematics, plant physiology, tissue culture, forage production, forage utilization, and minor crop production. Active research programs exist within these areas and offer graduate students many opportunities for active learning and discovery.

CURRICULUM

Core Courses (13 hours)
All students within the major are required to take the following courses.

28-551	Experimental Design (3 hours)
28-572	Department Seminar (1 hour) attendance required each semester, credit given during the semester that the thesis research is presented.
28-560	Research Problem in area of Specialization (3 hours)
28-561	Thesis Research (6 hours)

Elective Courses by Advisement (18 hours)
Other Graduate level courses by advisement

22-501	Organismal Biology (3 hours)
22-571	Population Biology (3 hours)
22-642	Cell and Molecular Biology (3 hours)
22-611	Advanced Genetics (3 hours)
23-521	Biochemistry (3 hours)
29-541	Plant Anatomy and Morphology (3 hours)
29-581	Advanced Forage and Minor Crop Production and Utilization (3)
29-531	Crop Biochemistry, Physiology, Ecology (3)
29-511	Plant Genetics and Breeding (3)
29-601	Advanced Field Botany (3)
29-609	Advanced Weed Science (3)
29-641	Evolution of Vascular Plants (3 hours)

COURSE DESCRIPTIONS

29-511. PLANT GENETICS AND BREEDING.
An introduction to and application of plant breeding methodology and selection. Various methods utilized in plant breeding programs, and an understanding of heredity, hybridization and selection of various plant species will be discussed. Prerequisites: 3 credits in Crop Production. 3 credit hours.

28-531. CROP BIOCHEMISTRY, PHYSIOLOGY AND ECOLOGY.
An advanced study of the physiology and ecological factors affecting the productivity of crop plants and their response to environmental stress. Prerequisites: 3 credits in Crop Production and 3 credits in Plant Physiology. 3 credit hours.

29-541. PLANT ANATOMY AND MORPHOLOGY.
A study of the structure and function of major plant cells and tissues and the morpholgy of organs of vascular and nonvascular plants. Laboratories will focus upon comparisons among taxa and the characteristics of major plant groups. Prerequisite: General Biology 101 and 102 and Plant Physiology. 3 credit hours.

28-551. EXPERIMENTAL DESIGN.
A study of the use of advanced experimental designs in planning, analyzing and interpreting experimental data. Three one-hour class periods per week. Prerequisite: 3 credits in statistics/biometrics. 3 credit hours.

28-560. RESEARCH PROBLEM IN AREA OF SPECIALIZATION.
A special problems course designed to provide research training in the area of the students field of study and specifically related to the needs of their research program. 3 credit hours.

28-572. DEPARTMENT SEMINAR.
A seminar, meeting once per week with faculty and student presentations on their research and/or other relative scientific topics. 1 credit hour.

29-581. ADVANCED FORAGE AND MINOR CROP PRODUCTION AND UTILIZATION.
An advanced application of forage and minor crop production and utilization. The course will include visits to and analysis of various forage and minor crop operations in the Delmarva Area. Prerequisites: None. 3 credit hours.

29-601 ADVANCED FIELD BOTANY.
Through field work, lectures, study of herbarium specimens, and readings, this course provides experience with identifications, habitats, and geographic distributions of native and naturalized plants of eastern North America, concentrating on the Delmarva Peninsula. Principles of plant systematics and phytogeography are illustrated through direct study of plants in the field. Primary and secondary literature of plant identification and distribution are used in the filed, herbarium, library, and classroom. In addition, collection, preparation, and labeling of plant specimens are covered in this course. 3
credit hours.

29-609 ADVANCED WEED SCIENCE.
An advanced study of weeds and their control. Principles involving weed plant classification, weed biology and ecology, and plant and herbicide chemistry will be presented. Practices which prevent, eliminate and control weeds in grain crops, legumes, vegetables, fruit, pasture and other crop ecologies will be discussed. Herbicide formulations and safe herbicide use will be taught. Prerequisites: Biology 102, Crops 317 or Horticulture 219 or the permission of instructor. Two one-hour lectures and one two-hour laboratory per week. 3 credit hours.

29-641 EVOLUTION OF VASCULAR PLANTS.
Advanced study of the evolution and classification of Tracheophyta, including traditional and experimental evidence of phylogenetic diversity. Two lectures and one two-hour laboratory per week. 3 credit hours.

GRADUATE PROGRAM IN NATURAL RESOURCES

Associate Professors
Richard A. Barczewski, Ph.D. University of Maryland (Program Director)
Michael A. Reiter, Ph.D. The University of Virginia
Kevina Vulinec, Ph.D. University of Florida

Assistant Professors
Dewayne Fox, Ph.D., North Carolina State University
Dennis McIntosh, Ph.D., University of Arizona
Gulivihal Ozbay, Ph.D., Auburn University

OBJECTIVES:

The Department of Agriculture and Natural Resources Natural Resources Master of Science program was developed to provide advanced studies in natural resources for students who wish to specialize in this area. To generate research designed to address local problems encountered in the study, management, or manipulation of natural resource areas. To provide opportunities for advanced study in disciplines in natural resource studies that are not readily available at other local colleges and universities. And to provide the opportunity for cooperative ventures with federal and state government agencies, private industry, and other interested organizations (i.e. grant proposals, internships, service learning relationships, etc.)

ADMISSION AND DEGREE REQUIREMENTS:

In addition to Graduate School requirements the candidate must have a bachelor's degree in some aspect of natural or applied field science (such as natural resources, wildlife management, fisheries, a field oriented biological science degree or similar), – including thirty (30) credits from the following courses: Aquaculture, Biometrics, Botany, Dendrology, Ecology, Ecosystems, Environmental Law/Policy, Fisheries Science, Ichthyology, Forestry, Land Use Planning, Limnology/Aquatic Ecology, Mammology, Marine Biology, Ornithology, Population Biology, Resource Management, Soil & Water Management, Wetlands Biology, Wildlife Management, Zoology. Any deficiencies in course background identified by a student's advisory committee can be made up, although courses taken to fill deficiencies cannot be applied to the graduate program for credit.

Degree Requirements:

Master of Science Degree Program in Natural Resources

The Masters degree in Natural Resources is designed to prepare students for advanced study in the various disciplines in the field. The degree requires a supervised research program and a thesis. A total of 30 credit hours are required for the degree, including 24 credit hours of course work and 6 credit hours of research.

FACILITIES:

The Department of Agriculture and Natural Resources is housed in the W.W. Baker Building, which contains classrooms, offices, and laboratories that house the program. Other facilities include the Claude E. Phillips Herbarium and Hicork Hill. The Claude E. Phillips Herbarium contains the largest collection of preserved plant specimens at any historically black institution and is the largest public herbarium east of the Mississippi River. Several fields, forest lands and research plots are located on the campus grounds. In addition, there is an aquaculture facility with in excess of 30 ponds and an aquatic ecology laboratory. Collaborative efforts with various state and federal parks and natural areas allow for a wide range of project

activities throughout the state.

FACULTY:

The faculty in the Department of Agriculture and Natural Resources are dedicated to their fields of study and have a diverse background. Specific areas of research interest of the Natural Resource science faculty include wildlife management, wetland ecology, rainforest ecology and aquaculture. Active research programs exist within these areas and offer graduate students many opportunities for active learning and discovery.

CURRICULUM

Core Courses (20 hours)
30-502 Habitat Management and Restoration: Theory (3)
30-503 Conservation and Restoration Biology, Applications (3)
23-504 Population Biology (3)
29-551 Experimental Design (3)
29-572 Department Seminar (2) – attendance required each semester, credit given during semester that thesis research is presented.
28-560 Thesis Research (6)

Additional graduate courses in supporting subjects (approximately 3-4 courses) such as Advanced Wildlife Biology, Wetlands Biology, etc. shall be determined and approved by the candidate's advisory committee, in consultation with the student, based on area of specialization and career goals. New courses include: Advanced Aquaculture, Aquatic Animal Physiology, Special Problems in Natural Resources.

COURSE DESCRIPTIONS

30-502. HABITAT MANAGEMENT AND RESTORATION: THEORY.
An exploration of advanced theory and methodology for the establishment, maintenance and restoration of aquatic and terrestrial habitats. 3 credit hours.

30-503. CONSERVATION AND RESTORATION BIOLOGY, APPLICATIONS.
Application of theory and methodology presented in the theory course to field projects involving data collection and interpretation. 3 credit hours.

29-504. ADVANCED AQUACULTURE.
Advanced aquaculture will include environmental, social and legal considerations; various culture systems; water quality management (as related to organism cultured and system type); feeds and nutrition; health management; and economics and marketing. The course will include literature research and research projects as well as assigned laboratory work. Three hours lecture and one two hour laboratory per week. 4 credit hours.

29-505. AQUATIC ANIMAL PHYSIOLOGY.
A study of the basic physiological systems in fishes and crustaceans and their relationships to development, growth and reproduction. Three hours lecture and one two hour laboratory per week. 4 credit hours.

29-506. EXPERIMENTAL DESIGN.
A study of the use of advanced experimental designs in planning, analyzing and interpreting experimental data. Three one-hour class periods per week. Prerequisite: 3 credits in statistics/biometrics. 3 credit hours.

29-507. RESEARCH PROBLEM IN AREA OF SPECIALIZATION.
A special problems course designed to provide research training in the area of the students field of study and specifically related to the needs of their research program. 3 credit hours.

29-508. DEPARTMENT SEMINAR.
A seminar, meeting once per week with faculty and student presentations on their research and/or other relative scientific topics. 1 credit hour.

29-642. ADVANCED WILDLIFE BIOLOGY.
Advanced study of wildlife populations including the application of computers to field data analysis and theoretical models. Research techniques of project planning, record keeping, wildlife literature review, and scientific writing. Environmental management using remote sensing and reconnaissance field mapping, habitat analysis and evaluation, sustained yield, and wildlife damage control. Prerequisite 30-403. 3 credit hours.

29-643. MARINE BIOLOGY.
A broad overview of the biota of marine environments, examining the ecological structure and function of oceanic, coastal, and estuarine habitats. Aspects of physical, chemical, and geological oceanography will also be covered pertinent to biological communities and adaptations. Lectures, demonstrations, laboratories and two-weekend field trips. Prerequisites: Ecology 205 or consent of instructor.l 3 credit hours.

29-644. WETLANDS BIOLOGY.
A broad overview of the ecological structure and function of wetlands environments, emphasizing comparisons of different wetland types in terms of hydrology, soils, biogeochemistry, biota, and ecological processes. Human interactions with wetlands will be examined in terms of wetlands values and functions, delineation, classification, inventory, regulations, mitigation, compensation, and management. Lectures, demonstrations, laboratories, and two weekend field trips. Prerequisites: Ecology 205 or consent of instructor. 3 credit hours.

30-504 ENVIRONMENTAL MODELING.
An introduction to the major types of environmental models, including modeling theory and various methodologies used for modeling environmental systems. Two hours lecture and two hours laboratory/project work per week. 3 credit hours.

30-531 ADVANCED ECOSYSTEMS
A philosophical course, integrating concepts in social, physical , and biological sciences with an introduction to the quantitative synthesis of ecological systems. The course is designed to provide the specialist with a total view of resource use and management. Prerequisites: Ecology 205, and Biometrics 321 or the consent of the instructor. Students who have taken 30-451 are not eligible to take 30-351 for graduate credit. Credit: three hours.

30-575 ADVANCED ECOSYSTEMS AND ENVIRONMENTAL POLICY & LAW
A study of the development and enforcement of environmental law. Emphasis on the history of the molding of national and regional environmental policy concerns. Synoptic review of major international, national , regional, state, and local environmental laws. Prerequisites: Ecology 205 or permission of the instructor. "Students who have taken 30-451 are not eligible to take 30??? For graduate credit." 3 credit hours.

30-604 GIS APPLICATION IN NATURAL RESOURCES
This course is an introduction to the design, development, and application of Geographic Information System tecnoloies for students in natural resources, environmental management, or similar disciplines that could benefit from a professional GIS curriculum. Two hours lecture and two hours laboratory/project work per week. 3 credit hours.

GRADUATE PROGRAM IN BUSINESS ADMINISTRATION

FACULTY:

Professors

Winston K. Awadzi, Ph.D., Louisiana State University; Business Policy
Richard F. Bieker, Ph.D., University of Kentucky; Economics
Patrick R. Liverpool, D.B.A., Kent State University

Associate Professors

Constant Beugre, Ph.D., Rensselaer Polytechnic Institute
Jan E. Christopher, Ph.D., Howard University; Quantative Methods
Daeryong Kim, Ph.D., University of Mississippi
Young-Sik Kwak, Ph.D., University of Mississippi; Finance

Assistant Professors

OBJECTIVES

The **Master of Business Administration (MBA) Degree Program** is designed for working professionals and aspiring managers from a wide range of backgrounds who wish to advance their careers or acquire the knowledge and skills necessary to succeed as managers and leaders in the new economy. Candidates integrate and apply business and organizational concepts and techniques in the functional areas of organizational management. The program is flexible enough to accommodate both full-time and part-time (professional and accelerated) students. MBA candidates interested in pursuing full-time accelerated program can complete the degree in 12 months by taking three courses (9 credit hours) per term*. Regular full-time students can complete the program within an 18-month period by taking two courses per term. MBA classes are offered during the evening hours and weekends. Those interested in part-time study can complete the degree requirements within two years by attending, at least, one summer session.

(*MBA classes are offered in 8-week terms whereby classes meet twice a week from Monday through Thursday; Weekend classes will meet once on Saturdays).

ADMISSION POLICIES AND PROCEDURES

Requirements for Unconditional Admission

For admission to the MBA Program, applicants must have earned a baccalaureate degree from an accredited college or university and possess the ability to do graduate work of high quality. For unconditional admission, candidates must have earned a minimum cumulative undergraduate grade-point-average of 2.75 (on a 4.00 point scale) and achieve a total score of at least 900 points (based on the following formula: 200 times the overall undergraduate grade-point-average plus the Graduate Management Admission Test (GMAT) score). In addition applicants must have completed the common body of knowledge (CBK) requirements.

Requirements for Conditional Admission

Applicants not meeting the unconditional requirements may be admitted conditionally if (1) they have a minimum cumulative undergraduate grade-point-average (GPA) of 2.50 and earn a minimum of 400 on the GMAT; (2) have an overall undergraduate GPA of 3.00 or at least 3.25 upper-division GPA and have not completed the GMAT; or (3) have completed all other requirements except the CBK. A candidate admitted conditionally must complete a total of three MBA core or elective courses (nine credits) and earn a cumulative grade-point average of at least 3.00, with no grades of "C" or lower. The candidate must then petition, before registering for the fourth course, for unconditional admission (refer to the MBA Handbook for the procedure). Candidates conditionally admitted must complete the CBK requirements and the GMAT before registering for their fourth course. A copy of the GMAT scores needs to be on file.

Requirements for Non-Traditional Applicants

Applicants may apply for admission as non-traditional students if they have: (1) higher or professional degree beyond the baccalaureate degree; (2) significant relevant work experience; or (3) national or regional certification in a professional field. Applicants may petition for the GPA, GMAT, and CBK requirements to be waived. All requests for waivers must undergo a review and certification by the Director of the MBA Program (refer to the MBA Handbook for further information).

Basic Skills Expectations of New MBA Students

In addition to meeting the admission criteria listed above, MBA students are expected to have the following skills to ensure success in the program.

1. *Quantitative Skills*. A knowledge of mathematical concepts, including algebra and calculus.
2. *Verbal & Written Skills.* The ability to collect relevant information, organize thoughts and communicate them clearly.
3. *Computer Skills.* Knowledge of word processing and ability to use spreadsheets.

Proficiency in these skills will be assessed by the Director of the MBA Program and the graduate faculty. Recommendations for review courses and additional training will be made based on a review of undergraduate course work, advanced degree or course work, professional experience and certification.

Common Body of Knowledge (CBK) Requirements

Incoming MBA students who lack a solid foundation in business must complete some or all of the CBK courses in selected areas of study. Prerequisites or foundation courses may be required in statistics, accounting, microcomputer applications, economics, marketing, management and finance. The non-credit foundation courses may be taken on line in self-paced learning modules prior to or in the first semester. The CBK must be completed prior to enrolling in courses for which any of them serve as a prerequisite. No MBA candidate may enroll in an MBA core or elective course until he or she fulfills the CBK prerequisite(s) for that course. All CBK courses must be reviewed and approved by the Director of the MBA Program (refer to the MBA Handbook for additional information).

The CBK Modules are Statistical and Math Concepts, Accounting Concepts, Economics Concepts, Finance Concepts, Management Concepts, and Marketing Concepts. Applicants must earn a grade of "C" or better in the CBK courses. Applicants with CBK deficiencies must complete them before being unconditionally admitted. Any or all of the CBK prerequisites may be waived based on: (1) applicant's work experience, (2) applicant's formal education, (3) professional certification upon review and certification by the Director of the MBA Program. The self-paced learning modules may be provided in the School of Management. Students have the option of taking undergraduate courses that meet the CBK requirements.

DEGREE REQUIREMENTS

To earn the MBA degree, students must complete 24 hours of the MBA core courses, one capstone course and nine semester hours of MBA elective courses. Students may pursue the general MBA in Management or select a concentration in Finance or Information Systems/E-Commerce.

The candidate must complete the 36 hours of core, elective, and capstone courses with a minimum cumulative grade-point-average of 3.00 and no more than six credit hours of lower than "B"and no grade lower than "C." There is a five-year time limit for completing the MBA Program, beginning in the first term that a student begins to take graduate classes. The School of Management reserves the right to substitute courses.

Required (Core) Courses (24 credit hours):

Information and Technology Management (MBA 600)
Economics for Managerial Decision-making (MBA 601)
Marketing Management (MBA 602)
Accounting for Decision-Making (MBA 603)
Financial Management (MBA 604)
Organizational Leadership & Behavior (MBA 605)
Quantitative Methods for Decision Making (MBA 606)
International Management (MBA 625)

Capstone Courses (3 credit hours required):

Applied Strategic Management (MBA 616)

MBA (Management Emphasis):

The General MBA with Management emphasis requires nine semester hours of elective courses in addition to the 24 credit hours of core courses and the three credit hour capstone course.

Finance Concentration Courses (9 credit hours from the following electives are required):

Financial Statement Analysis (MBA 617)
Investments and Portfolio Management (MBA 641)
Derivative Securities and Risk Management (MBA 642)

Domestic & Global Financial Markets and Institutions (MBA 643)
Economic and Financial Environment of Business (MBA 645)

Information Systems/E-Commerce Concentration Courses (9 credit hours of electives from the following are required)

Management Information Systems (MBA 611)
Strategic Information Systems (MBA 631)
Managing Electronic Commerce (MBA 632)
Topics in Information Systems (MBA 633)
Supply Chain Management (MBA 651)

General MBA Electives

Quantitative Research Methods (MBA 610)
Legal & Regulatory Environment of the Organization (MBA 612)
Accounting Information Systems (MBA 618)
Human Resource Management (MBA 626)
Organizational Change and Development (MBA 627)
International Marketing (MBA 650)
MBA Case Project (MBA 680)

SUGGESTED COURSE OF STUDY

	12 Month Program*	***18 Month Program****
Term 1 (8-week courses)	Credit Hours	Credit Hours
Information and Technology Management	3	3
Accounting for Decision Making	3	3
Elective	3	
Term 2 (8-week courses)		
Quantitative Methods	3	3
Organizational Leadership & Behavior	3	3
Elective	3	
Term 3 (8-week courses)		
Marketing Management	3	3
Economics for Managerial Decision Making	3	3
**Strategic Management *(12 Month)*	3	
Term 4 (8-week courses)		
Financial Management	3	3
International Management	3	3
Elective	3	
Term 5		
Elective		3
**Strategic Management *(18 Month)*		3
Term 6		
Elective		3
Elective		3
Total Hours to Complete Degree	36	36

* *Under the 12-month Program a student will take three courses (9 credit hours) per week term, including a Saturday class. Under the 18-month Program a student will take two courses per 8-week term. Classes will meet twice a week for the 8-week period from Monday through Thursday.*

** *Applied Strategic Management is a 16-week course (that meets once a week) covering Terms 3 and 4 for the 12-month course of study or Terms 5 and 6 for the 18-month course of study. Applied Strategic Management can also be taken over the summer.*

MBA COURSE DESCRIPTIONS

600. INFORMATION AND TECHNOLOGY MANAGEMENT

This course introduces the students to the uses, trends, and applications of information technologies in organizations. The course will expose the students to computer hardware, computer software, telecommunications, network technology, Internet, World Wide Web, multimedia, and other topics in information technology. Credit, three hours.

601. ECONOMICS FOR MANAGERIAL DECISION MAKING

This course examines the applied micro-economic theory of the firm. Economics concepts covered include demand analysis, production and cost analysis, linear programming applications, pricing policies, and government regulation of the firm. This course also provides an analysis of macro-economic factors influencing business activity and their implications for strategic management and business policy. Credit, three hours.

602. MARKETING MANAGEMENT

This course examines the strategic marketing planning process. Emphasis is placed on the development of product lines, sales promotion, and distribution strategies. Prerequisite: CBK requirements in Principles of Economics and Marketing. Credit, three hours.

603. ACCOUNTING FOR DECISION-MAKING

This course emphasizes the study of accounting as it relates to internal reporting, managerial decision-making, planning, and control. Topics covered include the following: cost-volume-profit analysis; budgeting; responsibility accounting; product costing; cost behavior; and variance analysis. Prerequisite: CBK requirement in Accounting. Credit, three hours.

604. FINANCIAL MANAGEMENT

This course addresses the principles of financial management. Topics covered include the following: capital acquisition; working capital management; capital budgeting; valuation theories; and dividend and long-term financial policies. Prerequisite: CBK requirements in Economics, Finance, and Accounting. Credit, three hours.

605. ORGANIZATIONAL LEADERSHIP & BEHAVIOR

This course concentrates on the behavior of individuals in small, informal groups and formal organizations. It examines the following topics: leadership, in the context of group behavior; job satisfaction; supervision; planning; and conflict resolution. Prerequisite: CBK requirement in Management.

606. QUANTITATIVE METHODS FOR DECISION MAKING

This course considers the use of quantitative techniques in business. Topics covered include the following: forecasting techniques; inventory control models; linear and dynamic programming; transportation and assignment problems; statistical quality control; decision theory; and computer applications in the areas of accounting, finance, marketing, and production. Prerequisite: CBK requirements in Math and Statistical Concepts. Credit, three hours.

610. QUANTITATIVE RESEARCH METHODS

This course is devoted to study of methods and techniques in business research. Topics covered include the following: problem identification and definition; hypotheses formulation and testing; literature review; and data collection and analysis. Prerequisite: Business 606. Credit, three hours.

611. MANAGEMENT INFORMATION SYSTEMS

This course addresses the needs of information and information technology in the organization in today's competitive business environment. The course will explore the information function within the organization, the nature and characteristics of computerized information systems, usage of information systems and technology to change the organizational structure, work process, and culture. Information system analysis and design are also discussed. Prerequisite: Bus 600. Credit, three hours.

612. LEGAL AND REGULATORY ENVIRONMENT OF THE ORGANIZATION.

This course addresses the impact of legal and ethical factors pertinent to the effective management of business organizations. Legal considerations, both common law and regulatory, are a constant concern for management executives in terms of decision making. Contracts, consumer protections, secured transactions and credit, employment and other currently relevant areas will be examined, in depth, from the perspective of the decision maker, the company, applicable regulatory bodies if any, and the consumer. Students will consider the ethical and legal implications inherent in each of these areas, from each of the four perspectives. Credit, three hours.

616. APPLIED STRATEGIC MANAGEMENT.

This course is a study of policy formulation and implementation by middle- and senior-level management. This course integrates previous course work in the other core courses. This capstone (integrated management course) is intended to apply theoretical concepts to a variety of organizational situations from a top-management perspective. The concepts and techniques of strategic management in organizations will be the focus of this course. Topics include developing a strategic vision, setting objectives and crafting a strategy. Students will be expected to develop a competitive analysis portfolio; match strategy to an organization's situation; build resource capabilities, support systems, budgets, align culture and strategy; and structure the organization to implement the organization's strategic vision in a dynamic global marketplace. Prerequisite: Completion of all other core course requirements. Credit, three hours.

617. FINANCIAL STATEMENT ANALYSIS.

This course provides the fundamentals managers need to analyze financial statements in making non-routine decisions, as well as in discharging their day-to-day operating responsibilities. Accordingly, it addresses the following issues: (1) basic accounting and applications in the context of financial statement analysis; (2) analyses of financial position, results of operations, and cash flows; (3) intercorporate investments; (4) financial statement data issues, including "other financial data" and information economics; and (5) financial statement audit opinions. Prerequisite: Business 603. Credit, three hours.

618. ACCOUNTING INFORMATION SYSTEMS

This course addresses the analysis, design, and installation of accounting systems, including understanding the control procedures required (with emphasis on computer-based systems). Prerequisite: Business 603. Credit, three hours.

625. INTERNATIONAL MANAGEMENT

An exploration of the issues which face a manager operating in an international environment. The course will expose students to the constraints and opportunities in the global economy to provide an understanding strategic and functional aspects of international business management. Topics include: an overview of global management, cultural, legal, and political influences on international management; international trade and investment; transnational operations and marketing; international human resource management; cross-cultural communication and decision-making; international strategies; and organizing international enterprises. Credit, three hours.

626. HUMAN RESOURCE MANAGEMENT

An advanced study of the human resource management function and its importance in organizations. Discussion topics include human resource planning, selection, training and development, performance appraisal, compensation, equal employment opportunity, safety and health, and employee labor relations. The impact of laws and business trends on the human resource function is presented. The manager's role in dealing with the challenges presented by human resources is emphasized.

627. ORGANIZATIONAL CHANGE AND DEVELOPMENT

A study of the models, intervention strategies, processes, and techniques for planned organizational change and development. Focus will be on system-wide change and development in complex organizations and the application of behavioral science knowledge to the planned creation and reinforcement of organizational structures, strategies, and cultures for improving organizational effectiveness. Prerequisite: Bus 605. Credit, three hours.

631. STRATEGIC INFORMATION SYSTEMS

This course examines the use of information technology to achieve competitive advantage, effective decision-making, and efficient operations. The course will explore the usage of many kinds of information systems and technology in organizations and analyze their role, functions, and effects on competitive strategy and organizational operations. Prerequisite: Bus 600. Credit, three hours.

632. MANAGING ELECTRONIC COMMERCE

With an emphasis on managing electronic organizations, this course examines electronic commerce infrastructures, various types of electronic commerce, issues in designing and managing on-line business, electronic payments as receivables and payables and Internet security issues. Additional topics such as database marketing will be discussed. Prerequisite: Business 600. Credit, three hours.

633. TOPICS IN INFORMATION SYSTEMS

Information technology is continuously evolving as so is the usage of information systems in the ever-changing business environment. Managers need to adapt operations and processes to the latest trends in information systems and technology. This course will deal with various topics and problems in many functional areas, such as marketing, accounting, production, human resources, and management information systems with information systems and technology. Case studies and lectures will reinforce lectures.

641. INVESTMENTS AND PORTFOLIO MANAGEMENT

This course addresses principles in determining investment vehicles for individual and institutional investors. It focuses on investment information sources, features of various securities instruments, as well as strategies and techniques for portfolio construction, management and protection. Prerequisite: Business 604. Credit, three hours.

642. DERIVATIVE SECURITIES AND RISK MANAGEMENT

This course examines the fundamental issues in risk management by utilizing futures, options, swaps, and various other derivative securities. Other topics include hedging techniques, mergers and acquisitions, and financial engineering. Prerequisite: Business 641. Credit, three hours.

643. DOMESTIC AND GLOBAL FINANCIAL MARKETS AND INSTITUTIONS

This course examines structures and functions of international and domestic financial markets such as stock, bond, mortgage, and money markets. It also addresses financial management aspects of different financial institutions including banks, savings and loans association, investment companies, and pension funds. Theories of comparative advantage, foreign exchange markets, financial risk management, and funds transfer and investments will be discussed. Prerequisite: Business 604. Credit, three hours.

645. ECONOMIC AND FINANCIAL ENVIRONMENT OF THE ORGANIZATION

This course examines the macroeconomic and financial environment within which the organization operates. The course focuses on identifying and assessing the macroeconomic and financial factors affecting the organization and on developing strategies to deal with changes in the macro environment. Prerequisites: Business 604. Credit, three hours.

650. INTERNATIONAL MARKETING

This course explores the globalizations of markets and the challenges presented to business managers. The course will examine the impacts of international market segmentation, product attributes, cultural differences, economics differences, differences in product and technical standards, global advertising, and international pricing, etc. on transnational business operations. Credit, three hours.

651. SUPPLY CHAIN MANAGEMENT

This course considers the components of modern-day distribution systems, with emphasis on facility location, transportation, warehousing, inventory control, and communication. Students will develop a conceptual understanding of issues relating to designing, planning, control, product design, information systems, inventory management, quality control and warehousing. Prerequisite: Business 602. Credit, three hours.

680. MBA CASE PROJECT

The MBA Case Project tests the student's strategic thinking and analytic skills. There are three different approaches to the Case Project:

1) Students will be provided with the income statement and balance sheet, annual reports, and other pertinent information to make recommendations on a broad range of strategic issues facing a company.
2) Students will be provided with a portfolio and other pertinent information to make trades on investments and maximize their portfolios.
3) Students will be given a series of general management cases that cover a broad range of strategic issues facing companies.

The students will submit a final presentation discussing their analysis and recommendations of the company or real-world cases they have investigated. A Project Thesis is required. Credit, three hours.

GRADUATE PROGRAM IN SOCIAL WORK

Professors:
Elijah Mickel, D.S.W, Howard University
Kul Bhushan Suri, Ph.D., University of Maryland
Associate Professors:
Maria Carroll, Ph.D., University of Maryland
Bruce Hobler, Ph.D., University of Maryland
Diane Metzendorf, D.S.W., University of Pennsylvania
Dolores Finger-Wright, D.S.W. Howard University
Assistant Professors:
Ernestine Brittingham-Brown, M.S.W., Ohio State University
Marlene Saunders, D.S.W., University of Pennsylvania (Program Director)

GOALS AND OBJECTIVES:

The primary goal of the Graduate Social Work Program is to prepare professional social workers capable of practicing at the advanced level according to the generalist perspective with, and on behalf of individuals, families, groups, communities, and organizations. Students are expected to demonstrate the ability to practice with diverse populations in diverse settings.

A primary objective of the Graduate Social Work Program is to increase the number of professional social workers employed in public, private, and non-profit human service agencies. By so doing, the program helps to insure that persons needing help with complex social problems receive intervention reflecting the profession's knowledge, values and skills.

Another primary objective of the program is to prepare social workers who are able to employ practice strategies that are consonant with the organizing frameworks of the graduate social work curriculum. These frameworks include the generalist perspective to social work practice, empowerment and the Black perspective.

ADMISSION AND DEGREE REQUIREMENTS:

The curriculum of the Graduate Program in Social Work is designed to prepare individuals to offer professional social work intervention at an advanced level on behalf of the residents of the State of Delaware and the nation. Graduates are enabled to provide intervention and preventive services to individuals, families, groups, organizations and communities in a range of traditional and non-traditional public and private social welfare settings. Foundation courses (first year courses) present the generalist perspective to social work practice. In addition, they present foundation content in the following areas: values and ethics, human behavior and the social environment, social welfare policy and services, social work practice, research, diversity, populations-at-risk and social and economic justice and field education. Building on foundation content, the advanced curriculum imparts an advanced body of knowledge, practice principles, and skills consistent with the programs concentration advanced generalist practice and a field of practice. The graduate program offers two fields of practice: Advanced Practice with Families, Children and Youth and Advanced Practice in Mental Health. These options, combined with methods electives, allow students to gain in-depth knowledge pertaining to practice in a specific field and within the context of advanced generalist practice.

The Graduate Social Work Program was fully accredited by the Council on Social Work Education (CSWE@) in 1990. The Departments MSW and BSW programs continue to be accredited by the Council.

Degree Requirements:

For admission to the Graduate Program in Social Work, applicants must show evidence that they have earned the baccalaureate degree at an accredited college or university (or its equivalent for foreign students). In addition, applicants must demonstrate the capacity to meet the Programs academic standards in the classroom and the field practicum. Two official transcripts of all previous undergraduate and graduate work must be submitted.

1. **Academic Requirements**:
   A. The applicant must have an undergraduate Liberal Arts foundation as defined by the Graduate Social Work Program. A background in the social and behavioral sciences is preferred.

B. The applicant's undergraduate transcript must reflect a Cumulative Grade Point Average (GPA) of 2.75 or above on a 4.00 point scale (4.00 = A). A "B" average in the major field of study is required. High scholastic achievement is strongly preferred.

C. Official scores on the Graduate Record Examination (GRE) are required. The test scores must not be more than five (5) years old. Scores do not determine admission to the program.

2. **Personal Attributes:**

A. The motivation necessary to successfully complete a rigorous curriculum designed to prepare students for advanced level practice;

B. The capacity to function as a creative, responsible independent, and accountable practitioner;

C. The ability to deal with sexual, racial, ethnic, physical, social, and cultural diversity;

D. Openness to self-introspection and a willingness to change;

E. The capacity to deal with individual differences;

F. An earnest desire to work for social change in order to create a just society.

G. The ability to utilize research methods to influence, formulate and advocate for constructive social welfare policies and effective social work practice interventions, and

H. Readiness to identify with the social work profession and to apply social work values and ethics as defined by the National Association of Social Workers

3. **Type of Admission:**

A. Full-time status- (Curriculum requirements are completed in two years).

B. Full-time modified (Curriculum requirements are completed in four (4) years).

C. Advanced standing status (Individuals granted this status complete the program in a summer and one (1) academic year).

D. Advanced standing credits or transfer credits. Applicants may be awarded up to fifteen (15) credits for courses taken in an accredited BSW program).

E. Typically, as students are admitted they will received a "Regular Status". Students may also receive admission in a "Provisional Status". For "Regular Status", the applicant must have a GPA or 2.75 or better on a 4.00 scale with a "B" average in the major field of study. "Provisional Status" may be offered to applicants with a GPA less than 2.75. The GPA should not be less than a 2.5 on a 4.00 scale. The MSW Program offers a "Success Workshop" to help strengthen the academic performance of students admitted in this category.

Application deadline is April 30th for Advanced Standing and May 30th for other admissions.

CURRICULUM REQUIREMENTS:

In order to complete the program and earn the M.S.W. degree, students must take and pass sixty (60) credit hours of graduate courses with a grade point average of 3.00 or above on a 4.00 scale. The curriculum consists of twenty-four (24) hours of foundation courses, twelve (12) credit hours of concentration courses, six (6) credits hours of field of practice courses, six credit (6) hours of methods electives and twelve (12) credit hours of field instruction courses.

Residency Requirements:

According to standards established by the CSWE and defined by the Graduate Program, students must complete their residency requirement in two consecutive semesters at Delaware State University during the first year of admission as a fully admitted graduate student.

Medical Statement:

After admission, each student is required to submit a health history and a recent physical examination, which must include a Serology Test. A licensed physician stating that the student is physically capable of completing curriculum requirements and is free of contagion must sign the report. Students who do not submit a complete medical statement as described above by the end of the first two weeks of the semester for which they are admitted may be subject to dismissal.

Practice Liability Insurance Requirement:

All students are required to purchase or show proof of social work practice liability insurance prior to placement in any field instruction course. This may be purchased through the National Association of Social Workers (NASW) Insurance Trust (Trust). Membership to the NASW is required when insurance is purchased from the Trust.

COURSE DESCRIPTIONS

Prerequisite:

522. ELEMENTARY STATISTICS FOR SOCIAL WORK
Emphasizes the logical structure and application of statistics and statistical thinking in the collection, analysis and interpretation of data generated by micro, mezzo and macro social work practice. Based on the generalist perspective to social work practice, the course examines descriptive inferential statistics in treating data germane to social work practice and problem solving methodologies. Three credits.

FOUNDATION REQUIREMENTS (24 Credit Hours)

601. POLICIES AND SERVICES IN SOCIAL WELFARE I.
Explorers and identifies the social, political, legal, economic, historical and philosophical foundation of social welfare policy and services in the United States. Reviews major historical themes such as systematic oppression and discrimination of groups such as African Americans, women, and Native Americans. Structures, such as managed care, which restrict the level of service intervention, are also examined. Introduces models of policy analysis and reviews the development of the social work profession. Three credits.

602. POLICIES AND SERVICES IN SOCIAL WELFARE II.
Focuses attention on major social welfare programs and social policy issues associated with various areas of practice and social problems, e.g, child welfare, unemployment. Various approaches to policy analysis as well as planning and implementation processes necessary to deliver services are considered. Emphasizes social policies related to special groups such African Americans, women the elderly and disabled. Prerequisite: 601 Policies and Services in Social Welfare I. Three credits.

603. HUMAN BEHAVIOR AND THE SOCIAL ENVIRONMENT I.
Introduces the various influences on human behavior within a social context. Identifies cognitive, psychological and developmental theories pertaining to human growth and development. Examines the interplay of psychosocial, spiritual, biological and institutional factors from conception through adolescence so that students have a basis for understanding and assessing behavior. Considers the relevance of such factors as ethnicity, gender, race, sexual preference, and mental and physical challenges on human functioning in society. Three credits.

604. HUMAN BEHAVIOR AND THE SOCIAL ENVIRONMENT II.

Focuses on the life span from young adulthood through late adulthood. Addresses milestones in life, such as death and dying. Normal and abnormal behavior are considered. Prerequisite: 603 Human Behavior and the Social Environment I. Three credits.

605. GENERALIST PRACTICE I.
Presents foundation knowledge in social work practice in the generalist perspective, including the problem-solving approach to social work practice, systems theory, the person-in-environment construct and an ecological perspective for practice. Reviews the difference between entry level and advanced level skills in activities/transactions with individuals, groups, families, organizations, and communities. Utilization of practice exercises that allow students to role- play practice situations is a standard teaching technique. This and other teaching methods facilitate skill development in the use of the problem solving model to assist client systems and advanced level integration of empowerment, the generalist perspective and the Black Perspective in practice. Highlights integration social work values and human diversity in practice. Three credits. Note: The grade "B" must be earned in this course. Students enrolled in this course must also be enrolled in the appropriate first year field instruction course.

606. GENERALIST PRACTICE II.
Builds on the knowledge acquired in Generalist Practice I. Provides in-depth knowledge and skills in practice with individuals, groups, families, organizations and communities. Students are expected to begin developing their own conceptual framework for advanced practice in the generalist perspective reflecting the generalist perspective to social work practice, empowerment and the Black Perspective. Prerequisite: 605 Generalist Practice I. Three credits. Note: The grade "B" must be earned in this course. Students enrolled in this course must also be enrolled in the appropriate first year field instruction course.

607. RESEARCH AND EVALUATION METHODS IN SOCIAL WORK I.
Introduces students to the qualitative and quantitative methods of inquiry within the context of social work practice in the generalist perspective. Students are introduced to various research designs practitioners can use to build knowledge for practice. Focuses on framing hypothesis, collecting data, analyzing data, developing conclusions from data and extracting implications for practice based on data collected. Three credits.

608. RESEARCH AND EVALUATION METHODS OF SOCIAL WORK II.
Builds on the knowledge acquired in Research Methods I and Statistics. The student is expected to engage in conducting empirical inquiry through the use of qualitative and/or quantitative methods. The course utilized statistical procedures in the analysis of data. Students are expected to complete a research proposal. Prerequisite: 607 Research and Evaluation Methods in Social Work. Three credits.

633-634. FIELD PRACTICUM.
This is a two-semester course taken by first year students who are enrolled in the program on a full-time basis. It gives students the opportunity to integrate the values, knowledge and skills learned in the class in actual practice situations in an agency setting with individuals, families, communities groups and organizations. Students are placed in a human service agency under the supervision of a field instructor who has earned the M.S.W. degree. Four credits. (Two credits for each course). Note: The grade "B" must be earned in this course. Students enrolled in these courses must also be enrolled in Generalist Practice I and Generalist II as required by the curriculum. All students in the field are required to have liability insurance before entering the field placement agency. See additional description of this course under "Field Practicum" below.

CONCENTRATION REQUIRED COURSES (12 Credit Hours)
A student must successfully complete all foundation courses according to prevailing curriculum and academic policies of the Graduate Social Work Program and the Graduate School prior to enrolling in any concentration course. The concentration, Advanced Practice in the Generalist Perspective, includes four required class-based courses. These courses are described below.

610. ADMINISTRATION MANAGEMENT AND SUPERVISION FOR SOCIAL WORK PRACTICE.
Examines social work practice theories and concepts for administration, management and supervision. Particular emphasis is placed on duties and responsibilities of social work administrators as they pertain to political, economic and bureaucratic realities that restrict delivery of needed services to client systems and to workers' mission as agents for change. Provides a framework for action for the worker/supervisor/administrator as a "change agent" in the social welfare system. Content on management in not-for-profit settings is addressed. Prerequisite: Second year status. Three credits.

611. ETHICAL, ETHNIC AND CULTURAL CONSIDERATIONS IN SOCIAL WORK.
Explores ethnicity, culture, values and ethics as central concepts in advanced social work practice in all human service settings with individuals, communities and organizations. The manner by which these realities are critical to social work practice in America is considered. Examines cross-cultural differences with emphasis on social work principles, concepts and values. Special emphasis is placed on the meaning of diversity for practice when empowerment and the Black Perspective are central elements for advanced level practice. Examines the transactions among and between the client and the worker within the context of ethnicity, culture, values and ethics. Prerequisite: Second year status. Three credits.

646. ADVANCED GENERALIST PRACTICE I.
First course of a second year, two-semester course sequence. Integrates the students values, knowledge, and skills across the foundation content areas of graduate social work education human behavior and the social environment, policy, research, diversity, social work practice, populations-at-risk and social and economic justice, and field education. Emphasizes the integration of advanced generalist practice with the objective to provide knowledge, values and skills that will enable the student to practice at the advanced level according to a practice philosophy steeped in empowerment, the generalist perspective to social work practice and the Black perspective. Course content is geared to developing practice competence at the micro and mezzo at the levels of practice with individuals, groups and families. Students articulate their conceptual framework for advanced practice with individuals and families in the form of a major paper. Prerequisite: Second year status. Three hours. Note: The grade "B" must be earned in this course. Students enrolled in this course must also be enrolled in the appropriate second year field instruction course.

647. ADVANCED GENERALIST PRACTICE II.
Second course of a second year, two-semester course. Integrates the students values, knowledge, and skills across the foundation content areas of graduate social work education (HBSE, policy, research, diversity, social work practice populations-at-risk and social and economic justice, and field education). Emphasizes the integration of advanced generalist practice with the objective to provide knowledge, values and skills that will enable the student to practice at the advanced level according to a practice philosophy steeped in empowerment, the generalist perspective to social work practice and the Black perspective. Students complete the development of their conceptual framework for advanced practice with communities and organizations in the form of a major paper. Prerequisite: 646 Advanced Generalist Practice I. Three hours. Note: The grade "B" must be earned in this class. Students enrolled in this course must also be enrolled in the appropriate second year field instruction course.

FIELD OF PRACTICE COURSES (6 Credits).
A student must successfully complete all foundation courses according to prevailing curriculum and academic policies of the Graduate Social Work Program and the Graduate School prior to enrolling in any field of practice course. The field of practice courses must be taken in sequence. Thus, for example, Advanced Social Work Practice in Mental Health I is taken followed by Advanced Social Work Practice in Mental Health II. Both sequential courses representing a field of practice must be taken. Therefore, Advanced Social Work Practice in Mental Health I (taken in the Fall semester) cannot be followed by Advanced Social Work Practice with Families, Children and Youth II, which is offered in the Spring semester. Students enrolled in a field of practice course must also be enrolled in the appropriate second year field instruction course.

654-655 ADVANCED SOCIAL WORK PRACTICE IN MENTAL HEALTH I & II.
This is a two-semester course that presents an in-depth study of the field of mental health. Emphasis is placed on mental

illness as a social problem. Advanced practice, behavioral and research theories are presented, along with policy and service issues. Prerequisite: Second year status. Six credits (Three credits for each course). Note: The grade B must be earned in this class. Students enrolled in this course must also be enrolled in the appropriate second year field instruction course.

658-659 ADVANCED SOCIAL WORK PRACTICE WITH FAMILIES, CHILDREN AND YOUTH I & II.

Examines utilization of the scientific method and the definition of the family, its history, its members, and functions, as well, as various family structures. Addresses family issues of gender, ethnicity, empowerment, Euro-centric, Afro-centric, mono-cultural and multi-cultural. Investigates intervention strategies for correcting maladaptive family patterns. Helps students identify and develop an understanding of some of the major conceptual frameworks in social work with families and children. Reviews the historical perspective on the development of society's perception of children's needs. The course will go beyond the traditional definitions of child welfare as an institution and encompass a social welfare system for children that would include an analysis of family policy, advocacy and program evaluation. Prerequisite: Second year status. Six credits (Three credits for each course). Note: The grade "B" must be earned in this class. Students enrolled in this course must also be enrolled in the appropriate second year field instruction course.

FIELD PRACTICUM 633(2), 634(2), 635(4), 636(4), 800(2), 802(2), 804(6), 806(3)

Provides students with opportunities to employ the knowledge, values, skills and conceptual frameworks that undergird advanced practice in the generalist perspective in agency settings while under the supervision of an approved field instructor. Students are enabled to develop and refine the skills necessary for effective advanced practice and to integrate the concepts and philosophy of empowerment, the generalist perspective to social work practice and the Black Perspective in the helping process with all client systems. Credit: Twelve credits. (All students must take twelve (12) credit hours of field instruction. Note: The grade "B" must be earned in all practice classes. Students enrolled in field practicum must also be enrolled in the appropriate practice course. Students must consult with their academic advisor to: (1) determine the appropriate field practice course to take, and (2) to select the appropriate practice course(s).

Field Instruction.

Students are assigned a field placement that runs concurrently with academic course work. First and second year placements are based on the learning opportunities of the placement site and the student's learning needs. Students who are employed in a human service agency may utilize their place of employment as a field placement site provided that the Director of Field Instruction, Program Faculty, the Agency, and the Student/Employee are in agreement regarding placement arrangements. No diminution of curriculum requirements established by the Program for Field Practicum courses is permitted. Placements in the student's work place are not considered until all other placement options are fully reviewed. Placement in the students place of employment must be educationally focused rather than centered on agency services. Employment-related field placements are carefully evaluated for appropriateness and specific learning experiences and the work settings ability to provide educationally directed field instruction by an individual who possesses the M.S.W. degree. This individual cannot be the student's supervisor. A written statement of learning objectives, which clearly differentiates employment duties from learning assignments, is required before such placements are approved.

METHOD ELECTIVES (6 Credits).

All students are required to take two methods electives in addition to the two required fields of practice courses and the two advanced generalist practice courses. Full-time modified students may take one methods elective per semester while enrolled in foundation year social work practice and field practicum courses. Full-time modified students may not take method elective courses if they are not enrolled in first year social work practice or field practicum courses.

609. SOCIAL WORK WITH FAMILIES.

Examines the family, its members, and the functional and dysfunctional aspects of family behavior. Considers issues of ethnicity, Euro-centric versus Afro-centric world views, and investigates intervention strategies for correcting dysfunctional family patterns. Examines traditional family theorists and attendant theories as a way of: (1) broadening the student's repertoire of perspectives regarding family functioning and (2) obtaining a framework for comparing and contrasting family theories and their appropriateness for treatment intervention. Three credits.

614. SOCIAL WORK AND THE LAW.
Examines the legal base of organized social welfare and social work practice through the study of social legislation, judicial decisions, the legislative process, development of administrative regulation and court organization. Presents an overview of legal principles for application to social work practice. Special attention is given to laws pertaining to the family, the field of mental health and child welfare, malpractice, and courtroom testimony. Three credits.

616. COMPUTER USE FOR SOCIAL WORKERS.
Introduces the use of computer technology for social work practice in human service settings. Utilizes SPSSPC to teach students data analysis as a means of improving practice and adding to the professions knowledge base. Prerequisite: Elementary Statistics, 607 & 608 Research and Evaluation Methods in Social Work, or equivalent. Three credits.

617. REVIEW OF RESEARCH IN SOCIAL WORK.
Provides the opportunity for an independent in-depth study of a social problem/issue. Individual topics of interest will be explored with designated mentors in an effort to explore a students special interest, e.g. de-institutionalization, foster care, elder abuse and neglect. Registration is by permission of the Program Director and the member of the faculty during the second semester of the second year. Three credits.

622. INSTITUTIONAL RACISM.
Examines institutional racism in the United States from a historical and contemporary perspective. Analyzes racist ideology and racist behavior and their meaning for advanced practice with individuals, families, groups, organizations and communities. Examines the effects of institutional racism on the social, psychological, and economic experience of ethnic groups living in America, especially African Americans. Strategies social workers can employ to combat racism in society and human services settings are examined. Three credits.

624. OCCUPATIONAL SOCIAL WORK.
Introduces student to social work practice with, and on behalf of employees. Reviews occupational social work practice modalities including, but not limited to, employee assistance counseling, organizational development and staff development. Major special emphasis is placed on women, minority groups that encounter discrimination in the workplace, e.g., the elderly, homosexuals, gay and lesbian persons, individuals with disabilities and persons who are HIV positive. Three credits.

625. SOCIAL WORK WITH GROUPS.
Focuses on various group theories, approaches and techniques, including a systems approach to understanding on-going group process. Examines several kinds of working groups including the task group, the social and therapeutic group, and the special interest group. Practice methods for engaging groups are considered. Structured format for experiential learning is used heavily as a teaching method. Prerequisites: 603-604 Human Behavior and the Social Environment I and II. Three credits.

626. FAMILY THERAPY.
Examines major conceptual frameworks engaging families via family therapy. Exposes the student to the process of family therapy, including guidelines for intervention as well as the therapeutic use of self by the worker. Explores utilization of family therapy with families of color. Prerequisites: 605-606 Generalist Practice I and II; 646 Advanced Generalist Practice I, 654Advanced Practice in Mental Health I, 658 Advanced Practice with Families, Children and Youth I, and corresponding field practicum courses. Three credits.

627. SOCIAL WORK WITH CHILDREN AND ADOLESCENTS.
Begins with an historical perspective, and goes beyond the traditional definitions of child welfare to include family policy, advocacy and socialization programs. Examines the treatment principles and skills dealing with children, including play techniques, reality treatment, behavior modification, communication skills, parent-child relationships, day care, foster care and adoption, groups and institutional settings, teen suicide and depression, teen pregnancy and addictive behavior among adolescents. Three credits.

640. SUPERVISION FOR SOCIAL WELFARE.
Explores in-depth, management functions within human service organizations. Examines the diversified roles of the social worker in a supervisory capacity. Prepares social workers for assuming a pro-active position in creating effective service delivery systems. Examines leadership styles, management principles and theories, accountability standards and staff training and staff development. Explores the ways in which effective intervention creates and maintains organizational climate to improve internal functioning. Three credits.

641. ADVANCED GENERALIST PRACTICE WITH THE OLDER ADULT.
Provides an overview of the field of gerontology and social work with and on behalf of older persons. Studies developmental stages of older persons and presents aging as a normative aspect of the life cycle. Studies theories of aging and adaptation as well as effects of the social environment upon older persons. Explores interventions particularly suited to practice with and on behalf of older persons at the individual, family, group, community, and policy levels. Explores issues of the elderly who are poor; elderly females individuals who are members of ethnic groups and elderly persons who reside in rural communities. Examines policies, programs and services for the elderly. Three credits.

642. SOCIAL WORK WITH SEX-RELATED ISSUES.
Explores the nature and varieties of human sexual expression, the reasons and effect of societal and changing definitions of normal sexual behavior. Stresses the application of social work services to problems associated with human sexuality, treatment and prevention. Encourages an open understanding of human sexual expression and of problems in sexual functioning as a means to providing sex education and developing technical skills in dealing with individuals, couples and small groups around problems related to sexuality. Three credits.

643. THEORIES OF PERSONALITY AND PSYCHOPATHOLOGY.
Presents course content to expand students' knowledge base and skill in diagnosing and treating client systems experiencing problems that are psychological and psychiatric in nature. Explores the historical background and the development of the field of psychopathology. Stresses the use of the DSM IV-TR and case materials as tools for developing skill for clinical diagnosis in multi- faceted problems- laden systems. Examines and focuses on observable behavior in childhood, adolescence (including developmental disorders, learning disorders, developmental delays, and mental retardation), as well as stage appropriate and symptomatic behavior in adults. Examines the cultural, social, and biological differences and commonalties in human systems with a particular emphasis on issues affecting women, physically disabled, and minorities of color. Three credits.

644. SOCIAL WORK WITH JUVENILE AND ADULT OFFENDERS.
Analyzes the historical development of the American criminal justice system within the context of Western Judeo Christian and Eastern societal ideologies. Examines fields of practice and uses a systems perspective to comprehensively examine various role functions and practice interventions at the individual, family, small group, organizational and community levels. Examines the adult criminal and the juvenile justice system through the stages of: arrest; charging; adjudication; sentencing and incarceration as rehabilitation. Role of entities that comprise the legal system, i.e, police, prosecution, courts and corrections are addressed. Examines ethical issues related to criminal and juvenile justice policies, procedures and practices. Addresses the social and economic dimensions of crime in America within the context of causality. Emphasizes the implications of research for social work practice for the criminal justice field of practice. Three credits.

645. SOCIAL CHANGE AND ADVOCACY.
Explores different styles of decision making in human service agencies and how these styles influence the outcome of change efforts. Presents different models for achieving change inside and outside the agency. Reviews specific tactics, such as legislative advocacy, to achieve change inside human service organizations and in society. Three credits.

648. SOCIAL WORK AND CHEMICAL DEPENDENCIES.
Prepares the practitioner for professional practice with chemically dependent persons and their co-dependents and others who are challenged by individuals who abuse drugs. Examines stages of dependency. Explores practice methodology theories and issues in treatment. Explores treatment of individuals who are members of ethnic groups and the special considerations that must be taken into account when intervening on behalf of such individuals. Three credit hours.

649. HUMAN RESOURCE MANAGEMENT.
Introduces the fundamental concepts of human resource management. Prepares students for management assignments. Emphasizes principles which: 1) create and maximize worker potential; 2) maintain the achievement of effective work objectives; and 3) focus on responding to change imperatives in an efficient and rational manner. Stresses a knowledge base of current approaches to managing human resources. Three credits.

650. ADULT CHILDREN OF ALCOHOLIC AND OTHER CHEMICALLY DEPENDENT PERSONS.
Introduces the development syndrome affecting the lives of co-dependent individuals. Examines stages of co-dependency, and its impact on personality development. Explores collateral issues that often result from co-dependency. Three credits.

651. PRACTICE AND PROGRAM EVALUATION FOR THE ADVANCED GENERALIST PRACTITIONER.
Focuses on the knowledge, skills, and procedures used for practice and program evaluation. Practice evaluation emphasizes the integration of research and practice by utilizing single subject/case design methodology. Focuses on analysis of evaluation studies concerned with special populations. Values and ethics of the social work profession in relation to research methods used in evaluation are addressed. Prerequisites: 607 & 608 Research and Evaluation Methods I & II, or an equivalent course. Three credits.

655-656. ADVANCED SOCIAL WORK PRACTICE IN GERONTOLOGY I & II.
This is a two-semester course that presents an in-depth study of the field of gerontology. Demographics of aging in a cultural and value laden context are presented, along with the biological, sociological and psychological theories of aging. Research issues confronting this population are presented along with policy issues and practice methods. Six credits.(Three credits for each course).

CURRICULUM PLAN FOR ADVANCED STANDING STATUS FOR GRADUATE SOCIAL WORK

PROGRAM ADVANCED STANDING STATUS:

The program of study for students who are admitted into Advanced Standing. Students must enroll and successfully complete the Advanced Standing Seminar during the summer preceding the commencement of the Fall semester. This Seminar is a six (6) credit hour seminar. After successful completion of the Advanced Standing Seminar, the student is then admitted to the second year of the graduate social work curriculum on a full-time basis.

FULL-TIME GRADUATE SOCIAL WORK CURRICULUM

YEAR ONE

39-601-60	Social Welfare Policies & Programs I	3
39-602-60	Social Welfare Policies & Programs II	3
39-603-60	Human Behavior & Social Environment I	3
39-604-60	Human Behavior & Social Environment II	3
39-605-60	Social Work Practice I	3

39-606-60	Social Work Practice II	3
39-607-60	Research and Evaluation Methods I	3
39-608-60	Research and Evaluation Methods II	3
39-633-60	Social Work Field I	2
39-634-60	Social Work Field II	2
		28

YEAR TWO

Semester 1

39-611-60	Ethical, Ethnic & Cultural Considerations in Social Work Practice	3
39-646-60	Advanced Generalist Practice I	3
	Methods Elective	3
	Field of Practice Elective	3
39-635-60	Field Practicum III	4
		16

Semester 2

39-610-60	Administration, Management & Supervision for Social Work Practice	3
39-647-60	Advanced Generalist Practice II	3
	Methods Elective .	3
	Field of Practice Elective	3
39-647-60	Field Practicum	4
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GRADUATE PROGRAM IN INTERDISCIPLINARY APPLIED MATHEMATICS AND MATHEMATICAL PHYSICS

Chairperson: Dr. Fengshan LIU
Professor: HÜBSCH, LIU
Associate Professor: BISWAS, SHI
Assistant Professor: Sun

Doctor of Philosophy

OBJECTIVES

This program is designed for students interested in research careers in mathematics in the military, industry or government. It also prepares individuals to teaching and/or do research at college.

ADMISSION REQUIREMENT

All applicants must submit to the Department of Applied Mathematics and Theoretical Physics their Graduate

Record Examination scores, three letters of references from professionals in the area of interest of the applicant, and transcripts from all colleges attended. A minimum of 3.0 on a scale of 4.0 overall and in the courses related to the field of the Ph.D. is required.

Applied Mathematics Concentration

Students who desire to enter the Applied Mathematics concentration with Master's degree must have successfully completed the following courses, by examination or by successfully completing the graduate courses with a grade of B or above: Abstract Algebra, Real Analysis, and Complex Analysis. Depending upon the student's educational background, some students may also be required to take some master level graduate mathematics courses.

Students who desire to enter the Imaging Applied Mathematics concentration from baccalaureate degree must have successfully completed the following courses, by examination or by successfully completing the undergraduate courses: Advanced Calculus I, Linear Algebra, Statistics, Probability, and Algebraic Structures I. The plan of study for this scenario will be agreed upon by the student, his/her advisor, and the Department of Applied Mathematics and Theoretical Physics. Depending upon the student's educational background, some students may also be required to take some undergraduate mathematics courses.

Mathematical Physics Concentration

Students who desire to enter the Mathematical Physics concentration with Master's degree in physics or a related area must have successfully completed the following courses, by examination or by successfully completing the graduate courses with a grade of B or above: Thermodynamics and Kinetic Theory, Classical Mechanics, Advanced Electromagnetic Theory, and Quantum Mechanics. Depending upon the student's educational background, some students may also be required to take some masters level graduate mathematics and physics courses.

Students with baccalaureate degrees may enter the mathematical physics concentration with the approval of the Department of Applied Mathematics and Theoretical Physics. Depending upon the student's educational background, some students may also be required to take some undergraduate mathematics and physics courses.

GRADUATE ASSISTANTSHIP AND FELLOWSHIP

Graduate research or teaching assistantships and fellowships are available. Detailed information and application forms may be obtained from the Applied Mathematics Research Center, or the Department of Applied Mathematics and Theoretical Physics.

CURRICULUM

The Ph.D. program in interdisciplinary applied mathematics and mathematical physics is flexible enough to accommodate students with diversified backgrounds. In consultation with the Department of Applied Mathematics and Theoretical Physics, each student develops a course of study in applied mathematics (Applied Mathematics concentration) or physics (Mathematical Physics concentration) whichever is most relevant to his/her professional and career objectives.

Ph.D. REQUIREMENTS

Courses and Qualifying Examinations

Concentration A: Applied Mathematics

A student who enters the program with a baccalaureate degree must complete his/her Master's degree in the related area. Students who have Master's degrees with no prior Ph.D. graduate course work must complete 30 credit hours of graduate level courses listed below. In addition at least 9 credit hours of research on dissertation are required. A

G.P.A. of 3.0 on a 4.0 scale or above must be maintained.

The program requires the Ph.D. candidate to have reading knowledge of at least one foreign language in a foreign language approved by the Department of Applied Mathematics and Theoretical Physics.

Required Courses (12 Credit Hours)

60-863 Functional Analysis	3 Hours
60-861 Real Analysis	3 Hours
60-871 Complex Analysis	3 Hours

One of the following two courses:

60-887 Image Processing	3 Hours
60-821 Scientific Computation I	3 Hours

Electives (18 credit hours)

Students may take an additional 18 credit hours from the list of elective courses to satisfy the credit hours requirement with the approval of the student's advisor. Students must take any two of the following courses:

26-657 Mathematical Methods	3 Hours
60-885 Computational Geometry	3 Hours
26-671 Advanced Electromagnetic Theory	3 Hours
60-883 Wavelet Analysis	3 Hours

Qualifying Examinations

Upon completing the course requirement, each student must successfully pass two written examinations. One examination is based on two courses selected by the student from Functional Analysis, Real Analysis and Complex Analysis. The other examination is based on two courses selected by the student from Image Processing, Mathematical Methods, Advanced Electromagnetic Theory, Computational Geometry , Wavelet Analysis, Numerical Analysis and Scientific Computation I and courses approved by the Department of Applied Mathematics and Theoretical Physics. A student must pass an oral examination on a subject area directly related to his/her dissertation.

Concentration B: Mathematical Physics

A student who enters the program with a baccalaureate degree must complete his or her Master’s degree in the related area. Students who have Master degrees with no prior Ph.D. graduate course work must complete 39 credit hours of graduate level courses listed below. In addition at least 9 credit hours of research on dissertation are required. A G.P.A. of 3.0 or above on a 4.0 scale must be maintained.

The program requires the Ph.D. candidate to have reading knowledge of at least one foreign language in a foreign language approved by the Department of Applied Mathematics and Theoretical Physics. Each candidate is required to take a foreign language reading in mathematics or physics approved by Department of Applied Mathematics and Theoretical Physics.

A sequence of core courses required by all Ph.D. candidates includes the following: 26-665 Statistical Mechanics, 26-672 Advanced Electromagnetic Theory, 26-676 Quantum Mechanics, 26-655 Computational Methods, 60-863 Functional Analysis or 60-857 Integral Equations, and 60-871 Complex Analysis. Any student found deficient in any of these areas may be required to take appropriate courses to remove that deficiency.

Required Courses (18 credit hours)

26-855 Computational Methods	3 Hours

26-865 Statistical Mechanics	3 Hours
26-872 Advanced Electromagnetic Theory	3 Hours
26-876 Quantum Mechanics	3 Hours
60-863 Functional Analysis	3 Hours
60-871 Complex Analysis	3 Hours

Electives (12 credit hours)

Students may take an additional 12 credit hours from the list of elective courses to satisfy the credit hours requirement with the approval of the student's advisor.

Qualifying Examinations

Each student must successfully pass the written general examination in physics which encompasses the area of Thermodynamics and Kinetic Theory, Classical Mechanics, Advanced Electromagnetic Theory, and Quantum Mechanics. In addition, a student must pass an oral examination on a subject area chosen by his/her advisor.

Elective Courses:

60-821 Scientific Computation I	3 Hours
60-822 Scientific Computation II	3 Hours
60-833 Stochastic Processes	3 Hours
60-853 Partial Differential Equations	3 Hours
60-867 Numerical Analysis	3 Hours
60-851 Ordinary Differential Equations	3 Hours
60-885 Computational Geometry	3 Hours
60-857 Integral Equations	3 Hours
60-875 Inverse Problems	3 Hours
60-887 Image Processing	3 Hours
60-811 Abstract Algebra	3 Hours
26-655 Computational Methods	3 Hours
26-665 Statistical Mechanics	3 Hours
26-671 Advanced Electromagnetic Theory I	3 Hours
26-672 Advanced Electromagnetic Theory II	3 Hours
26-652 Classical Mechanics	3 Hours
26-657 Mathematical Methods	3 Hours
26-661 Solid State Physics	3 Hours
26-675 Quantum Mechanics	3 Hours
60-883 Wavelet Analysis	3 Hours
60-889 Topics in Applied Mathematics	3 Hours

Dissertation

Each student must select or have assigned by the Ph.D. Program Committee, two dissertation advisors, one in mathematics and one in physics or a related applied area. The most important requirement for the Ph.D. degree is the satisfactory completion of a scientific investigation, and the writing of a dissertation on that investigation represents a significant contribution to the research literature. Each student must complete a dissertation with his/her dissertation advisors and successfully defend the dissertation before his/her Ph.D. Program Committee of five members including one external examiner.

60-890 Dissertation	3-9 Hours

Sustaining Status

Once a student has completed all the course requirements, passed the Qualifying Examinations, met the language requirements, and registered for 9 credits of dissertation (60-890), but has not completed his/her dissertation, then the student is required to maintain his/her matriculation in the degree program by registering for Doctoral Sustaining (60-999). A student must be registered in the semester in which the degree is awarded.

60-999 Doctoral Sustaining	3-9 Hours

GRADUATE FACULTY LISTING

Graduate Program in Biology

Professors:

GUSTAV OFOSU *(Program Director)*
Professor of Biology
B.A., Inter-American University (Puerto Rico)
M.S., Atlanta University
Ph.D., Michigan State University

FATAMA M. HELMY
Professor of Biology
B.Sc., M.Sc., Cairo University
Ph.D., Tulane University

ARTHUR TUCKER
Research Professor of Agriculture and Natural Resources
B.A., Kutz State College
M.S., Ph.D., Rutgers University

Associate Professors:

LEONARD DAVIS
Associate Professor of Biology
B.S., University of Illinois
M.S., Northwestern University
Ph.D., University of Illinois

STAN IVEY
Associate Professor of Biology
B.S., Eastern Kentucky University
M.S., University of Denver
Ph.D., University of Denver

ANDREW LLOYD
Associate Professor of Biological Sciences
B.S., University of Maryland, College Park
Ph.D., University of Virginia

ROBERT MacBRIDE
Associate Professor of Biology
B.S., Bartes College
M.S. Miami University
Ph.D., Case Western Reserve University

TERESA SINGLETON
Associate Professor of Biotechnology
B.S., Stillman College
M.S., North Carolina A&T State University
Ph.D., The University of Maryland-Baltimore

CHARLIE DEAN WILSON
B.S., Delaware State University
Ph.D., University of Delaware

MELISSA HARRINGTON
Associate Professor of Biotechnology
B.S., Purdue University
Ph.D., Stanford University

Graduate Program in Business Administration

Professors:

WINSTON AWADZI
Professor of Business and Economics
B.S., Louisiana State University Plattsburgh
M.B.A., M.A., University of New Orleans and State
Ph.D., Louisiana State University

RICHARD F. BIEKER
Professor of Economics
B.A., Murray State College Puerto
Ph.D., University of Kentucky

Associate Professors:

YOUNG SIK KWAK *(Program Director)*
Associate Professor Economics
B.A., Sung Kyun Kwan University
M.A., Ph.D., University of Mississippi

DAERYONG KIM
Associate Professor of Information Systems
B.A., Yeungnam University
M.S., Iowa State University
Ph.D., University of Mississippi

BERNADETTE RUF
Professor of Accounting and Finance
B.A., State University of New York at

M.A., Ph.D., Virginia Polytechnic Institute

University

PATRICK LIVERPOOL
Professor Management
B.A., M.B.A, Inter American University of

Rico
D.B.A., Kent State University

JAN CHRISTOPHER
Associate Professor of Economics
B.A., Hampton Institute
M.A., The University of Rochester
M.B.A., The University of Oklahoma
Ph.D., Howard University

Graduate Program in Chemistry

Professors:

ANDREW GOUDY *(Program Director, Chair)*
Professor of Chemistry
B.S., M.S., Indiana University of Pennsylvania
Ph.D., University of Pittsburg

SADIQ W. WASFI
Professor of Chemistry
B.S., Baghdad University (Iraq)
M.S., Ph.D., Georgetown University

Associate Professors:

PETER DIMARIA
Associate Professor of Chemistry
B.S., Ursinus College
Ph.D., Temple University

KRAIG WHEELER
Professor of Chemistry
B.A., University of Minnesota
Ph.D., Brandeis University

Graduate Program in Education

Professors:

ANURDHA DUJARA
Professor of Science Education
B.S., University of Rajasthan
M.S., University of Delaware
Ed.D., Wilmington College

GHOLAM KIBRIA
Professor of Education
B.Ed., Punjab University
M.S., Ph.D., Indiana University
Ph.D., Southern Illinois University

WILLIAM J. McINTOSH
Professor of Science Education
B.A., Temple University
M.Ed., Pennsylvania State University
Ed.D., Temple University

RAYTON R. SIANJINA
Professor of Education
B.A., M.S.Ed., Harding University
Ph.D., University of Mississippi

Associate Professors:

JOSEPH FALODUN
Associate Professor of Education
B.A., M.A., Awolowo University Nigeria
Ph.D., University of Pennsylvania

CATHY GRIFFIN MUSSINGTON
Associate Professor of Education
B.S., Bennett College
M.S., University of North Carolina
Ph.D., The Ohio State University

ROBERT OESTERLING
Associate Professor of Education
and Director of Field Experiences
M.Ed., Ed.D., Temple University

ROBERT RAHAMIN
Associate Professor of Education
B.S., M.Ed., Wright State University
Ed.D., The George Washington University

MICHAEL F. RUFFINI
Associate Professor of Education
B.A., Rowan State
B.S., M.S., West Chester University
Ed.D., Widner University

Assistant Professors:

EVERARD CORNWALL
Assistant Professor of Education
B.S., M.S.,University of Wisconsin
Ph.D., University of Wisconsin

Graduate Program in Foreign Languages

Professors:

ORIAKU NWOSU
Professor of Foreign Languages
B.Ed., Central Michigan University
Matrise, Universite de Sorbonne
Doctorat, Universite de Sorbonne

Graduate Program in Historic Preservation

Professors:

BRADLEY SKELCHER (*Program Director*)
Professor of History
A.A., John A. Logan College
B.A., M.A., Ph.D., Southern Illinois University

SAMUEL HOFF
Professor of History and Political Science
B.A., Susquehanna University
M.A., American University
M.A., Ph.D., SUNY-Stony Brook

Associate Professors:

AKWASI OSEI
Associate Professor of History
and Political Science
B.A., Oberlin College
M.A., Ohio University
Ph.D., Howard University

YOHURU WILLIAMS
Associate Professor of History
B.A., B.S., M.A., University of Scranton
Ph.D., Howard University

Graduate Program in Mathematics

Professors:

HANSON UMOH (*Program Director)*
Professor of Mathematics
B.S., Virginia Union
M.A., Morgan State University
Ph.D., Howard University

NAGAIAH R. NANDAKUMAR
Professor of Mathematics
B.Sc., M.Sc., University of Mysore
A.M., M.S., Ph.D., University of Illinois

MAZEN SHANIN
Professor of Mathematics
Sciences
B.Sc., Alexander University
Ph.D., Lvov State University

FENGSHAN LIU
Professor of Computer and Information

B.S., M.S., Jilin University, Changchun
Ph.D., University of Delaware

Associate Professors:

ERIC FRANKL
Associate Professor of Mathematics
B.A., University of Rochester
M.A., Ph.D., University of Illinois

RODNEY MCNAIR
Associate Professor of Mathematics
M.S., Virginia Polytechnic Institute and
State
University
Ph.D., University of Delaware

Assistant Professor:

PAUL GIBSON
Assistant Professor of Mathematics
B.A., Hendrix College
M.S., University of Arkansas

Graduate Program in Natural Resources

Associate Professors:

RICHARD BARCZEWSKI *(Program Director)*
Associate Professor of Agriculture
B.S., University of Delaware
M.S., Virginia Technical
Ph.D., University of Maryland

MICHAEL REITER
Associate Professor of Agriculture and Natural Resources
B.S., Muskingum College
M.S., Kent State University
Ph.D., The University of Virginia

Assistant Professor:
KEVINA VULINEC
Assistant Professor of Agriculture & Natural Resources
B.A., Kent State University
M.S., University of Cincinnati
M.S., University of Chicago
Ph.D., University of Florida

Graduate Program in Physics

Professors:

EHSAN M. HELMY *(Program Director)*
Professor of Physics
B. Sc., M.Sc., Cairo University

Ph.D., University of California

GABRIEL GWANMESIA
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B.S., Delaware State University
M.S., Ph.D., SUNY at Stony Brook

NOUREDDINE MELIKECHI

Professor of Physics
M.S., University of Sussex, England
D. Phil., University of Sussex, England

PATRICK F. GLEESON
Professor of Physics
B.S., Fairfield University

M.S. Ph.D., University of Delaware

AL-SAMEEN KAHN
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B.S., Delaware State University
M.S., University of Virginia
Ph.D., University of Delaware

ARTHUR PURDY

Professor of Physics
B.S., University of Scranton
M.S., Ph.D., University of Delaware

Associate Professor:
ESSAID ZERRAD
Associate Professor of Physics and Pre-Engineering
B.Sc., University of Mohammed V Rabat
M.Sc., Delaware State University
Ph.D., University of Connecticut

Graduate Program in Plant Science

Research Professor:
ARTHUR TUCKER
Research Professor of Agriculture and Natural Resources
B.A., Kutz State College
M.S., Ph.D., Rutgers University

Associate Professors:

RICHARD BARCZEWSKI
Associate Professor of Agriculture
B.S., University of Delaware
M.S., Virginia Technical

RANDEL PEIFFER
Associate Professor of Agriculture
B.S., Delaware State University
M.S., Ph.D., The Pennsylvania State

University
Ph.D., University of Maryland

Ed.D., Syracuse University

CYRIL BRODERICK
Associate Professor of Agriculture and Natural Resources
B.Sc., University of Liberia
M.Sc., Iowa State University
Ph.D., University of New Hampshire

Graduate Program in Social Work

Professors:

JOHN AUSTIN
Professor of Social Work
A.A., Community College of Baltimore
B.A., Bowie State University
M.S.W., Ph.D., Virginia Commonwealth University

KUL BHUSHAN SURI
Professor of Social Work
B.A., Punjab University
M.A., University of Delhi
Ph.D., University of Maryland, Baltimore

Associate Professor:

BRUCE H. HOBLER
Associate Professor of Social Work
B.A., Kenyon College
M.S.W., University of Pennsylvania
Ph.D., University of Maryland-College Park

Assistant Professors:

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Assistant Professor of Social Work
B.S., Delaware State University
M.S.W., D.S.W., University of Pennsylvania

SHIRLEY I. WILSON
Assistant Professor of Social Work
B.S., District of Columbia Teachers College
M.A., Howard University
M.S.W., University of Maryland
Ph.D., Howard University

Doctoral Program in Mathematics and Physics

Professors:

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M.A., Morgan State University
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GABRIEL GWANMESIA
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B.S., Delaware State University
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