



GRADUATE CATALOG

2026-2027

<https://sgaes.desu.edu/admissions>

Published by Delaware State University | Dover, Delaware 19901

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

The provisions of this publication are not being 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.



CONTENTS

THE UNIVERSITY.....	4
ACADEMIC CALENDARS.....	7
GRADUATE ADMISSION POLICIES AND PROCEDURES.....	15
GRADUATE ADMISSION CLASSIFICATIONS.....	16
READMISSION.....	18
GRADUATE ACADEMIC POLICIES AND REGULATIONS.....	20
GRADUATE DEGREE PROGRESSION AND MATRICULATION.....	28
CULMINATING EXPERIENCE OUTCOMES.....	29
TUITION, FEES AND FINANCIAL OBLIGATIONS.....	32
COUNSELING AND VIRTUAL WELLNESS SERVICES.....	33
CAREER AND PROFESSIONAL DEVELOPMENT.....	33
MILITARY-AFFILIATED AND VETERAN STUDENT SERVICES.....	34
DELAWARE STATE UNIVERSITY ONLINE.....	34
INTERNATIONAL AFFAIRS.....	35
COLLEGE OF AGRICULTURE, SCIENCE AND TECHNOLOGY	
DEPARTMENT OF AGRICULTURE AND NATURAL RESOURCES.....	37
MASTER OF SCIENCE IN AGRICULTURE.....	37
MASTER OF SCIENCE IN NATURAL RESOURCES.....	43
DOCTOR OF PHILOSOPHY IN INTEGRATIVE AGRICULTURE, FOOD AND ENVIRONMENTAL SCIENCES.....	49
DEPARTMENT OF BIOLOGICAL SCIENCES.....	55
MASTER OF SCIENCE IN BIOLOGICAL SCIENCES.....	55
MASTER OF SCIENCE IN MOLECULAR AND CELLULAR NEUROSCIENCE.....	62
DOCTOR OF PHILOSOPHY IN NEUROSCIENCE.....	70
DEPARTMENT OF CHEMISTRY.....	79
MASTER OF SCIENCE IN APPLIED CHEMISTRY (THESIS).....	79
DOCTOR OF PHILOSOPHY IN APPLIED CHEMISTRY.....	85
DEPARTMENT OF HUMAN ECOLOGY.....	90
MASTER OF SCIENCE IN FOOD SCIENCE AND BIOTECHNOLOGY.....	90
MASTER OF SCIENCE IN NUTRITIONAL SCIENCES.....	96
DIVISION OF PHYSICS, ENGINEERING, MATHEMATICS AND COMPUTER SCIENCE.....	107
MASTER OF SCIENCE IN COMPUTER SCIENCE.....	107
MASTER OF SCIENCE IN MATHEMATICS.....	118
DOCTOR OF PHILOSOPHY IN INTERDISCIPLINARY APPLIED MATHEMATICS & MATHEMATICAL PHYSICS.....	132
DOCTOR OF PHILOSOPHY IN OPTICS DEGREE.....	144

MASTER OF SCIENCE IN APPLIED OPTICS.....	153
MASTER OF SCIENCE IN PHYSICS.....	164
COLLEGE OF BUSINESS	
MASTER OF BUSINESS ADMINISTRATION (MBA).....	176
MASTER OF SCIENCE IN SPORT ADMINISTRATION.....	186
WESLEY COLLEGE OF HEALTH AND BEHAVIORAL SCIENCES	
DEPARTMENT OF NURSING.....	192
MASTER OF SCIENCE IN NURSING (MSN).....	192
DEPARTMENT OF SOCIAL WORK.....	212
DOCTOR OF SOCIAL WORK (DSW).....	212
MASTER OF SOCIAL WORK (MSW).....	218
SPANISH FOR SOCIAL WORK CERTIFICATE.....	229
DEPARTMENT OF PSYCHOLOGY.....	230
MASTER OF SCIENCE IN CLINICAL PSYCHOLOGY.....	230
DEPARTMENT OF PUBLIC AND ALLIED HEALTH SCIENCES.....	241
MASTER OF OCCUPATIONAL THERAPY (MOT).....	241
MASTER OF PUBLIC HEALTH (MPH).....	249
COLLEGE OF HUMANITIES, EDUCATION AND SOCIAL SCIENCES	
DEPARTMENT OF EDUCATION.....	254
DOCTOR OF EDUCATION (Ed.D.) IN EDUCATIONAL LEADERSHIP.....	254
MASTER OF EDUCATION (M.Ed.) IN EDUCATIONAL LEADERSHIP.....	254
MASTER OF ARTS IN EQUITABLE CURRICULUM AND INSTRUCTIONAL LEADERSHIP.....	276
MASTER OF ARTS IN TEACHING (MAT).....	281
DUAL-TITLE MA TESOL/Bilingual Education and M.Ed. in Educational Leadership.....	285
DEPARTMENT OF LANGUAGES AND LITERATURES.....	286
MASTER OF ARTS IN TESOL/ BILINGUAL EDUCATION.....	286
TELL PROGRAM SECONDARY CERTIFICATION IN TEACHER OF ENGLISH LANGUAGE LEARNERS / BILINGUAL TEACHER.....	293
ONLINE GRADUATE CERTIFICATE IN TESOL.....	296
DUAL-TITLE MA TESOL/Bilingual Education and M.Ed. in Educational Leadership.....	300
SPANISH FOR SOCIAL WORK CERTIFICATE.....	307
MASTER OF PUBLIC ADMINISTRATION (MPA).....	310
DEPARTMENT OF SOCIOLOGY AND CRIMINAL JUSTICE.....	317
MASTER OF ARTS IN JUSTICE STUDIES.....	317

THE UNIVERSITY

MISSION STATEMENT

Rigorously leverage a proud HBCU legacy and commitment to excellence in every field of human endeavor to enhance the recruitment and preparation of talented professionals to contribute to a sustainable, global community.

VISION STATEMENT

Delaware State University strives to become America's most diverse, contemporary HBCU by expanding its capacity to provide a life-changing, high-quality, low-cost education to 10,000+ students; continuing our efforts to achieve R1 "very high research activity" status; and having a significant, measurable impact on the social, technological, and economic challenges that face our State, the nation, and the world.

CORE VALUES

- Community
- Integrity
- Diversity
- Scholarship
- Outreach
- Contemporary

BASIC PHILOSOPHY AND VALUES

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 strives for excellence and seeks to be the best in all that it does. Its belief is that this uncompromising pursuit of excellence is best achieved through teamwork and shared governance.

The University is committed to providing students with a complete and high-quality educational experience through outstanding academic programs and excellent campus life, including well-defined and well-managed extracurricular activities.

It is also dedicated to ensuring all undergraduate students receive a strong liberal arts education. This essential part of students' 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 and 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.

The University places major emphasis on teaching quality. At the same time, it recognizes that all faculty are obligated to expand the frontiers 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 related missions' areas of research and outreach, Delaware State University is committed to serving the surrounding communities, the state of Delaware and the nation.

STUDENT LEARNING GOALS

Delaware State University provides a wide range of experiences designed to prepare our graduates to be:

- competent communicators;
- effective inquirers, critical thinkers and problem-solvers able to use appropriate quantitative and qualitative information;
- ethical, collaborative and productive citizens of a complex, diverse world;
- independent learners able to integrate knowledge and technology to achieve personal and professional success.

Program learning goals are aligned with these learning goals. Course learning goals are aligned with the program learning goals.

HISTORY

Delaware State University was established on May 15, 1891, as the Delaware College for Colored Students under the provisions of the Second Morrill Act of 1890, which expanded access to land-grant higher education for Black students in states with segregated educational systems. The institution began its mission of education and public service on February 2, 1892, and was renamed the State College for Colored Students in 1893.

The University awarded its first degrees in 1898 and continued to expand its academic offerings throughout the early twentieth century. In 1944, the institution received provisional accreditation from the Middle States Association of Colleges and Schools. In 1947, legislative action renamed the institution Delaware State College, reflecting its continued growth and expanding role in higher education.

On July 1, 1993, Delaware State College became Delaware State University, marking a significant milestone in the institution's academic development and evolution. Today, Delaware State University is an 1890 land-grant Historically Black College and University (HBCU) offering undergraduate, graduate, and doctoral education while advancing its longstanding mission of teaching, research, public service, and community engagement.

Delaware State University is accredited by the Middle States Commission on Higher Education (MSCHE). The University's accreditation was most recently reaffirmed in 2022.



Accredited by Middle States Commission on Higher Education
3624 Market Street
Philadelphia, PA 19104-2680
267-284-5000

<http://www.msche.org/>

ACCREDITATION

Delaware State University is accredited by the **Middle States Commission on Higher Education (MSCHE)**. The University's accreditation was most recently reaffirmed in 2022. Program-specific accreditation and approval information is provided within the applicable academic program sections of this catalog.

UNIVERSITY LOCATIONS

Delaware State University's main campus is located in Dover, Delaware. The University also maintains additional locations that support academic programs and University operations. Students should consult their academic program or the University website for current program locations and campus information.

KIRKWOOD HIGHWAY AND DSU RIVERFRONT LOCATIONS IN WILMINGTON

The Kirkwood location houses the Office of Adult and Continuing Education (ACE), the Office of Testing, offices of the College of Agriculture, Science and Technology (CAST) Cooperative Extension and offices of Graduate Admissions.



ACADEMIC CALENDAR

FALL 2026 (202701)

DOVER, WILMINGTON, AND GEORGETOWN

*** 8 WEEK ACCELERATED SESSIONS ***

ACCELERATED SESSION I

August 25, 2026 – October 16, 2026

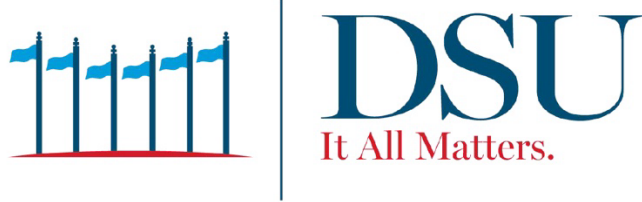
August 25 (Tuesday).....Classes Begin @ 8:00 am
Late Registration Begins
September 3 (Thursday).....Last Day to Add and Drop (w/out financial penalty) Courses
September 4 (Friday).....Begin date to withdraw from course(s), \$10 fee for each course
(a grade of W will be placed on transcript)
****See Refund Schedule below for Financial Responsibility for withdrawn course(s)****
September 7 (Monday).....Labor Day Recess (University Closed)
September 7 (Monday).....Academic Early Alert Period
September 8-September 9 (Tuesday-Wednesday).....Documentation for Non-Attendance Period
September 14-18 (Monday-Friday).....Mid-Term Evaluations Administered
September 21 (Monday).....Mid-Term Grades Due
September 25 (Friday).....Last Day to withdraw from Accelerated I Course(s) / University
Last Day to submit PASS-FAIL request for Accelerated I course(s)
(*****See academic catalog for Pass-Fail policy*****)
October 5-October 16 (Monday-Friday).....Accelerated I Fall Course Evaluations
October 12-16 (Monday-Friday).....Final Examinations
October 16 (Friday).....Last Day of Classes
October 19 (Monday).....Final Grades Due

ACCELERATED SESSION II

October 19, 2026 – December 11, 2026

October 19 (Monday).....Classes Begin
Late Registration Begins
October 22 (Thursday).....Last Day to Add and Drop (w/out financial penalty) Courses
October 23 (Friday).....Begin date to withdraw from course(s), \$10 fee for each course
(a grade of W will be placed on transcript)
****See Refund Schedule below for Financial Responsibility for withdrawn course(s)****
October 23-26 (Friday-Monday).....Documentation for Non-Attendance Period
October 29 (Thursday).....Census Date
November 2 (Monday).....Academic Early Alert Period
November 9-13 (Monday-Friday).....Mid-Term Evaluations Administered
November 16 (Monday).....Midterm Grades Due
November 23 (Monday).....Last Day to withdraw from Accelerated II Course(s) / University
Last Day to submit PASS-FAIL request for Accelerated II course(s)
(*****See academic catalog for Pass-Fail policy*****)
November 30 -December 11 (Monday-Friday).....Accelerated II Fall Course Evaluations
November 26-November 29 (Thursday-Sunday).....Thanksgiving Recess
December 7-11 (Monday-Friday).....Final Examinations
December 11 (Friday).....Last Day of Classes
December 14 (Monday).....Final Grades Due
December 24-January 1 (Thursday-Friday).....Winter Recess Begins (University Closed)

UPDATED: 7/23/2026



Refund Schedule for Course(s) Withdrawals

FALL/SPRING SEMESTERS

Period from the First Day of Instruction	Refundable Tuition	Percentage Fees
Pre-registration to Last Day to Add Classes	100%	100%
Six Calendar Days or less	80%	0%
Nine Calendar Days or less	60%	0%
After Nine Calendar Days	0%	0%

ACCELERATED/SUMMER/WINTER SESSIONS

Period from the First Day of Instruction	Refundable Tuition	Percentage Fees
Pre-registration to Last Day to Add Classes	100%	100%
Six Calendar Days or less	80%	0%
Nine Calendar Days or less	60%	0%
After Nine Calendar Days	0%	0%

UPDATED: 7/23/2026



ACADEMIC CALENDAR

2026 Winter Session (202702) December 7, 2026 – January 1, 2027	
Pre-Registration	October 19 – November 19
Winter Session Payment Due Date	Friday, November 27
Classes Begin	Monday, December 7
Last Day to Add Classes	Tuesday, December 8
Documentation for Non-Attendance	Wednesday, December 9
Last day to Drop/Withdraw from the University	Thursday, December 10
Winter Course Evaluations	Tuesday, December 22 - Friday, January 1
Last Day of Classes	Friday, January 1
2 Hour - Final Exams	Last class meeting
Final Grades Due	Tuesday, January 5

Final Approval Received: 11/21/2025
 Last Update: 12/1/2025



ACADEMIC CALENDAR

SPRING 2027 (202703)

DOVER, WILMINGTON AND GEORGETOWN

*** 8 WEEK SESSIONS ***

ACCELERATED SESSION I

January 11, 2027 – March 5, 2027

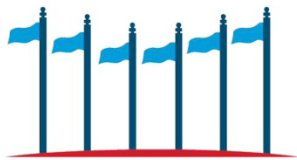
January 7-8 (Thursday-Friday)	Registration
January 11 (Monday)	Classes Begin
January 11 (Monday)	Late Registration Begins
January 14 (Thursday)	Last Day to Add Classes
January 15 (Friday)	Effective date for receiving a grade of "W" for dropped course
January 15-19 (Friday-Tuesday)	Documentation for Non-Attendance Period
January 12 (Tuesday)	Academic Early Alert Begins
January 18 (Monday)	Martin Luther King, Jr. Day (University Closed)
February 1-5 (Monday – Friday)	Mid-Term Evaluations Administered
February 8 (Monday)	Mid-Term Grades Due
February 12 (Friday)	Last Day to Drop Accelerated I Course
February 15-26 (Monday-Friday)	Accelerated Session I Course Evaluations
March 5 (Friday)	Last Day of Classes
March 8 (Monday)	Final Grades Due

ACCELERATED SESSION II

March 15, 2027 – May 7, 2027

March 8-12 (Monday-Friday)	Spring Break
March 8-12 (Monday – Friday)	MEAC (TBD)
March 15 (Monday)	Classes Begin
March 15 (Monday)	Late Registration Begins
March 18 (Thursday)	Last Day to Add Classes
March 19 (Friday)	Effective date for receiving a grade of "W" for dropped course
March 19-22 (Friday-Monday)	Documentation for Non-Attendance Period
March 22 (Monday)	Academic Early Alert Begins
March 26–29 (Friday-Monday)	Easter Recess (University Closed)
April 5-9 (Monday-Friday)	Mid-Term Evaluations Administered
April 12 (Monday)	Mid-Term Grades Due
April 12-23 (Monday-Friday)	Accelerated Session II Course Evaluations
April 16 (Friday)	Last Day to Drop Accelerated II Course
May 7 (Friday)	Last Day of Class
May 10 (Monday)	Final Grades Due
May 14 (Friday)	Commencement

Updated: 6/17/26 GM



Refund Schedule for Course(s) Withdrawals

FALL/SPRING SEMESTERS

Period from the First Day of Instruction	Refundable Tuition	Percentage Fees
Pre-registration to Last Day to Add Classes	100%	100%
Six Calendar Days or less	80%	0%
Nine Calendar Days or less	60%	0%
After Nine Calendar Days	0%	0%

ACCELERATED/SUMMER SESSIONS

Period from the First Day of Instruction	Refundable Tuition	Percentage Fees
Pre-registration to Last Day to Add Classes	100%	100%
Six Calendar Days or less	80%	0%
Nine Calendar Days or less	60%	0%
After Nine Calendar Days	0%	0%

*Subject to Change

Updated: 6/17/26 GM



ACADEMIC CALENDAR

Summer 2027 (202714)

(Part of Term 1 – 16 weeks)

Only for Internship, Research, Practicum, Fieldwork, Private Pilot Lab courses

April 1 (Thursday).....	Pre-Registration
April 30 (Friday).....	Payment Due Date
May 3 (Monday).....	Classes Begin
May 7 (Friday).....	Last day to submit application for graduation (August)
May 12 (Wednesday).....	Last day to Add and Drop (w/out financial penalty) course(s)
May 13-17 (Thursday-Monday).....	Documentation for Non-Attendance Period
May 13 (Thursday)	Begin date to withdraw from course(s), \$10 fee for each course (a grade of W will be placed on transcript)
****See Refund Schedule below for Financial Responsibility for dropped course(s)****	
May 31 (Monday)	Memorial Day (University Closed)
July 14 (Wednesday).....	Last Day to withdraw from course(s) / University
	Last Day to submit PASS-FAIL request for Spring course(s)
	****See academic catalog for Pass-Fail policy****
August 20 (Friday).....	Last Day of Classes
August 23 (Monday).....	Final Grades Due



Refund Schedule for Course(s) Withdrawals

FALL/SPRING SEMESTERS

Period from the First Day of Instruction	Refundable Tuition	Percentage Fees
Pre-registration to Last Day to Add Classes	100%	100%
Six Calendar Days or less	80%	0%
Nine Calendar Days or less	60%	0%
After Nine Calendar Days	0%	0%

ACCELERATED/SUMMER/WINTER SESSIONS

Period from the First Day of Instruction	Refundable Tuition	Percentage Fees
Pre-registration to Last Day to Add Classes	100%	100%
Six Calendar Days or less	80%	0%
Nine Calendar Days or less	60%	0%
After Nine Calendar Days	0%	0%

Subject to Change

GRADUATE ADMISSIONS

Applicants must submit all required application materials by the applicable Graduate Admissions deadline. Some graduate programs may establish earlier deadlines, admit students only during specific terms, or use rolling admission.

Current domestic and international application deadlines are published by the School of Graduate, Adult and Extended Studies. Applicants are responsible for reviewing both University and program-specific admission deadlines before applying.

GRADUATE ADMISSION POLICIES AND PROCEDURES

ELIGIBILITY AND APPLICATION PROCEDURES

Applicants seeking admission to a graduate degree or certificate program must hold, or be eligible to receive before enrollment, a bachelor's degree from an appropriately accredited institution.

The School of Graduate, Adult and Extended Studies establishes minimum University requirements for graduate admission. Individual graduate programs may establish additional or more rigorous admission standards, prerequisites, application materials, and deadlines.

Admission to Delaware State University does not guarantee admission to a specific graduate program.

GENERAL APPLICATION REQUIREMENTS

Unless otherwise specified by the graduate program, applicants must submit:

- a completed graduate application;
- official transcript(s) from each required college or university attended;
- required academic and/or professional recommendations;
- program-specific supplemental materials, when applicable; and
- the applicable nonrefundable application fee.

Applicants should consult the requirements for their intended graduate program for additional admission criteria.

Incomplete applications may not be reviewed.

ADMISSION DECISION

Completed applications are reviewed in accordance with the admission procedures of the respective graduate program and the School of Graduate, Adult and Extended Studies. Program recommendations are forwarded to Graduate Admissions for review and issuance of the University's official admission decision.

Only an official admission notification issued through the University's authorized admissions process constitutes an offer of admission.

RETENTION OF APPLICATION MATERIALS

Application materials and credentials submitted to Delaware State University become part of the University's admissions record and are maintained in accordance with University records-retention requirements.

Applicants should retain copies of materials submitted to the University. Materials submitted as part of an application are not ordinarily returned.

INTERNATIONAL GRADUATE ADMISSION

International applicants must satisfy the general requirements for graduate admission and all applicable program-specific requirements.

International applicants whose academic credentials were earned outside the United States may be required to submit a course-by-course credential evaluation from an evaluation service accepted by Delaware State University. The evaluation must provide the U.S. equivalency of the applicant's academic credentials and, when applicable, a U.S.-equivalent grade point average.

ENGLISH LANGUAGE PROFICIENCY

International applicants whose prior education does not satisfy the University's English-language proficiency exemption must demonstrate English proficiency through an assessment or other method accepted by Delaware State University.

Current accepted examinations, minimum scores, exemptions, and documentation requirements are published by Graduate Admissions and the Office of International Affairs.

Graduate programs may establish higher English-language proficiency requirements when academically or professionally appropriate.

F-1 STUDENT STATUS AND FORM I-20

Following admission to the University, students seeking F-1 status must satisfy the documentation and financial-certification requirements established by the Office of International Affairs before a Form I-20 may be issued.

Admission to an academic program does not, by itself, guarantee issuance of a Form I-20 or eligibility for F-1 status. International students are responsible for complying with all applicable University and federal immigration requirements throughout their enrollment.

F-1 TRANSFER STUDENTS

F-1 students transferring to Delaware State University from another U.S. institution must satisfy University admission requirements and complete the transfer and immigration documentation required by the Office of International Affairs.

GRADUATE ADMISSION CLASSIFICATIONS

Applicants who are admitted to graduate study are assigned an admission classification that reflects their academic and/or documentation status at the time of admission.

UNCONDITIONAL ADMISSION

Unconditional Admission is granted when an applicant has satisfied the University's general graduate admission requirements and all applicable admission requirements of the graduate program.

UNCONDITIONAL ADMISSION WITH PROVISIONS

Unconditional Admission with Provisions may be granted when an applicant meets the academic requirements for admission but must submit specified documentation or satisfy a nonacademic administrative requirement by the deadline stated in the admission notification.

Students admitted with provisions must satisfy all identified provisions by the established deadline. Failure to do so may affect continued enrollment, registration, or admission status.

CONDITIONAL ADMISSION

Conditional Admission may be granted when an applicant is permitted to begin graduate study subject to specified academic conditions.

The conditions, required coursework or performance standard, and deadline for satisfying the conditions will be stated in the official admission notification.

Students who do not satisfy the academic conditions of admission within the prescribed period may be subject to a change in admission status or separation from the graduate program.

Financial aid eligibility may be affected by admission classification. Students should consult the Office of Financial Aid regarding eligibility requirements.

NON-DEGREE ADMISSION

Non-degree admission permits an individual to enroll in approved graduate coursework without admission to a graduate degree program.

Enrollment as a non-degree student does not guarantee subsequent admission to a graduate degree program. Credits earned in non-degree status may be applied toward a graduate degree only when permitted by University policy and approved by the applicable graduate program.

APPEAL OF A GRADUATE ADMISSION DECISION

An applicant who is denied admission may submit an appeal when permitted under University policy.

An admission appeal must identify the basis for reconsideration and include any required supporting documentation. Appeals are reviewed through the established Graduate Admissions and academic program review process.

Submission of an appeal does not guarantee reversal of the original admission decision.

The decision rendered through the University's final graduate admission appeal process is final.

CHANGE OF ADMISSION STATUS

Students admitted with provisions or academic conditions must satisfy the requirements identified in their admission notification before their status may be changed.

When all requirements have been met, the graduate program may recommend a change of admission status through the University's established process. Approved status changes are recorded by the appropriate University offices.

Students are responsible for monitoring and satisfying all admission conditions by the prescribed deadline.

TRANSFER OF GRADUATE CREDIT

Graduate-level coursework completed at another appropriately accredited institution may be considered for transfer into a Delaware State University graduate degree program, subject to University and program requirements.

The maximum number of transfer credits that may be applied toward a graduate degree is:

- **Master's degree programs: 9 graduate credits**
- **Doctoral degree programs: 12 graduate credits**

To be eligible for transfer, coursework must:

- be equivalent in content and academic rigor to coursework or requirements within the student's graduate program;
- have been completed with a grade of **B or higher**;
- not have been applied toward a previously earned degree; and
- be reviewed and approved through the University's graduate transfer-credit process.

Approval of transfer credit is not automatic. The graduate program determines whether approved transfer coursework is applicable to the student's degree requirements and Plan of Study.

Graduate programs may establish **more restrictive transfer-credit requirements** when required by the curriculum, accreditation standards, or other approved program requirements.

READMISSION

Graduate students seeking readmission must first meet with their **Program Director** to determine eligibility and the appropriate pathway for returning to their graduate program. The **Readmission Application is provided by the Program Director** following this consultation.

GENERAL READMISSION REQUIREMENTS

Students seeking readmission must provide:

- **Two Letters of Support:**
 - One from the **Program Director**
 - One from a **faculty or staff member within the academic department**
- A **written statement** addressing the circumstances leading to the request for readmission and outlining a plan for future academic success. Specific questions are included in the Readmission Application.
- An **updated Plan of Study**
- Any additional documentation required by the academic program or University.

The readmission process is determined by whether the student is returning **after a lapse in registration** or **following academic dismissal**.

READMISSION AFTER A LAPSE IN REGISTRATION

Graduate students are expected to maintain continuous enrollment in accordance with University policy. **After the third semester in which the student's program is offered, a student who has not registered must complete the normal graduate admissions process to return to the program.**

To be considered for readmission following a lapse in registration, the student must:

- Meet the requirements for **unconditional admission**;
- Complete the applicable **graduate admissions process**;

- Provide the reason for the lapse in enrollment;
- Provide a **plan for academic success** upon returning to the program; and
- Meet any additional requirements established by the academic program or University.

Students should contact the **Graduate Admissions Office** for assistance with the application process. Because the student previously attended the University, **some admissions documents may not need to be resubmitted**. Graduate Admissions will advise the student regarding the documentation required for the new application.

The **Program Director and/or academic department** will review the application using the established graduate admissions process and determine whether the student will be recommended for readmission.

Readmission is not automatic or guaranteed. Students must satisfy current admission and program requirements before returning to the program.

READMISSION FOLLOWING ACADEMIC DISMISSAL

A graduate student may be academically dismissed following a review of the student's academic performance and progress. Academic dismissal may result from any of the following:

- Earning a grade of **D or F** in a graduate course;
- Failing to earn a **term GPA of 3.0 or higher while on academic probation**;
- Remaining on **academic probation for two consecutive semesters**; or
- Earning a **third grade of C** in graduate coursework.

Students who are academically dismissed may complete courses already in progress at the time of notification. However, students will be removed from future courses that have not yet begun, including courses scheduled for subsequent academic terms.

WAITING PERIOD FOLLOWING ACADEMIC DISMISSAL

Students who are academically dismissed must wait a minimum of **one full academic term** before becoming eligible to apply for readmission:

- **Dismissal during an 8-week term:** The student must wait at least **8 weeks** before applying for readmission.
- **Dismissal during a 16-week term:** The student must wait at least **16 weeks** before applying for readmission.

After satisfying the waiting period, the student must meet with the **Program Director** and complete the required readmission process.

Completion of the waiting period **does not guarantee readmission**. Readmission is subject to departmental review and approval in accordance with University and program requirements.

Students are encouraged to consult with their **Program Director or academic advisor** to discuss their academic standing, available support resources, and appropriate steps toward future academic success.

READMISSION PATHWAYS AT A GLANCE

Category	Lapse in Registration	Academic Dismissal
Who This Applies To	Students who have not registered after the third semester in which their program is offered.	Students dismissed because of academic performance or progress.
Waiting Period	No separate waiting period; the student must complete the normal admissions process after the third semester of non-enrollment.	One full academic term: 8 weeks for an 8-week term or 16 weeks for a 16-week term.

Admissions Status	Student must qualify for unconditional admission .	Student must meet applicable readmission requirements.
Application Process	Normal graduate admissions process; Graduate Admissions determines which documents must be resubmitted.	Graduate Readmission Application with departmental review.
Program Review	Program Director/Department follows the normal admissions process to determine whether to recommend readmission.	Program Director/Department reviews the student's eligibility and application for readmission.
Readmission Guaranteed?	No	No

GRADUATE ACADEMIC POLICIES AND REGULATIONS

ACADEMIC INTEGRITY AND MISCONDUCT

Graduate students are expected to uphold the highest standards of academic integrity in coursework, research, scholarly activity, professional practice, and all other academic endeavors.

Academic misconduct includes, but is not limited to:

- plagiarism;
- cheating;
- unauthorized collaboration;
- fabrication or falsification of information, data, citations, or academic records;
- submitting work completed by another person as one's own;
- unauthorized reuse of previously submitted work;
- improper use of technology or other resources to complete academic work;
- assisting another individual in committing academic misconduct; and
- other conduct that compromises the integrity of the academic process.

Allegations of academic misconduct are reviewed under applicable University academic-integrity and student-conduct procedures.

Graduate programs may establish additional professional, ethical, research, clinical, or disciplinary standards when appropriate to the field of study.

ADMISSION DEFERMENT

A student who has been admitted to a graduate program but is unable to enroll for the admitted term may request an admission deferment when permitted by the graduate program.

A deferment:

- requires approval by the applicable graduate program and Graduate Admissions;
- may not exceed the period established by University policy;
- does not guarantee that the curriculum, program requirements, course availability, or funding offered at the time of the original admission will remain unchanged; and
- does not guarantee continuation of an assistantship, scholarship, or other funding offer.

CONTINUOUS ENROLLMENT

It is a requirement that all degree-seeking graduate students maintain their enrollment status throughout the duration of their Program of Study. All students must be registered in the semester (or term) in which the degree is officially awarded. This will require enrollment during fall and spring semesters until all degree requirements are completed.

Only students seeking to graduate during the summer must enroll during the summer session. Students out of compliance will be required to reapply to their Program and if readmitted, will be subject to any Program changes or admission standards implemented during their lapse of enrollment.

MINIMUM REGISTRATION REQUIREMENTS

The number of credits required for enrollment may vary based upon the Program of Study. International students must remain enrolled full-time throughout the duration of their Program of Study in order to maintain their visa status.

Students receiving financial assistance in the form of an extramurally funded grant will be held to the enrollment requirements stipulated by the grant or funding agency. Students receiving funding via University scholarships, graduate assistantships or work-study will be held to enrollment standards defined by these programs.

LEAVE OF ABSENCE

Students who have an extenuating circumstance may request a leave of absence for up to one academic year. The student will submit his or her request in writing to the Chair of their Advisory Committee. The committee will meet with the student and render a decision. This decision will be reviewed by the Graduate Program Director and submitted to the Department Chairperson for approval and forwarded to the Dean of Graduate, Adult and Extended Studies for final approval. If granted, the leave of absence will stop the clock for the enrolled student, but it does not extend the enrollment timeline. Students requiring an extension will request an extension of time via their Advisory Committee.

DEGREE COMPLETION TIMING

- All master's programs must be completed within five years of initial enrollment including any transfer courses applied to the current Program of Study.
- All doctoral programs must be completed within seven years from the time of first enrollment.

EXTENSION OF TIME

Students with extenuating circumstances may petition their Advisory Committee for an extension of time. Students must be in good standing academically and must have successfully completed all candidacy requirements. The committee will review the candidate's petition, render a decision and forward their recommendation to the Graduate Program Director. This decision will be reviewed by the Graduate Program Director and submitted to the Department Chairperson for approval and forwarded to the Dean of Graduate, Adult and Extended Studies for final approval. If the recommendation for an extension is approved, the recommendation must be accompanied with a review of any coursework outside the time limit and a recommendation on how the student will bridge this gap. Options include the following:

- **Examination:** The Department or Program may elect to examine the student (orally or in writing) and report the results to the School of Graduate, Adult and Extended Studies.
- **Independent Study:** The Department or Program may elect to design an independent study if no course currently exists by which the student may update course content.
- **Repeat the Course:** The student may repeat expired coursework if the content has changed significantly since previous enrollment.
- **Additional Hours:** The Department or Program may assign additional hours of coursework to ensure currency of knowledge in rapidly changing content areas;
- **No Additional Work Assigned:** The Department or Program has evaluated the curriculum and acknowledges

that no significant curricula or program change has occurred since the student's first date of enrollment and therefore no additional work is assigned.

SUSTAINING CREDIT

Students who are in good standing, having successfully completed all course and candidacy requirements, must register for sustaining credit until their degree is awarded. Sustaining credit will carry with it the designation of full-time enrollment (6 hours' credit) and will be designated as thesis, dissertation, or non-thesis. These courses will replace existing sustaining graduate credit courses. Sustaining credit enrollment will be subject to the approval of the Dean of Graduate, Adult and Extended Studies. Successive enrollment will require meeting established milestones from the previous term and will be designated with the grade of Q. (See Sustaining Fee information in the Tuition and Fees section). Students must register for the fall and spring semesters. Students are not required to register during the summer semester unless they intend to graduate in the summer semester.

HEALTH RECORDS

The University requires that all graduate students who intend to live on campus must fill out a Student Health Form. If a student does not live on campus, he or she does not have to complete a health form. If a graduate student decides that he or she wants to receive treatment from the Student Health Center and does not live on campus, the student must fill out the Student Health Form. These forms are available at the following link: <https://www.desu.edu/student-life/campus-health-services>.

ACADEMIC ADVISEMENT

Students accepted into a Graduate Program are assigned a Faculty Advisor by their Graduate Program Director. Graduate students should consult with their Advisor in selection of courses, degree requirements, and related matters. After the schedule is approved by the Program Director or Advisor, a student should receive a PIN number and is then allowed to web register, or the Advisor may choose to register incoming graduate students. Course lists are published each semester by the Office of Records and Registration and are available for viewing at the [myDESU](#) student services portal. Prior to development and submission of the Plan of Study to the School of Graduate, Adult and Extended Studies, degree-seeking students must consult with an Advisor prior to registering. After the initial consultation, graduate students should be able to follow their plan only seeking guidance as needed.

Every student is expected to complete registration before the first day of classes each semester. Students are officially registered for a course only when they have completed all procedures applying to registration, including **making full payment** or payment arrangements for any outstanding balance. **Students not officially registered for a course will not receive credit for the course at the end of the semester.**

A student who fails to register prior to the late registration period, which begins on the first day of classes, is charged a late registration fee. Returning students who register during the late registration period are assessed a failure to pre-register fee and a late registration fee.

ONLINE REGISTRATION

Graduate students must register for courses through the University's official registration system during the registration periods published in the **Academic Calendar**.

Students should register in accordance with their approved **Plan of Study** and in consultation with their Graduate Program Director or academic advisor, as appropriate. Registration may be subject to course availability, prerequisites, academic standing, financial clearance, holds, and other University or program requirements.

Students are responsible for reviewing their registration for accuracy and completing any required changes within published deadlines.

Detailed registration instructions, system navigation, registration dates, and current procedures are maintained by the **Office of Records and Registration** and should be consulted each academic term.

CHANGE IN PROGRAM

A graduate student seeking to change from one graduate program to another must complete the University's established Change of Program process and receive all required approvals.

Approval of a program change is not automatic and is subject to the admission requirements, academic standards, and available capacity of the receiving graduate program. The receiving program will determine which previously completed graduate courses, if any, may be applied toward the requirements of the new program in accordance with University policy.

An approved change of program may result in changes to the student's Plan of Study, degree requirements, catalog year, anticipated graduation date, financial aid, funding, or other enrollment requirements.

Students should consult with the appropriate Graduate Program Director before initiating a change of program.

CHANGE OF PERSONAL INFORMATION

Graduate students are responsible for maintaining accurate personal and contact information in University records.

Changes to a student's legal name, mailing address, telephone number, email address, or other official student information must be submitted through the process established by the Office of Records and Registration. Supporting documentation may be required for certain changes.

Students are responsible for ensuring that their information remains current to receive official University communications and maintain accurate academic records

CREDIT HOURS

Academic work in University courses is measured in semester hours of credit. A semester hour is equal to 50 minutes of recitation or lecture work per week for one semester (16 weeks). Programs offering accelerated/shorter sessions must adjust contact hours based upon this calculation. A minimum of two hours of laboratory work yields one semester hour.

Credit will not be accepted for a course in which a student is not officially registered, nor will credit be granted for the same course twice with the exception of thesis/dissertation research as noted in the Program's Plan of Study.

GRADING POLICIES

A grade is reported for each course in which a student is enrolled. The grade is an indication of the quality of the student's performance in a course.

Mid-semester and final grades will be issued to all students for all courses enrolled. Final grades become a part of the student's permanent record and are used in computing grade point averages. If a student repeats a course, the highest grade in the course is calculated in the grade point average (GPA). The lower grade earned in the course is disregarded when calculating the GPA, but is not deleted from the student's record. On the student's transcript, an "E" placed next to a course indicates the repetition of a course excluded from the GPA and an "I" indicates the repetition of a course included in the GPA. The GPA is computed by dividing the total number of quality points by the total number of GPA hours earned. Non-traditional grades including grades of I, W, WA, AU, S, U, and P are not computed in the GPA.

The **Dean of the College** in which the course is offered must approve grade changes during the semester of instruction **immediately** following the semester the grade was issued. All grade changes submitted later than the succeeding semester must be approved by the Provost and Vice President for Academic Affairs. Approved grade changes will be forwarded to the Office of Records and Registration for processing.

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 graduate degree. A grade of "Q" is to be used when thesis or dissertation research is in progress and proceeding satisfactorily. If the thesis or dissertation is not proceeding satisfactorily, a "U" grade is given. The "Q" grade can be used for several semesters. At the time the thesis or dissertation is presented, defended, and graded, the thesis/dissertation Advisor will submit the appropriate quality grade (A, B, C, D, F, S, or U) for the final term, and all other terms with a "Q" grade, using the grade change form.

REMOVAL OF INCOMPLETES

Incomplete coursework due to reasons clearly beyond the control of the student will yield the grade "I". This grade must be removed by the end of the first six weeks of the next semester of the current academic year (i.e., for fall, the next semester is spring; for spring, the next semester is fall) unless prior arrangements are made in writing with the Instructor, with a copy sent to the Registrar. Otherwise, the grade "I" is automatically changed to "F" by the Office of Records and Registration.

NOTE: No student may graduate with an "I" grade or "In Progress" on his or her transcript.

The grading system at Delaware State University is shown below:

Grade	Quality Points	Explanation
A	4.0	Excellent
B	3.0	Good
C	2.0	Fair
D	1.0	Poor
F	0.0	Failure
WF	0.0	Withdrawal/Fail
I	Not Computed in GPA	Incomplete
W	Not Computed in GPA	Withdrew
WA	Not Computed in GPA	Administrative Drop
AU	Not Computed in GPA	Audit – Not Taken For Credit
S	Not Computed in GPA	Satisfactory
U	Not Computed in GPA	Unsatisfactory
P	Not Computed in GPA	Pass
Q	Not Computed in GPA	Thesis/Dissertation in progress proceeding satisfactorily

GRADUATE COURSE LEVEL

Courses which may apply toward a Graduate Program are numbered 500 and above.

COURSE LOADS

Graduate enrollment status is determined by the number of credit hours in which a student is enrolled during an academic term.

- **Full-time:** 6 or more graduate credit hours
- **Half-time:** 3 graduate credit hours
- **Part-time:** Fewer than 6 graduate credit hours

Graduate students should enroll in coursework consistent with their approved **Plan of Study** and consult with their Graduate Program Director or academic advisor when determining an appropriate course load.

Enrollment status may affect **financial aid, graduate assistantships, veterans educational benefits, immigration status, and other University requirements**. Students are responsible for understanding the requirements associated with their enrollment status

Overload Policy – Under review

UNDERGRADUATE STUDENT ELIGIBILITY FOR TAKING GRADUATE-LEVEL COURSES

Students who have accrued the requisite number of hours to be classified as seniors and who have also accrued a minimum grade point average of 3.0 within the major or program of interest are eligible to take introductory graduate courses. These courses should typically be those offered in the first year core to graduate students but minimally should be those not requiring any graduate course pre-requisites.

Undergraduates who meet eligibility requirements must also receive permission of the Advisor, Instructor, and Department Chairperson (or designee). If enrolled as a full-time undergraduate, the student will be charged at the undergraduate tuition rate for up to 9 credits.

The student may elect to use the graduate course in order to meet a credit hour requirement or to fulfill an undergraduate course requirement in cases where an undergraduate course is not available. If the student elects to use the course to fulfill an undergraduate requirement, the Department may waive this requirement should the student continue in a Graduate Program requiring the course, but the student will be required to take an additional course to meet the requisite credit hour requirement. If the student continues in a Graduate Program and elects to use the course to fulfill a graduate requirement, the Department is free to allocate the credit toward the student's graduate Plan of Study. In the latter instance, however, the student is subject to the policies governing graduate student academic performance.

AUDITING CLASSES

Graduate and non-degree students may audit a course with the approval of the **course instructor and academic advisor**, subject to University registration requirements and course availability.

Audited courses:

- do not carry academic credit;

- are recorded on the academic record with a grade of **AU**;
- are not included in the grade point average;
- do not satisfy graduate degree requirements; and
- do not count toward enrollment requirements for financial aid eligibility.

Students must request audit status within the University's established registration period. Applicable tuition and fees are assessed in accordance with current University policy. Once a course is designated for audit, the student is responsible for satisfying applicable University procedures and deadlines.

DOCUMENTATION FOR NON-ATTENDANCE (NO SHOW POLICY)

All enrolled students are required to attend each class at least once during the first week of classes in order to verify participation in the class. Attendance in online courses is the completion of the initial course assignment of a syllabus quiz or introduction assignment. Failure to verify participation in a class before the end of the first week of classes will result in the student being classified as a “no show” for the course. All tuition and fees for the course will be refunded and no grade will be issued.

ADDING AND DROPPING COURSES

Graduate students may add or drop courses within the deadlines established in the University **Academic Calendar**. All registration changes must comply with University and graduate program requirements.

Students are responsible for ensuring that registration changes are consistent with their **Plan of Study** and degree requirements. Consultation with the Graduate Program Director or academic advisor is encouraged when a change may affect academic progress or degree completion.

Courses may be added during the published add period, subject to course availability, prerequisites, enrollment restrictions, and required approvals.

Courses may be dropped during the published drop period. After the drop deadline, students must follow the University's **course withdrawal procedures**.

Changes in enrollment may affect **financial aid, graduate assistantships, veterans educational benefits, immigration status, continuous enrollment, and degree progression**. Students are responsible for understanding the academic and financial implications of registration changes.

WITHDRAWAL FROM COURSES OR THE UNIVERSITY

COURSE WITHDRAWAL AFTER THE PUBLISHED DEADLINE

After the published deadline to drop or withdraw from a course, a graduate student may request a **late course withdrawal** only when documented extenuating circumstances beyond the student's control prevented completion of the course.

The request must include appropriate supporting documentation, receive required academic approvals, and be submitted to the **Dean of the School of Graduate, Adult and Extended Studies** for review.

Dissatisfaction with academic performance, course instruction, or an anticipated grade does not constitute grounds for a late withdrawal.

If approved, the course will be recorded with a grade of **WA (Administrative Withdrawal)** in accordance with University policy.

WITHDRAWAL FROM THE UNIVERSITY

A graduate student who intends to withdraw from **all courses during a term** must complete the University's official withdrawal process by the deadline published in the **Academic Calendar**.

An approved University withdrawal will result in a grade of **W** for each applicable course, subject to University policy.

For graduate courses offered in accelerated or nonstandard terms, withdrawal must occur before completion of **60% of the applicable instructional period**. Withdrawal from the University must occur before the final week of the student's classes.

Students who withdraw from the University and later seek to resume graduate study are subject to applicable **continuous enrollment, readmission, and reapplication requirements**.

ADMINISTRATIVE WITHDRAWAL FOR A PREVIOUS TERM

In rare circumstances involving documented and compelling conditions, a graduate student may request an **administrative withdrawal for a previous academic term**.

The request must identify the applicable term, explain the circumstances supporting the request, and include appropriate documentation. The Dean of the School of Graduate, Adult and Extended Studies reviews the request and submits a recommendation to the **Provost and Vice President for Academic Affairs**.

Only the Provost and Vice President for Academic Affairs may authorize an administrative withdrawal for a previous term. If approved, grades of **WA** will be assigned in accordance with University policy.

FINANCIAL AND ACADEMIC IMPLICATIONS

Withdrawal may affect **tuition and fees, financial aid, academic standing, enrollment status, immigration status, veterans educational benefits, and progress toward degree completion**.

Students receiving federal financial aid should consult the University's current **Return of Title IV Funds** and withdrawal policies before withdrawing.

TRANSCRIPT REQUESTS

Official Delaware State University transcripts are issued by the **Office of Records and Registration** in accordance with University policy.

Transcripts received from other institutions become part of the student's University record and are not reproduced or released by Delaware State University.

Current transcript-request procedures, fees, and processing information are maintained by the Office of Records and Registration.

STUDENT EDUCATION RECORDS AND FERPA

Delaware State University maintains student education records in accordance with the **Family Educational Rights and Privacy Act (FERPA)** and applicable University policy.

FERPA provides eligible students certain rights regarding **access to education records, requests for amendment of records, disclosure of personally identifiable information, and the filing of complaints regarding alleged violations.**

Students should consult the University's official FERPA notification for current information regarding these rights and applicable University procedures.

DIRECTORY INFORMATION

In accordance with FERPA and University policy, Delaware State University may designate certain student information as **directory information** and disclose that information without prior written consent, unless the student has requested that disclosure be restricted.

The University's current designation of directory information and procedures for requesting nondisclosure are provided in the University's official FERPA notification.

GRADUATE DEGREE PROGRESSION AND MATRICULATION

1. Admission Status Requirements
2. Plan of Study
3. Advisory/Thesis/Dissertation Committee
4. Advancement to Candidacy
5. Thesis and Dissertation Requirements
6. Proposal and Research Approval
7. Thesis/Dissertation Defense
8. Defense Outcomes and Reexamination
9. Final Thesis/Dissertation Submission
10. Continuous Enrollment and Thesis/Dissertation Incomplete
11. Non-Thesis/Dissertation Culminating Requirements

Note: **Procedures and Forms:** Current matriculation forms, submission procedures, deadlines, and detailed thesis/dissertation formatting and submission requirements are maintained by the School of Graduate, Adult and Extended Studies. Students are responsible for following the procedures and deadlines in effect at the time of submission.

CULMINATING EXPERIENCE OUTCOMES

- Graduate programs may require a culminating experience as a condition of degree completion. Depending on the program, the culminating experience may include a **thesis, dissertation, capstone, scholarly project, research project, oral or written presentation, internship, field placement, comprehensive examination, or other program-approved requirement.**
- The appropriate faculty committee, evaluator(s), or program representative shall assess the student's culminating experience in accordance with established University and program requirements.

OUTCOMES

- Upon completion and evaluation of the culminating experience, one of the following outcomes shall be reported, as applicable:
- **Pass/Approved** — The culminating experience satisfactorily meets all requirements and no additional revisions or requirements are necessary.
- **Pass/Approved with Revisions** — The culminating experience is satisfactory subject to completion and verification of required revisions.
- **Revisions Required** — Substantive revisions or additional work are required before the culminating experience may receive final approval.
- **Reexamination or Additional Presentation Required** — The student must complete required revisions or additional work and undergo another examination, presentation, defense, or evaluation.
- **Fail/Not Approved** — The culminating experience does not satisfactorily meet the academic or program requirements.
- The committee, evaluator(s), or program representative shall communicate the outcome and any required revisions, additional requirements, or reexamination expectations to the student.
- Programs may establish additional evaluation criteria or requirements appropriate to the discipline and type of culminating experience.
- The final outcome must be reported to the School of Graduate, Adult and Extended Studies in accordance with University procedures and applicable graduation deadlines. Detailed submission procedures, forms, and program-specific requirements are maintained by the School of Graduate, Adult and Extended Studies and the student's academic program.

CULMINATING EXPERIENCE COMPLETION AND SUBMISSION

Doctoral and Master's level students must complete all culminating requirements by the deadlines published in the Academic Calendar for the term in which they intend to graduate. The scholarly project and or manuscript must incorporate all required revisions resulting from the defense and receive all required approvals and if manuscript publication is required then it must be submitted electronically through ProQuest in accordance with current University procedures. Students are responsible for completing all final submission requirements by the applicable graduation deadline.

CULMINATING EXPERIENCE INCOMPLETE AND SUSTAINING STATUS

A graduate student who requires more than one semester to complete a required culminating experience may receive the applicable **incomplete or continuing-progress designation[Q]**, as established by University and program policy, provided satisfactory progress is being made.

After completing all required coursework and applicable research or culminating-experience credits, a student who has not completed the required culminating experience must maintain the appropriate **enrollment or sustaining status** in accordance with University policy until all degree requirements are satisfied. Applicable sustaining fees are established by the University.

Semesters in which a student is not actively enrolled continue to count toward the University's established **time limit for degree completion**.

When sustaining status is required, continued registration beyond the initial sustaining semester requires approval of the **Graduate Program Director and the Dean of the School of Graduate, Adult and Extended Studies**.

Students must complete all culminating experience and degree requirements within the maximum time permitted for completion of their graduate degree.

DEGREE REQUIREMENTS AND APPLICATION FOR GRADUATION

DEGREE REQUIREMENTS

Graduate students must satisfy all University requirements and the requirements of their respective academic programs to be awarded a graduate degree.

A master's degree requires a minimum of 30 graduate credits, of which no more than six credits may consist of thesis, internship, or other approved special-project coursework.

A doctoral degree requires a minimum of 60 graduate credits, which may include eligible credits previously applied toward a master's degree and accepted as part of the doctoral curriculum. No more than 18 credits applied toward the doctoral degree may consist of dissertation credits.

Students may enroll in additional thesis or dissertation credits when necessary to complete the required research or culminating experience. Credits taken beyond the maximum applicable to the degree may not be substituted for required core, concentration, or elective coursework.

To qualify for a graduate degree, students must earn a minimum cumulative graduate grade point average of 3.0 on a 4.0 scale and satisfy all academic, matriculation, and culminating experience requirements established by the University and the student's graduate program.

APPLICATION FOR GRADUATION

The Petition for Graduation serves as the University's Application for Graduation for graduate students. Students intending to graduate must submit the Petition for Graduation by the applicable University deadline.

Submission of the Petition for Graduation initiates the review of the student's eligibility for degree completion. Degree conferral is subject to final verification that all University and graduate program requirements have been satisfied.

Prior to degree completion, students must have all applicable graduate matriculation requirements completed and approved, including:

- an approved Plan of Study, including approved transfer credits, if applicable;
- an approved Advisory Committee, when required by the program;
- Advancement to Candidacy, when required;
- all required coursework and credit-hour requirements;
- the required culminating experience, which may include a thesis, dissertation, capstone, scholarly project, comprehensive examination, internship, field placement, presentation, or other program-approved requirement; and
- all required final documentation and approvals.

Students are responsible for reviewing their academic record and degree progress with their Graduate Program Director and addressing outstanding requirements by the applicable graduation deadlines.

PARTICIPATION IN COMMENCEMENT

Participation in Commencement is distinct from the official conferral of a degree. Graduate students seeking to participate in Commencement must submit the Petition for Graduation (Application for Graduation) and comply with the University's published deadlines and Commencement requirements.

To be eligible to participate in Commencement, a graduate student must:

- submit the Petition for Graduation (Application for Graduation) and applicable degree-completion documentation;
- be enrolled in, or have successfully completed, all coursework required for the degree;
- satisfy all University and graduate program degree requirements;
- complete and receive approval for any required culminating experience and associated final submissions by the applicable deadlines; and
- satisfy applicable University requirements for Commencement participation.

Participation in Commencement does not constitute degree conferral. Degrees are awarded only after the University verifies that all academic and degree requirements have been successfully completed.

Students who complete degree requirements in a term other than the spring semester and wish to participate in the University's annual Commencement exercises must follow the University's current Commencement procedures and deadlines.

TUITION, FEES, AND FINANCIAL OBLIGATIONS

TUITION AND FEES

Tuition, fees, and other University charges are established by Delaware State University and are subject to change. The University reserves the right to establish or modify tuition, fees, and other charges as authorized by the Board of Trustees.

The Graduate Catalog does not constitute a contract regarding tuition, fees, or other charges. Students are responsible for reviewing the University's current tuition and fee schedule and satisfying all applicable financial obligations.

Current information regarding tuition, mandatory fees, special instructional fees, and other charges is available through the University's Tuition and Fees website and the Office of Student Accounts.

FINANCIAL RESPONSIBILITY

Students are responsible for satisfying their financial obligations to the University by the applicable deadlines. Registration and continued enrollment may be subject to satisfactory financial arrangements with the University.

Students using approved third-party educational benefits or sponsorships, including military or veterans' educational benefits, vocational rehabilitation, tuition exchange, or other authorized programs, are responsible for ensuring that required documentation is submitted and approved in accordance with University procedures.

COURSE AND SPECIAL FEES

Certain courses or programs may require additional fees associated with technology, laboratories, specialized equipment, instructional materials, clinical experiences, aviation, off-campus facilities, or other program-specific requirements.

Students are responsible for applicable course and program fees as published by the University. Current fee amounts should be reviewed through the University's official tuition and fee schedule.

Changes in enrollment, including adding, dropping, or withdrawing from courses, may affect a student's tuition, fees, financial aid, and account balance. Students should consult the applicable University refund and financial aid policies before changing enrollment.

PAYMENT PLANS AND BILLING

The University may offer payment-plan options to assist students in meeting their financial obligations. Payment-plan availability, enrollment periods, fees, required deposits, and payment schedules are established by the University and are subject to change.

Students are responsible for reviewing their University account, billing statements, financial aid, and outstanding balances and for meeting all published payment deadlines. Current billing schedules and payment-plan information are available through the Office of Student Accounts.

DELINQUENT ACCOUNTS

Students with past-due financial obligations may be subject to account holds and other restrictions consistent with University policy and applicable law. Such restrictions may affect registration and other University services.

Past-due balances may also be subject to collection procedures and associated costs in accordance with University policy and applicable law.

Students are responsible for resolving outstanding balances with the Office of Student Accounts.

FINANCIAL AID AND ACCOUNT ADJUSTMENTS

Financial aid displayed on a student's account may be subject to eligibility requirements, verification, adjustment, or disbursement schedules. Students with questions regarding financial aid eligibility, awards, or adjustments should consult the Office of Financial Aid.

Students should refer to the University's official Tuition and Fees, Billing, Payment Plan, Refund, and Financial Aid policies for current rates, deadlines, procedures, and requirements.

COUNSELING AND VIRTUAL WELLNESS SERVICES

Delaware State University provides counseling and wellness resources to support the personal, social, and academic well-being of eligible students. Available services may include individual and group counseling, crisis support, wellness programming, and other student-support resources.

Graduate students may also access TimelyCare, the University's virtual health and well-being resource, for eligible services available remotely. TimelyCare provides an additional option for graduate students, including those enrolled in online programs or who may not regularly access services on campus.

Graduate students should consult the University's Counseling Services and TimelyCare resources for current services, eligibility requirements, access instructions, hours, and availability.

CAREER AND PROFESSIONAL DEVELOPMENT

Graduate students have access to University career and professional development resources designed to support career exploration, professional growth, and the transition from graduate education to employment or career advancement.

Services available through the **Office of Career Services** may include career advising, résumé and cover letter review, interview preparation, career assessments, internship and employment assistance, professional branding, career fairs, networking opportunities, and other career-readiness programming.

Graduate students are encouraged to utilize career services throughout their academic program to explore career pathways, strengthen professional skills, and connect with potential employers and professional opportunities.

Students should consult the **Office of Career Services** for current services, programs, events, and access information.

MILITARY-AFFILIATED AND VETERAN STUDENT SERVICES

Delaware State University provides support to eligible **active-duty service members, veterans, National Guard and Reserve members, military spouses and dependents, and students utilizing military or veterans' educational benefits.**

The University's Veterans Affairs resources assist eligible students with the certification and administration of applicable educational benefits and provide guidance regarding enrollment and benefit requirements.

Military-affiliated graduate students may be eligible for federal or state veterans' educational benefits, military tuition assistance, and other educational resources in accordance with applicable requirements.

The University may award applicable transfer credit for eligible military education, training, and occupational experience based on **American Council on Education (ACE) recommendations**, University transfer-credit policies, and evaluation by the appropriate academic program or University official.

Students utilizing military or veterans' educational benefits are responsible for satisfying applicable certification, enrollment, and verification requirements. Students should consult the University's **Veterans Affairs/Military and Veteran Student resources** for current eligibility requirements, benefit information, certification procedures, and available services.

DELAWARE STATE UNIVERSITY ONLINE

Delaware State University offers select graduate degree and certificate programs through online delivery. Online graduate programs are subject to the same applicable University academic policies and standards as other graduate programs.

Admission requirements, curriculum, degree requirements, delivery format, and program-specific accreditation or licensure information are provided within the applicable graduate program sections of this catalog.

Students enrolled in online programs have access to University academic and student-support services in accordance with applicable University policies and eligibility requirements.

Current information regarding online graduate programs, course availability, and student services is available through **Delaware State University Online.**

Contact Information:

Delaware State University Online
302-857-7122
canvas@desu.edu

Canvas 24/7 After Hours Line
833.822.2281

INTERNATIONAL AFFAIRS

The **Office of International Affairs (OIA)** supports international students and advances international education at Delaware State University. OIA provides guidance, resources, and programming to assist international students with their transition to the University and engagement in the campus community.

Services for international graduate students may include **orientation, immigration advising and support, cultural adjustment resources, referrals to University services, and international educational and cultural opportunities.**

International graduate students should refer to the **International Graduate Students** section of this catalog for information regarding international admission, Form I-20 requirements, F-1 student status, and related enrollment requirements.

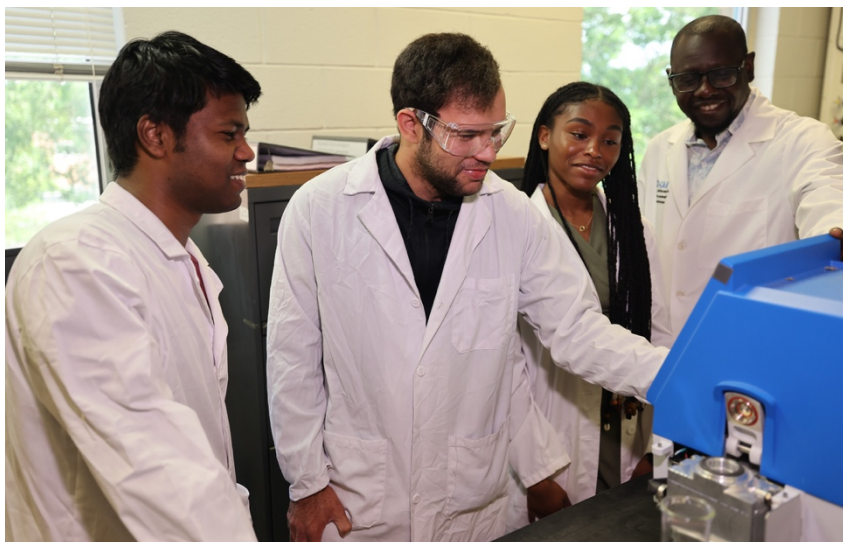
Current information regarding international student services, programs, forms, and procedures is available through the **Office of International Affairs**

Contact Information:

Mrs. Candace Alphonso-Moore, Director of International Student Services & Study Abroad Coordinator
302.857.6474, cmoore@desu.edu

Mrs. Latasha Wilson Daniels, Manager | 302.857.6421, ldaniels@desu.edu

COLLEGE OF AGRICULTURE, SCIENCE AND TECHNOLOGY



Department of Agriculture and Natural Resources

Master of Science in Agriculture

Concentration in Animal Science

Concentration in Plant Science

Master of Science in Natural Resources

Doctor of Philosophy in Integrated Agriculture, Food and Environmental Sciences

Department of Biological Sciences

Master of Science in Biological Sciences

Master of Science in Molecular and Cellular Neuroscience

Doctor of Philosophy in Neuroscience

Department of Chemistry

Master of Science in Applied Chemistry

Doctor of Philosophy in Applied Chemistry

Department of Human Ecology

Master of Science in Food Science and Biotechnology

Concentration in Biotechnology

Concentration in Food Chemistry

Concentration in Food Microbiology

Master of Science in Nutritional Sciences

Concentration in Dietetics

Concentration in General

Division of Physics, Engineering, Mathematics and Computer Science

Master of Science in Computer Science

Master of Science in Mathematics

Concentration in Applied Mathematics

Concentration in Pure Mathematics

Doctor of Philosophy in Interdisciplinary Applied Mathematics & Mathematical Physics

Concentration in Applied Mathematics

Concentration in Mathematical Physics

Master of Science in Applied Optics

Master of Science in Physics

Doctor of Philosophy in Optics

DEPARTMENT OF AGRICULTURE AND NATURAL RESOURCES

MASTER OF SCIENCE IN AGRICULTURE

PROGRAM 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 agricultural institutions. The program strives to generate research designed to solve problems encountered in the study, production and manipulation of plant and animal science and in evaluating various aspects of the plant and animal sciences.

PROGRAM GOALS

The goal of the Agricultural Science program is to educate, train, and prepare students as the next generation of plant and animal scientists for career opportunities in the agricultural industries, or for further studies in graduate or professional programs. To achieve this goal, Delaware State University's Agriculture Science Graduate Program focuses on two signature areas: 1) Plant Science and 2) Animal Science.

STUDENT LEARNING OUTCOMES

Students will demonstrate an advanced knowledge and understanding in an area of emphasis offered by the Agriculture program.

Students will design an experiment, collect, analyze, interpret data and report findings.

Students will demonstrate competency in scholarly writing and oral communication by writing a M.S. thesis and presenting it to a committee of professors in their field.

ADMISSION DEADLINES AND DEGREE REQUIREMENTS

Application Deadlines:

Fall – June 30

Spring – Nov. 15

Summer – April 15

International Application Deadlines:

Fall – May 1

Spring – Nov. 1

Summer – April 1

All applicants are required to submit evidence of the following for consideration of unconditional admission:

- An earned baccalaureate degree in Plant or Animal Science, Biology, Chemistry, Nutrition, or a closely related field with a minimum undergraduate cumulative grade point average of 2.8.
- An online application for admission.
- Official transcript(s) of all academic work completed.
- GRE scores. (Due to COVID-19, GRE scores are not required for the 2023-2024 academic year.)
- A resume.
- Three letters of recommendation via the online application process.
- A statement of intent to include the following: (a) the student's objectives in obtaining the degree, (b) area(s) of research interest, and (c) the student's interest in the Agricultural Science area (maximum two pages).

The Department of Agriculture and Natural Resources faculty will review students' application materials and make recommendation for acceptance into the Agricultural Science program to the Dean of Graduate, Adult and Extended Studies, who extends an offer of admission to the applicant.

DEGREE REQUIREMENTS

The Master of Science in Agriculture is designed to prepare students for advanced study in plant or animal science. The degree requires a supervised research program and a thesis. A total of 31 credit hours are required for the degree, including 25 hours of coursework and 6 credit hours of research.

Foundation Courses are noted below:

Depending on the area of study chosen, students entering the program are expected to have 30 credits from the following list of courses:

General Botany, Horticultural Plant Materials, Field Crops, Forage Crops Biology, Organic Chemistry, Molecular Biology and Biochemistry, Animal Science, Animal Nutrition, Livestock Production, Dairy Science, Poultry Science Anatomy, Physiology, Animal Breeding, Immunology, Parasitology Biometrics or Statistics Plant Physiology, Plant Pathology, Genetics, Entomology, Ecology Soil Science, Plant Propagation, Horticulture, Plant Systematics

M.S. Thesis:

Students in the program are expected to conduct independent research and write a thesis. Candidacy requires the development of a thesis topic and preparation of a research proposal which is subject to the approval of the Thesis Committee. All students must develop their research thesis proposal into a full research project consisting of collection and analysis of data and documented in an original research project that includes the collection, analysis and interpretation of data which will be presented in a format that meets the standards by the College of Agriculture, Science and Technology and School of Graduate, Adult and Extended Studies. The completed thesis will be submitted to the Thesis Committee for review and if deemed acceptable, an oral examination, consisting principally of a defense of the thesis, will be scheduled. Upon final approval by the Thesis Committee, the thesis shall be submitted to the Dean of the College and finally to the Dean of Graduate, Adult and Extended Studies. A majority of the student's Thesis Committee must approve the thesis and its

defense. If approval is denied, the candidate will not be recommended for graduation. In this event, the student may be re-examined at a later period as determined by the Thesis Committee.

Required Coursework:

Students enrolled in the Agricultural Science Graduate Program are required to complete at least 31 credit hours of graduate-level coursework which includes 6 credits of thesis work.

Required courses include:

AGRI 551 – Experimental Design (3 hours)

AGRI 572 – Departmental Seminar (1 hour)

AGRI 560 – Research Problem in area of Specialization (3 hours)

AGRI 561 – Thesis Research (6 hours)

The remaining courses (18 hours) are elective courses that can be chosen by the student in collaboration with his or her Academic Advisor and Thesis Committee. Courses selected can be from departmental offerings, or offerings within other departments on campus.

Student registration in graduate-level coursework is subject to the approval of an assigned Advisor.

Transfer Credits: A maximum of 9 graduate credits may be transferred into the program from another accredited institution of higher learning provided that the following conditions apply:

The course curriculum must have covered material equivalent to that of the substituted course within the program, the student must have earned a minimum grade of "B" for the course, the credit cannot have been used toward a prior degree, and the course must be approved by the student's Advisory Committee.

FACULTY

The faculty members in the Agricultural Science program are dedicated to their respective fields of study and have a diverse background. Specific areas of research interest of the faculty include Plant Biotechnology, Plant Genomics, Plant Physiology, Plant Systematics, Minor Crop Production, Small Ruminant Production, Sustainable Poultry Production and Parasite Control. Active research projects exist within these areas and offer graduate students many opportunities for active learning and discovery.

COURSE DESCRIPTIONS

(Note: Additional Course Descriptions can be found under Food Science, Natural Resources, Biology and Chemistry).

AGRICULTURE (AGRI)

AGRI-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 (3) hours lecture and one (1) two-hour laboratory per week. Credit, three hours.

AGRI-505. AQUATIC ANIMAL PHYSIOLOGY

A study of the basic physiological systems in fishes and crustaceans and their relationships to development, growth and reproduction. Three (3) hours lecture and one (1) two-hour laboratory per week. Credit, four hours.

AGRI-507. SOILS AND SOIL FERTILITY

The study of soil properties, processes, nutrients, fertility, and management practices related to crop production and environmental protection. Two (2) hours lecture and one (1) two-hour laboratory. Credit, three hours.

AGRI-511. PLANT 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: AGRI-317. Credit, three hours.

AGRI-516. 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: AGRI-317. Credit, three hours.

AGRI-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: AGRI-317, BIOL-205. Credit, three hours.

AGRI-541. PLANT ANATOMY AND MORPHOLOGY

A study of the structure and function of major plant cells and tissues and the morphology of organs of vascular and nonvascular plants. Laboratories will focus upon comparisons among taxa and the characteristics of major plant groups.

Prerequisites: BIOL 101, 102, 205. Credit, three hours.

AGRI-551. EXPERIMENTAL DESIGN

A study of the use of advanced experimental designs in planning, analyzing, and interpreting experimental data. Three (3) one-hour class periods per week.

Prerequisites: Three (3) credits in Statistics/Biometrics. Credit, three hours.

AGRI-560. RESEARCH PROBLEMS

A special problems course designed to provide research training in the area of the student's field of study and specifically related to the needs of their research program. Credit, one to three hours.

AGRI-561. THESIS RESEARCH

An in-depth individualized investigation of a research problem conducted under close supervision of the thesis advisor. This involves experimental design, data collection, data analysis and the preparation of the thesis. A grade of "Q" is given until the thesis is completed. Credit, 0 to six hours.

AGRI-572. GRADUATE SEMINAR

A seminar, meeting once per week with faculty and student presentations on their research and/or other relative scientific topics. Credit, one hour.

AGRI-575. MOLECULAR GENETICS AND GENOMICS

An in-depth discussion of molecular genetic principles and genomic methods as applied to model and commercially relevant biological organisms. Review of cutting edge technology, literature, and methods applied on a genomic scale; this course will also investigate evolutionary relationships between various organisms and utilization of tools from the genomic era to better elucidate similarities and differences.

Credit, three hours.

AGRI-581. ADVANCED FORAGE & MINOR CROP PRODUCTION & 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.

Credit, three hours.

AGRI-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 field, herbarium, library, and classroom. In addition, collection, preparation, and labeling of plant specimens are covered in this course.

Credit, three hours.

AGRI-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. Two (2) one-hour lectures and one (1) two-hour laboratory per week.

Prerequisites: AGRI-102, AGRI-317 or AGRI 219 or permission of instructor. Credit, three hours.

AGRI-641 EVOLUTION OF VASCULAR PLANTS

Advanced study of the evolution and classification of Tracheophyta, including traditional and experimental evidence of phylogenetic diversity. Two (2) lectures and one (1) two-hour laboratory per week.

Credit, 3 hours

AGRI-695. AG AND NATURAL RESOURCES SUSTAINING GRADUATE STUDENT

A continuation courses to allow students who have completed their research and their coursework the additional time necessary to complete their thesis. A fee is assigned to this course; however, no credit is awarded.

Credit, none.

**PROGRAM: MASTER OF SCIENCE IN
AGRICULTURE CONCENTRATION: PLANT OR
ANIMAL SCIENCE**

(Even Year Fall Semester)			(Odd Year Spring Semester)		
Course	Course Name	Cr	Course	Course Name	Cr
AGRI 551	Experimental Design	3	AGRI 560	Research Problems	3
	Elective	3	AGRI 572	Graduate Seminar	1
				Elective	3
	Total	6		Total	7

(Odd Year Fall Semester)			(Even Year Spring Semester)		
Course	Course Name	Cr	Course	Course Name	Cr
	Elective	3		Elective	3
	Elective	3	AGRI 561	Thesis Research	3
	Total	6		Total	6

(5 th Semester of Attendance or Summer)			(Insert Year and Semester and/or Term)		
Course	Course Name	Cr	Course	Course Name	Cr
	Elective	2-3			
AGRI 561	Thesis Research	3			
	Total	6		Total	

(Insert Year and Semester and/or Term)			(Insert Year and Semester and/or Term)		
Course	Course Name	Cr	Course	Course Name	Cr
	Total			Total	
			Total Credits: 31		

- *Denotes a Core Requirement
- +Denotes an Elective
- Total Core Credits = 13
- Total Elective Credits = 17-18
- Candidacy Requirement: Completion of Core Courses
- Submission of Research Plan with Candidacy Application to School of Graduate, Adult and Extended Studies
- Capstone or Culminating Experience: Thesis Defense and Submission of Thesis

MASTER OF SCIENCE IN NATURAL RESOURCES

PROGRAM OBJECTIVES

The Department of Agriculture and Natural Resources' Master of Science in Natural Resources program was developed: to provide a research and graduate coursework-based program focused on the study, management and/or the manipulation of natural resources; 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, nonprofit groups, private industry, and other interested organizations (i.e. grant proposals, internships, service learning relationships).

PROGRAM GOALS

The goal of the Natural Resources program is to educate, train, and prepare students as the next generation of scientists for career opportunities in Natural Resources or for further studies in graduate or professional programs.

STUDENT LEARNING OUTCOMES

Students will demonstrate an advanced knowledge and understanding in an area of emphasis offered by the Natural Resources program.

Students will design an experiment, collect, analyze, interpret data and report on and publish findings.

Students will demonstrate competency in scholarly writing and oral communication by writing a M.S. thesis and presenting it to a committee of professors in their field.

All applicants are required to submit evidence of the following for consideration of unconditional admission:

- An earned baccalaureate degree in Fisheries Science, Wildlife Science, Environmental Science, Ecology, Biology, or a closely related field with a minimum undergraduate cumulative grade point average of 2.8.
- An online application for admission.
- Official transcript(s) of all academic work completed.
- GRE scores. (Due to COVID-19, GRE scores are not required for the 2023-2024 academic year.)
- A resume.
- Three letters of recommendation via the online application process (letters are requested in addition to filling out the evaluation form).
- A statement of intent to include the following: (a) the student's objectives in obtaining the degree, (b) area(s) of research interest, and (c) the student's interest in Natural Resources (maximum two pages).

The Department of Agriculture and Natural Resources faculty will review students' application materials and make recommendation for acceptance into the Natural Resources program to the Dean of Graduate, Adult and Extended Studies, who extends an offer of admission to the applicant.

DEGREE REQUIREMENTS

The Master of Science in Natural Resources is designed to prepare students for advanced study. The degree requires a supervised research program and a thesis. A minimum of 31 credit hours are required for the degree, including 25 hours of coursework and 6 credit hours of research.

Foundation Courses are noted below:

Depending on the area of study chosen, students entering the program are expected to have 30 credits from the following list of courses:

Aquaculture, Biometrics, Botany, Ecology, Ecosystems, Entomology, Environmental Law/Policy, Herpetology, Fisheries Science, Ichthyology, Forestry, Land Use Planning, Limnology, Mammalogy, Marine Science, Ornithology, Population Biology, Resource Management, Soils, Wildlife Sciences and 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.

M.S. Thesis:

Students in the program are expected to conduct independent research and write a thesis. Candidacy requires the development of a thesis topic and preparation of a research proposal which is subject to the approval of the Thesis Committee. All students must develop their research thesis proposal into a full research project consisting of collection and analysis of data and documented in an original research project that includes the collection, analysis and interpretation of data which will be presented in a format that meets the standards by the College of Agriculture, Science and Technology and School of Graduate, Adult and Extended Studies. The completed thesis will be submitted to the Thesis Committee for review and if deemed acceptable, an oral examination, consisting principally of a defense of the thesis, will be scheduled. Upon final approval by the Thesis Committee, the thesis shall be submitted to the Dean of the College and finally to the Dean of Graduate, Adult and Extended Studies. A majority of the student's Thesis Committee must approve the thesis and its defense. If approval is denied, the candidate will not be recommended for graduation. In this event, the student may be re-examined at a later period as determined by the Thesis Committee.

Required Coursework:

Students enrolled in the Natural Resources Graduate Program are required to complete at least 31 credit hours of graduate-level coursework which includes 6 credits of thesis work.

Required courses include:

NTRS 502 – Habitat Management and Restoration Theory (3 hours)

NTRS 503 – Conservation and Restoration Biology (3 hours)

NTRS 501 – Population Biology (3 hours)

NTRS 551 – Experimental Design (3 hours)

AGRI 572 – Departmental Seminar (1 hour)

AGRI 561 – Thesis Research (6 hours)

The remaining courses (12 hours) shall be comprised of electives chosen by the student in collaboration with their Academic Advisor and Thesis Committee. Courses selected can be from departmental offerings, or offerings within other departments.

Student registration in graduate-level coursework is subject to the approval of an assigned Advisor.

Transfer Credits: A maximum of 9 graduate credits may be transferred into the program from another accredited institution of higher learning provided that the following conditions apply:

The course curriculum must have covered material equivalent to that of the substituted course within the program, the student must have earned a minimum grade of "B" for the course, the credit cannot have been counted toward a prior degree, and the course must be approved by the student's Thesis Committee.

FACULTY

The faculty members in the Natural Resources program are dedicated to their respective fields of study and have a diverse background. Specific areas of research interest of the faculty include: Aquaculture, Environmental Science, Fisheries and Wildlife Science. Active research projects exist within these areas and offer graduate students many opportunities for active learning and discovery.

COURSE DESCRIPTIONS

(Note: Additional Course Descriptions can be found under Agriculture, Food Science, Biology and Chemistry).

NATURAL RESOURCES (NTRS)

NTRS-501. POPULATION BIOLOGY

A study of biology above the level of the individual with emphasis on ecology and evolution. Two (2) hours of lecture and one (1) two-hour laboratory. Credit, three hours.

NTRS-502. HABITAT MANAGEMENT AND RESTORATION: THEORY

An exploration of advanced theory and methodology for the establishment, maintenance and restoration of aquatic and terrestrial habitats. Credit, three hours.

NTRS-503. CONSERVATION AND RESTORATION BIOLOGY, APPLICATIONS

Application of theory and methodology presented in the theory course to field projects involving data collection and interpretation. Credit, three hours.

NTRS-504. ENVIRONMENTAL MODELING

An introduction to the major types of environmental models, including modeling theory and various methodologies used for modeling environmental systems. Two (2) hours lecture and two (2) hours laboratory/project work per week. Credit, three hours.

NTRS-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: 23-205, NTRS-321 or the consent of the Instructor. Students who have taken NTRS-451 are not eligible to take NTRS-531 for graduate credit. Credit, three hours.

NTRS-551. EXPERIMENTAL DESIGN

A study of the use of advanced experimental designs in planning, analyzing, and interpreting experimental data. Three (3) one-hour class periods per week.

Prerequisites: Three (3) credits in Statistics/Biometrics. Credit, three hours.

NTRS-604. GIS APPLICATION IN NATURAL RESOURCES

This course is an introduction to the design, development, and application of Geographic Information System technologies for students in natural resources, environmental management, or similar disciplines that could benefit from a professional GIS curriculum. Two (2) hours lecture and two (2) hours laboratory/project work per week. Credit, three hours.

NTRS-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.

Prerequisites: 23-205 or consent of the Instructor. Credit, three hours.

NTRS-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.

Prerequisites: 23-205 or consent of the Instructor. Credit, three hours.

NTRS-675. ADVANCED ENVIRONMENTAL POLICY AND 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: 23-205 or permission of the Instructor. Students who have taken NTRS-475 are not eligible to take NTRS-675 for graduate credit. Credit, three hours.

NTRS-684. 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.

Prerequisites: NTRS-403. Credit, three hours.

AGRI-560. RESEARCH PROBLEMS

A special problems course designed to provide research training in the area of the student's field of study and specifically related to the needs of their research program. Credit, one to three hours.

AGRI-561. THESIS RESEARCH

An in-depth individualized investigation of a research problem conducted under close supervision of the thesis advisor. This involves experimental design, data collection, data analysis and the preparation of the thesis. A grade of "Q" is given until the thesis is completed. Credit, 0 to six hours.

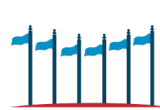
AGRI-572. GRADUATE SEMINAR

A seminar, meeting once per week with faculty and student presentations on their research and/or other relative scientific topics.

Credit, one hour.

AGRI-695. AG AND NATURAL RESOURCES SUSTAINING GRADUATE STUDENT

A continuation courses to allow students who have completed their research and their coursework the additional time necessary to complete their thesis. A fee is assigned to this course; however, no credit is awarded. Credit, none.



PROGRAM: MASTER OF SCIENCE IN NATURAL RESOURCES

(Even Year Fall Semester)			(Odd Year Spring Semester)		
Course	Course Name	Cr	Course	Course Name	Cr
NTRS 502	Habitat Mgt. & Restoration Theory	3	NTRS 501	Population Biology	3
NTRS 551	Experimental Design	3	NTRS 503	Conservation & Restoration Biology Application	3
	Total	6		Total	6

(Odd Year Fall Semester)			(Even Year Spring Semester)		
Course	Course Name	Cr	Course	Course Name	Cr
	Elective	3	AGRI 572	Graduate Seminar	1
AGRI 561	Thesis Research	3	AGRI 561	Thesis Research	3
				Elective	3
	Total	6		Total	7

(5 th Semester of Attendance or Summer)			(Insert Year and Semester and/or Term)		
Course	Course Name	Cr	Course	Course Name	Cr
	Elective	3			
	Elective	3			
	Total	6		Total	

(Insert Year and Semester and/or Term)			(Insert Year and Semester and/or Term)		
Course	Course Name	Cr	Course	Course Name	Cr
	Total			Total	
			Total Credits: 31		

- *Denotes a Core Requirement
- +Denotes an Elective
- Total Core Credits = 19
- Total Elective Credits = 12
- Candidacy Requirement: Completion of Core Courses
- Thesis Students - Submission of Research Plan with Candidacy Application to School of Graduate, Adult and Extended Studies
- Capstone or Culminating Experience: Thesis Defense and Submission of Thesis

DOCTOR OF PHILOSOPHY IN INTEGRATIVE AGRICULTURE, FOOD AND ENVIRONMENTAL SCIENCES (IAFES)

PROGRAM OBJECTIVES AND GOALS

The Ph.D. Program in Integrative Agriculture, Food and Environmental Sciences provides access to and prepares a diverse population of students in a STEM interdisciplinary approach that will supply experimental tools through rigorous theoretical and practical, integrated, interdisciplinary curriculum needed for the advancement of science. This integrated Ph.D. program enhances the training of students and collaboration of colleagues in different areas of STEM leading to scientists proficient in working in multidisciplinary areas of Agriculture, Food and Environmental Sciences.

STUDENT LEARNING OUTCOMES

- Build capability to conduct innovative and advanced research to solve emerging problems in STEM.
- Equip and develop professionals with the tools and technologies needed to respond to complex and integrated 21st century challenges.
- Enhance career opportunities for graduate students through the development of a multidisciplinary educational program focused in integrating life sciences.
- Train the next generation of qualified scientists and faculty to address scientific issues via a multidisciplinary approach.
- Provide opportunities to train potential Ph.D. candidates with a broad-based knowledge base with a focus on developing them into well-rounded scientists who will be able to work in academia, industry, or government in the broader life sciences.
- Provide interdisciplinary graduate training particularly in subject matter areas where no Ph.D. graduate programs currently exist.
- Create a collaborative research environment in CAST where interdisciplinary and multidisciplinary faculty knowledge bases can be brought together for the benefit of our graduate students.

ADMISSION DEADLINES AND DEGREE REQUIREMENTS

Application Deadlines:

Fall – June 30

Spring – November 15

Summer – April 15

International Application Deadlines:

Fall – May 30

Spring – October 15

Summer – March 15

The IAFES Ph.D. Program is offered to students who would like to pursue a Ph.D. in multidisciplinary research fields in the following departments in the College of Agriculture, Science and Technology (CAST) at Delaware State University:

- Department of Agriculture and Natural Resources
- Department of Human Ecology
- Department of Chemistry
- Department of Biological Sciences
- The Division of Physics, Engineering, Mathematics, and Computer Science

REQUIRED OF ALL APPLICANTS:

Potential applicants holding an M.S. Degree in STEM disciplines are eligible to apply for the IAEFS Ph.D. Program. Applicants with a B.S. degree with outstanding backgrounds are also eligible to apply. Applicants from under-represented populations are highly encouraged to apply for this doctoral program.

- Applicants having an M.S. degree: Minimum cumulative undergraduate grade point average of 3.0 (on a 4-point scale)
- Applicants having a B.S. degree: Minimum cumulative undergraduate grade point average of 3.25 (on a 4-point scale)
- Provide official scores on the Graduate Record Examination (GRE). Testing must be within five years of application. Due to COVID-19, GRE scores are not required for the 2023-2024 academic year.
- Complete an application for admission
- Submit a detailed curriculum vitae
- Submit official transcript(s)
- Submit three letters of recommendation from professionals in the area of interest
- Identify and be in communication with a potential Advisor prior to application to the program for potential research assistantship opportunities.

PROGRAM OFFERINGS & DEGREE REQUIREMENTS

The program offers multidisciplinary Ph.D. training including external internship opportunities in industry, government or academia at other institutions or programs; shadowing experiences on the University campus in various business and operational units that help in student success; and professional development opportunities provided by the School of Graduate, Adult and Extended Studies (i.e. resume writing, manuscript preparation, job application, interview skills).

Each student will have one primary Faculty Advisor and one Faculty Co-Advisor from a different but related discipline.

Total credit hours for the IAFES Ph.D. Program are 45 credit hours including 12 credit hours of dissertation for applicants with an M.S. degree, and 60 credits including 18 credit hours of dissertation for applicants applying with a B.S. degree.

Note: The external internship and shadowing opportunities are requirements of the program, but students with the advice of the program administration and advisors will be required to take initiative to find these opportunities.

FACULTY

Faculty members in the following departments in the College of Agriculture, Science, and Technology (CAST) at Delaware State University are eligible to advise, co-advise and serve in the dissertation committees of potential Ph.D. candidates in the IAFES

RESEARCH AREAS

Research areas include all opportunities that are integrative in nature and build on programs in the College. The primary research focus of this integrative Ph.D. program is a multidisciplinary approach in agricultural, environmental and food sciences disciplines.

QUALIFYING EXAMINATIONS

Each student must successfully pass the written general examination that encompasses the courses the candidate has taken along with an oral examination in a subject area chosen by his or her Advisor and Co-Advisor.

CANDIDACY REQUIREMENTS

- Candidates who joined the program with an M.S. degree: Complete at least 12 credits of graduate Ph.D. level and 12

credits of graduate M.S. level coursework

- Candidates who joined the program with a B.S. degree: Complete at least 12 credits of graduate Ph.D. level and 21 credits of graduate M.S. level coursework

In addition to the above coursework:

- Candidates who joined the program with an M.S. degree are required to take 12 dissertation credits, 6 credits Research Problems and 3 Experiential Learning credits.
- Candidates who joined the program with a B.S. degree are required to take 12 dissertation credits, 6 additional thesis research credits, 6 credits Research Problems and 3 Experiential Learning credits.
- A cumulative GPA of at least 3.0 on all graduate-level coursework should be maintained with no more than two courses with a grade C.
- Pass the written Qualifying Examination
- Pass the Oral Qualifying Examination
- Submission of Research Plan
- Oral Defense of Research Plan
- Total credit hours for the Ph.D. candidate must be 45 credits for those candidates who joined the program with an M.S. degree.
- Total credit hours for the Ph.D. candidate must be 60 credits for those candidates who joined the program with a B.S. degree.

CORE COURSE REQUIREMENTS

For Those Candidates Who Joined the Ph.D. Program with an M.S. Degree:

CAST 8XX – Dissertation Research - 12 Credits

CAST 8XX – Research Problems - 6 Credits

CAST 8XX – Experiential Learning - 3 Credits

For Those Candidates Who Joined the Ph.D. Program with a B.S. Degree:

6XX – Thesis Research – 6 Credits

CAST 8XX – Dissertation Research - 12 Credits

CAST 8XX – Research Problems - 6 Credits

CAST 8XX – Experiential Learning - 3 Credits

COURSE DESCRIPTIONS

Course descriptions are only provided for the courses that are required for Ph.D. candidates in the program. The remaining credit hours will be taken by candidates per the recommendation of the Faculty Advisor and Co-Advisor and they are listed as electives and include courses offered across all graduate programs in the College of Agriculture, Science and Technology (CAST).

DISSERTATION RESEARCH

In consultation with the Faculty Advisor and Co-Advisor and Advisory Committee, the student will design and conduct research to complete the aims identified in his/her research proposal or as modified subsequently in line with recommendations from the committee. Dissertation allows students to present their findings in response to a question or proposition that they choose themselves. The primary purpose is to test independent research skills that they have acquired during their time at the University, with the assessment used to help determine their final grade. Students will be learning 12 credits dissertation research hours.

RESEARCH PROBLEM

The purpose of this course is to provide an introduction to empirical research and a variety of research approaches common to STEM fields. Upon completing the course, participants will be able to locate, understand, evaluate, and interpret qualitative as well as quantitative STEM

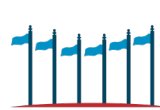
research and use these skills to identify possible Thesis or Project topics. Internship opportunities will allow students to acquire those skills. As part of the Ph.D. Program requirement, students will be doing their internships outside of their labs including state and federal labs, other institutions and programs. Students in the program will earn 6 credit hours for their internships experiences. Students will be required to find these opportunities on their own by developing relationships across campus and off campus, even though they will be assisted by the program administrators.

EXPERIENTIAL LEARNING

Throughout the experiential learning process, the Ph.D. candidate is actively engaged in posing questions, investigating, experimenting, being curious, solving problems, assuming responsibility, being creative, and constructing meaning, and is challenged to take initiative, make decisions and be accountable for their learning experiences. Students in the program will earn 3 credit hours for their shadowing experiences in various offices on the campus (i.e. Student Success, Office of Sponsored Programs, Finance Department, Marketing, Events, Facilities, Purchases). Students will be required to find these opportunities on their own by developing relationships across campus and off campus, even though they will be assisted by the program administrators.

THESIS RESEARCH

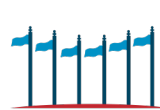
This is only required from the candidates who joined the program with a B.S. Degree. Students in the program will earn 6 credit hours for their thesis research. They can take any thesis research class at the 6XX level available in the department with which their primary advisors are affiliated. This is a Master of Science-level course and the description of this course is provided for the Thesis Research for each Master of Science Degree in the College of Agriculture, Science and Technology (CAST) in the graduate catalog.



**PROGRAM: Ph.D. PROGRAM IN INTEGRATIVE AGRICULTURE,
FOOD AND ENVIRONMENTAL SCIENCES (IAFES)**

Curriculum for candidates who joined the program with an M.S. Degree

First Year Fall Semester			First Year Spring Semester		
Course	Course Name	Credit	Course	Course Name	Credit
6XX	Elective	3	6XX	Elective	3
6XX	Elective	3	7XX or 8XX	Elective	3
6XX	Elective	3	7XX or 8XX	Elective	3
	Total Credits	9		Total Credits	9
Second Year Fall Semester			Second Year Spring Semester		
Course	Course Name	Credit	Course	Course Name	Credit
7XX or 8XX	Elective	3	CAST 8XX	Experiential Learning	3
7XX or 8XX	Elective	3	CAST 8XX	Dissertation Research	6
	Total Credits	6		Total Credits	9
Third Year Fall Semester			Third Year Spring Semester		
Course	Course Name	Credit	Course	Course Name	Credit
CAST 8XX	Research Problems	6	CAST 8XX	Dissertation Research	6
	Total Credits	6		Total Credits	6
Fourth Year Fall Semester			Fourth Year Spring Semester		
Course	Course Name	Credit	Course	Course Name	Credit
6XX or 8XX	Sustaining Graduate Student	6		Sustaining Graduate Student	6
	Total Credits	0		Total Credits	0
Total Credits Earned for Ph.D.					45



**PROGRAM: Ph.D. PROGRAM IN INTEGRATIVE AGRICULTURE,
FOOD AND ENVIRONMENTAL SCIENCES (IAFES)**

Curriculum for candidates who joined the program with a B.S. Degree

First Year Fall Semester			First Year Spring Semester		
Course	Course Name	Credit	Course	Course Name	Credit
6XX	Elective	3	6XX	Elective	3
6XX	Elective	3	6XX	Elective	3
6XX	Elective	3	6XX	Elective	3
	Total Credits	9		Total Credits	9
Second Year Fall Semester			Second Year Spring Semester		
Course	Course Name	Credit	Course	Course Name	Credit
6XX	Elective	3	7XX or 8XX	Elective	3
7XX or 8XX	Elective	3	7XX or 8XX	Elective	3
7XX or 8XX	Elective	3	CAST 8XX	Experiential Learning	CAST 8XX
	Total Credits	9		Total Credits	9
Third Year Fall Semester			Third Year Spring Semester		
Course	Course Name	Credit	Course	Course Name	Credit
CAST 8XX	Research Problems	6	CAST 8XX	Dissertation Research	12
6XX	Thesis Research	6			
	Total Credits	12		Total Credits	12
Total Credits Earned for Ph.D.					60
Fourth Year Fall Semester			Fourth Year Spring Semester		
Course	Course Name	Credit	Course	Course Name	Credit
6XX or 8XX	Sustaining Graduate Student	6	6XX or 8XX	Sustaining Graduate Student	6
	Total Credits	0		Total Credits	0
Total Credits Earned for Ph.D.					60

DEPARTMENT OF BIOLOGICAL SCIENCES

MASTER OF SCIENCE IN BIOLOGICAL SCIENCES

PROGRAM OBJECTIVES

The Department of Biological Sciences offers degrees in 3 separate graduate programs: MS in Biological Sciences, MS in Molecular and Cellular Neuroscience, and PhD in Neuroscience. These programs overlap in terms of understanding the rules of life; however, each program uses distinct routes to prepare students for research and professional career paths in areas related to biological sciences and neuroscience. Each program is described in more detail below, followed by course descriptions, faculty research and research facilities.

The Department of Biological Sciences prepares students for career opportunities in professional studies and further graduate studies in areas related to biological sciences and neuroscience. Many graduates pursue careers in state and federal agencies, healthcare, private industry, research, 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 knowledge of biological principles required to make intelligent and effective research and development decisions.

PROGRAM GOALS

Students in the MS Program in Biological Sciences will have broadened knowledge in the fields of biology and hands-on research training. Our programs aim to enhance student research skills and the ability to apply classroom and laboratory knowledge to real-world situations. Additionally, the student will be informed of recent trends in research practices. Students are required to complete original research directed by a departmental faculty member and submit a thesis, which will be defended before their Thesis Committee.

STUDENT LEARNING OUTCOMES

- Expanded knowledge of biological concepts;
- Proficiency in experimental design and laboratory research experiments and techniques;
- Familiarity with current research topics in the field;
- Enriched skills in data analysis and interpretation;
- Enhanced experience with scientific writing and oral presentation of research findings.

ADMISSION AND DEGREE REQUIREMENTS

Application Deadline:

- Fall enrollment – April 15

International Application Deadline:

- Fall enrollment – March 15; however, currently the program is unable to admit many international students due to federal funding constraints.

All applicants are required to:

- Have earned a baccalaureate degree in Biological Sciences or a related field, such as fundamental or basic Life Sciences, Biochemistry, Molecular or Cellular Biology.
- Have earned a minimum cumulative overall grade point average of at least 3.0.
- Provide official scores on the Graduate Record Examination (GRE). Testing must be within five years of application. Applicants must have a cumulative GRE score of 100 or higher, and a minimum score of 25 percentile in each section of verbal reasoning, qualitative reasoning and analytical writing. (Due to COVID-19, GRE scores are not required for the 2023-2024 academic year.)
- Complete an application for admission.
- Submit official transcript(s).
- Submit three letters of recommendation.
- Submit a personal statement that addresses prior research, professional, and academic experiences as related to the student's objectives in obtaining the degree, and the student's research areas of interest pursuant to the degree within the Department of Biological Sciences.
- International applicants must meet all requirements.

The Department of Biological Sciences Graduate Program Committee will review student application materials (priority review to commence on March 15) and consider availability of departmental host lab(s) and identify at least one potential research mentor before admission will be considered. A recommendation regarding admission will be made to the Chairperson, followed by the Dean of Graduate, Adult and Extended Studies, who will then extend an offer of admission to recommended applicants. Funding (i.e. a stipend and tuition waiver supported through a teaching or research assistantship) is not guaranteed to any student upon his or her recommendation for admission; funding status is assessed on an individual basis and depends on availability of funds along with evaluation of the student during his or her progression through the program.

DEGREE REQUIREMENTS

The M.S. Degree Program in Biological Sciences is a traditional degree program designed to prepare students for further graduate studies in areas related to biological sciences, and pursuit of careers in state and federal agencies, healthcare, private industry, and research technical positions. The program capitalizes on the expertise of a number of faculty across campus who are active in various areas of research. The degree requirements include and emphasize a research thesis based on mentored research. The program requires 30 graduate credits and is designed to allow completion over a two-year period on a full-time basis.

The Department of Biological Sciences is comprised of dedicated and well-prepared faculty with diverse educational backgrounds and areas of research specialization. Small class sizes for graduate courses ensure 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 faculty are involved not only with individual research projects but also participate in joint collaborative research themes. The students have the opportunity to select their departmental Advisor based on their area of interest, including biotechnology, microbiology, virology, cancer biology, and a range of neuroscience disciplines.

COURSE DESCRIPTIONS

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.

BIOLOGICAL SCIENCES (BIOL)

BIOL-503. INTRODUCTION TO NEUROSCIENCE

The course is a broad overview of the field of neuroscience covering three levels of analysis: 1.) molecular and cellular; 2.) systems neuroscience; and 3.) behavioral neuroscience. The course provides a common foundation in neuroscience for students planning further study or for those interested in learning about the area. Credit, three hours.

BIOL-505. EXPERIMENTAL DESIGN AND BIOSTATISTICS

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. Credit, three hours.

BIOL-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 pharmacodynamics, pharmacokinetic, and toxicological side- effects that underlies effective treatments. Credit, three hours.

BIOL-515. MOLECULAR FOUNDATIONS OF BEHAVIOR

Biological understanding of the brain has taken psychological accounts to new heights. Advances in multiple areas of modern biology are allowing deeper insights into the biological and genetic mechanisms that underlie behavior. It is important for today's students of behavior to comprehend the diverse approaches used by scientists to decipher complex neural processes that provide the foundational cores of functional neural mechanisms that underlie behavior. This course focuses on behavior as well as our current understanding at the cellular and molecular level. It is designed for students interested in Neuroscience, with examples drawn from recent as well as seminal studies on various model organisms as well as humans when available or applicable.

Credit, three hours.

BIOL-520. CELL BIOLOGY

A biological cell represents the structural and functional unit of life, and this course focuses on the mechanisms that confer a cell its properties, and its interactions with the environment including other cells in multicellular processes. Topics focused in this course include proteins structure and function, cell biology techniques including modern imaging techniques, membrane structure and function, cell communication, cell cycle and development. This is a key foundational course for graduate students in all graduate programs in Biology and Neuroscience.

Credit, three hours.

BIOL-521. MOLECULAR BIOLOGY

Understanding the molecular basis of the living state requires an in-depth understanding of the basic processes concerning the chemistry and biology of our genetic material. In this course, students study the molecular mechanisms that confer living systems their unique properties focusing on nucleic acids including chemical nature and structure of DNA, chromatin structure, replication, regulation of gene expression, recombinant DNA technology, small RNAs, sequence motifs, and genome analyses.

Credit, three hours.

BIOL 542 BIOLOGY OF AGING. Biology of Aging presents biological principles that have led to a new understanding of the causes of aging and describes how these basic principles help one understand the human experience of biological aging, longevity, and age-related diseases. Prerequisites: Graduate Standing.

BIOL-575. MOLECULAR GENETICS AND GENOMICS

An in-depth discussion of molecular genetic principles and genomic methods as applied to model and commercially relevant biological organisms. Review of cutting-edge technology, literature, and methods applied on a genomic scale; this course will also investigate evolutionary relationships between various organisms and utilization of tools from the genomic era to better elucidate similarities and differences. Equivalent to AGRI-575. Credit, three hours.

BIOL-590. PROFESSIONAL DEVELOPMENT WORKSHOP I

This course is mandatory for all first-year graduate students in the Department of Biological Sciences. The course focuses on developing professional skills and experiences that are broadly applicable to science-related careers by participation and presentation in a weekly journal club along with relevant workshops and seminars. This course will also include an introduction to scientific writing. This course will facilitate identification of a departmental research advisor for each first-year student in order to initiate faculty-supervised research that leads to the development and writing of a thesis proposal.

BIOL-591. PROFESSIONAL DEVELOPMENT WORKSHOP II

This course is mandatory for all first-year graduate students in the Department of Biological Sciences, and is a continuation of BIOL 590. This course will enhance scientific writing by drafting the thesis of the research proposal, and will continue reinforcement of becoming well-educated scientists through exercises in scientific integrity and through the participation of the Departmental Journal Club. Credit, one hour.

BIOL-595. CAREERS SEMINAR IN BIOTECHNOLOGY/PHARMACOLOGY

This course will introduce students to leaders in industrial research companies and government regulatory agencies that hire large numbers of biologists. Each week a speaker from industry or government will present about their industry or agency and will present a case study of a related issue or problem. Prerequisites: MA graduate student in Department of Biological Sciences or related area; Bioscience major. Credit, one hour.

BIOL-599. SPECIAL PROJECTS

The course is for continued participation in research, or other special needs. Prerequisites: Consent of the Chair. Credit, three hours.

BIOL-600. MOLECULAR ENDOCRINOLOGY

The 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. Credit, three hours.

BIOL-603. STRATEGIES FOR EFFECTIVE TEACHING IN BIOLOGY

The course provides an introduction to the principles and techniques of effective pedagogy as it applies to teaching in the life sciences. While the course is focused on college-level instruction, secondary school teaching will be considered. This course is required for graduate students planning to teach in DSU's Biology Department.

Prerequisites: Second year biology graduate student status. Credit, three hours.

BIOL-604. SCIENTIFIC INTEGRITY

The course provides an introduction to the principles of ethical conduct of research including scientific integrity and relevant human subjects and animal use regulations. The course will be taught using a case-study method where students will read and discuss situations that they might encounter in the practice of research. Prerequisites: Second year graduate student status. Credit, three hours.

BIOL-605. CELL MORPHOGENESIS

Current topics related to basic processes of molecular aspects of differentiation and development in living cells. Credit, three hours.

BIOL-607. CANCER BIOLOGY

This course is designed to extend the concepts introduced in Cell Biology and Genetics and apply them to a well-known human disease. Cancer Biology covers current concepts and knowledge of cancer, including cancer research and cancer treatment. This course will explore the cellular and molecular mechanisms underlying cancer development with the aim of understanding how changes in the normal growth and division processes lead to the formation of tumors. Lecture topics include the natural history of cancer, oncogenes, tumor suppressors, cancer-causing viruses, signal transduction, other genetic alternations in cancer, epidemiology, healthcare policy and current therapeutic approaches to cancer treatment. Prerequisites: Graduate student in Department of Biological Sciences or related area. Credit, three hours.

BIOL-608. PATHOPHYSIOLOGY

Pathophysiology is the study of abnormal function in living tissue. This course describes the basic biology of various disease processes, building upon the knowledge gained in Genetics, Cell Biology, and Principles of Physiology. Physiological principles underlying the causes, signs, symptoms, and pattern of development of human disease will be examined. Building upon a basic background in human biology, the manifestations of various human diseases will be explained by the way these diseases disrupt normal physiology, anatomy, and biochemistry. Knowing how diseases disrupt normal physiology will also help in understanding the rationale behind many types of treatment. Health disparities will also be addressed. Prerequisites: Graduate student in Department of Biological Sciences or related area. Credit, three hours.

BIOL-610. FUNCTIONAL NEUROANATOMY

The 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. Credit, three hours.

BIOL-611. ADVANCED GENETICS

The course offers 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. Four (4) hours lecture/laboratory. Credit, three hours.

BIOL-612. EDUC. NEUROCHEMISTRY

The 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. The 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. Credit, three hours.

BIOL-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. Credit, three hours.

BIOL-622. THE PHYSIOLOGY OF EXCITABLE CELLS

The 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. The course will help students understand 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. Credit, three hours.

BIOL-625. IMMUNOLOGY

The course offers 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. Credit, three hours.

BIOL-631. CELL BIOCHEMISTRY/HISTOCHEMISTRY

The course offers 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 are included. Two lecture hours and one two-hour lab each week. Credit, three hours.

BIOL-650. BIOLOGICAL MECHANISMS

The course provides 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. Credit, three hours.

BIOL-651. PROTEINS: STRUCTURES AND MOLECULAR PROPERTIES

The 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.

BIOL-653. DISEASES OF THE NERVOUS SYSTEM

With the dramatic advances in neuroscience and psychiatry, we are able to identify the anatomical, chemical, and psychological anomalies underlying many mental and nervous system disorders. These advances may help us find better treatment options as well as potential preventative measures. Using several different reading sources, the present course will cover epidemiology, symptoms, known causes, neurobiology and treatment of nervous system disorders that include Schizophrenia, addiction, autism, depression, bipolar disorder, anxiety disorder, Alzheimer's, Parkinson's and Huntington's diseases.

Prerequisites: Graduate student in Department of Biological Sciences or related area. Credit, three hours.

BIOL-666. BIOTECHNOLOGY

The course provides 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 student. Credit, three hours.

BIOL-689. PROBLEMS IN BIOLOGY

The course offers an in-depth individualized literature investigation of a research problem conducted under supervision of advisor. The course includes use of library, integrating data from various sources, and conceptual thinking to produce a final Review paper. The outcome will be reviewed by faculty, and the student must defend to a committee in a seminar.

Prerequisites: Graduate Biology student in M.A. program. Credit, typically three hours but may be one hour.

BIOL-690. THESIS RESEARCH I

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.

Credit, typically three hours each, but may be taken for one to six.

BIOL-691. THESIS RESEARCH II

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.

Credit, typically three hours each, but may be taken for one to six.

BIOL-692. THESIS RESEARCH III

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.

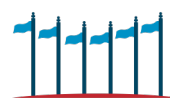
Credit, typically three hours each, but may be taken for one to six.

BIOL-698. THESIS SUSTAINING – BIOLOGY

Upon completion of all courses and research, this course is used to maintain registration until graduation. Credit, none.

College of Agriculture, Science and Technology
Department of Biological Sciences

**PROGRAM: MS BIOLOGICAL SCIENCES –
GENERAL BIOLOGY CONCENTRATION (MAGB)**



DSU
It All Matters.

Year 1 Fall Semester			Year 1 Spring Semester		
Course	Course Name	Cr	Course	Course Name	Cr
BIOL XXX	Foundation I Foundation	3	BIOL XXX+	Foundation II	3
BIOL 590	Professional Development	3	BIOL 591	Professional Development II	2
BIOL xxx+	Biology Elective	3	BIOLXXX	Biology Elective	3
			BIOL 690	Thesis Research	1
	Total Credits	9		Total Credits	9

Year 2 Fall Semester			Year 2 Spring Semester		
Course	Course Name	Cr	Course	Course Name	Cr
BIOL XXX	Biology Elective	3	BIOL 505	Experimental Design/Biostats	3
BIOL XXX	Biology Elective	3	BIOL 692	Thesis Research	2
BIOL 691	Research Thesis	1			
	Total Credits	7		Total Credits	5

Total Credits:					30
-----------------------	--	--	--	--	-----------

*Denotes a Core Requirement

+Denotes an Elective

Total Core Credits = 18

Total Elective Credits = 12

Candidacy Requirement: Proposal Defense with Thesis Committee and submission with candidacy application to School of Graduate, Adult and Extended Studies

Capstone or Culminating Experience: Public Thesis Presentation and Oral Defense of Research Thesis

A. Courses listed in the above table with a definite course number are required.

B. *AGNR 501 and AGNR 551 are considered equivalent to BIOL 505.

C. Foundation Courses: May take 2 out of 3 from BIOL 520-521, 650.

D. Biology electives include any graduate level course offered by the Department of Biological Sciences or other CAST departments with advisor approval.

E. An extremely critical component of MS in Biological Sciences requires lab work including experimental data collection and analyses, which is carried out by students along with coursework. Upon completion of above coursework and thesis credits, a student may register for sustaining thesis (BIOL 698) until successful public thesis presentation and oral defense of thesis.

MASTER OF SCIENCE IN MOLECULAR AND CELLULAR NEUROSCIENCE

PROGRAM OBJECTIVES

The Department of Biological Sciences prepares students for career opportunities in professional studies and further graduate studies in areas related to biological sciences and neuroscience. Many graduates pursue careers in state and federal agencies, healthcare, private industry, research, 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 knowledge of biological principles required to make intelligent and effective decisions.

PROGRAM GOALS

Students in the Molecular and Cellular Neuroscience Program will have broadened knowledge in the fields of biology and/or neuroscience. Our programs aim to enhance student research skills and the ability to apply classroom and laboratory knowledge to real-world situations. Additionally, the student will be informed of recent trends in research and engineering practices. Students are required to complete a research project directed by faculty mentor and submit a thesis, which will be defended before their committee.

STUDENT LEARNING OUTCOMES

- Expanded knowledge of biological concepts;
- Proficiency in experimental design and laboratory research experiments and techniques;
- Familiarity with current research topics in the field;
- Enriched skills in data analysis and interpretation;
- Enhanced experience with scientific writing and oral presentation of research findings.

ADMISSION AND DEGREE REQUIREMENTS

Application Deadline:

- Fall enrollment – April 15

International Application Deadline:

- Fall enrollment – March 15; however, currently the program is unable to admit many international students due to federal funding constraints.

All applicants are required to:

- Have earned a baccalaureate degree in Biological Sciences or a related field such as fundamental or basic Life Sciences, Biochemistry, Molecular/Cellular Biology or Biological Psychology.
- Have earned a minimum overall cumulative grade point average of at least 3.0.
- Provide official scores on the Graduate Record Examination (GRE). Testing must be within five years of application. Applicants must have a cumulative GRE score of 100 or higher, and a minimum score of 25 percentile in each section of verbal reasoning, quantitative reasoning, and analytical writing. (Due to COVID-19, GRE scores are not required for the 2023-2024 academic year.)
- Complete an application for admission.
- Submit official transcripts.
- Submit three professional letters of recommendation.

- Submit a personal statement that addresses prior research, professional, and academic experiences as related to the student's objectives in obtaining the degree, and the student's research areas of interest pursuant to the degree within the Department of Biological Sciences.
- International applicants must meet all requirements.

NOTE: Only complete applications will be considered for admission.

The Department of Biological Sciences Graduate Program Committee will review students' application materials (priority review to commence on March 15) and make a recommendation regarding admission into the Graduate Program to the Department Chair and to the Dean of Graduate, Adult and Extended Studies, who extends an offer of admission to recommended applicants. Funding (i.e. a stipend and tuition waiver supported through a teaching or research assistantship) is not guaranteed to any student upon his or her recommendation for admission; funding status is assessed on an individual basis and depends on availability of funds along with evaluation of the student during his or her progression through the program.

DEGREE REQUIREMENTS

The 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 departmental 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 our departmental neuroscience research laboratories. The program is supplemented by a partnership with local universities. The program requires 30 graduate credits and is designed to allow completion over a two-year period on a full-time basis.

BIOLOGICAL SCIENCES RESEARCH FACULTY

The Department of Biological Sciences is comprised of dedicated and well-prepared faculty with diverse educational backgrounds and areas of research specialization. Small class sizes for graduate courses ensure 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 faculty are involved not only with individual research projects, but they also participate in joint collaborative research themes. The students have the opportunity to select their departmental Advisor based on their area of interest, including biotechnology, microbiology, virology, cancer biology, and a range of neuroscience disciplines.

MASTER OF SCIENCE IN MOLECULAR AND CELLULAR NEUROSCIENCE

Required Core Courses: (required for all students pursuing MS degrees):

Molecular Biology (BIOL-521)

Experimental Design and Biostatistics (BIOL-505) Current Techniques in Biology (BIOL-535)

Thesis / Dissertation Writing Workshop (BIOL-695)

Additional Required Courses:

Introduction to Neuroscience (BIOL-503) Functional Neuroanatomy (BIOL-610) Neurochemistry (BIOL-612)

The Physiology of Excitable Cells (BIOL-622)

Open Neuroscience Elective (see below)

Total credit hours for graduation: 30 (26 course credits + 4 research credits)

Open Neuroscience Electives:

BIOL-520 Cell Biology

BIOL-511 Pharmacology

BIOL-515 Behavior

CHEM-521 Biochemistry

BIOL-600 Molecular Endocrinology

BIOL-605 Cell Morphogenesis

BIOL-625 Immunology

BIOL-650 Biological Mechanisms

BIOL-651 Proteins: Structure and Function

BIOL-653 Nervous System Disorders

or, any other graduate-level 'biological' courses approved by the student's Research Advisor and Department Chair

COURSE DESCRIPTIONS

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.

BIOLOGICAL SCIENCES (BIOL)

BIOL-503. INTRODUCTION TO NEUROSCIENCE

The course is a broad overview of the field of neuroscience covering three levels of analysis: 1.) molecular and cellular; 2.) systems neuroscience; and 3.) behavioral neuroscience. The course provides a common foundation in neuroscience for students planning further study or for those interested in learning about the area. Credit, three hours.

BIOL-505. EXPERIMENTAL DESIGN AND BIOSTATISTICS

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. Credit, three hours.

BIOL-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 pharmacodynamics, pharmacokinetic, and toxicological side effects that underlies effective treatments. Credit, three hours.

BIOL-515. MOLECULAR FOUNDATIONS OF BEHAVIOR

Biological understanding of the brain has taken psychological accounts to new heights. Advances in multiple areas of modern biology are allowing deeper insights into the biological and genetic mechanisms that underlie behavior. It is important for today's students of behavior to comprehend the diverse approaches used by scientists to decipher complex neural processes that provide the foundational cores of functional neural mechanisms that underlie behavior. This course focuses on behavior as well as our current understanding at the cellular and molecular level. It is designed for students interested in Neuroscience, with examples drawn from recent as well as seminal studies on various model organisms as well as humans when available or applicable. Credit, three hours.

BIOL-520. CELL BIOLOGY

A biological cell represents the structural and functional unit of life, and this course focuses on the mechanisms that confer a cell its properties, and its interactions with the environment including other cells in multi-cellular processes. Topics focused in this course include proteins structure and function, cell biology techniques including modern imaging techniques, membrane structure and function, cell communication, cell cycle and development. This is a key foundational course for graduate students in all graduate programs in Biology and Neuroscience. Credit, three hours.

BIOL-521. MOLECULAR BIOLOGY

Understanding the molecular basis of the living state requires an in-depth understanding of the basic processes concerning the chemistry and biology of our genetic material. In this course, students study the molecular mechanisms that confer living systems their unique properties focusing on nucleic acids including chemical nature and structure of DNA, chromatin structure, replication, regulation of gene expression, recombinant DNA technology, small RNAs, sequence motifs, and genome analyses. Credit, three hours.

BIOL-542 BIOLOGY OF AGING. Biology of Aging presents biological principles that have led to a new understanding of the causes of aging and describes how these basic principles help one understand the human experience of biological aging, longevity, and age-related diseases. Prerequisites: Graduate Standing. Credit, three hours.

BIOL-575. MOLECULAR GENETICS AND GENOMICS

An in-depth discussion of molecular genetic principles and genomic methods as applied to model and commercially relevant biological organisms. Review of cutting-edge technology, literature, and methods applied on a genomic scale; this course will also investigate evolutionary relationships between various organisms and utilization of tools from the genomic era to better elucidate similarities and differences. Equivalent to AGRI-575. Credit, three hours.

BIOL-590. PROFESSIONAL DEVELOPMENT WORKSHOP I

This three-credit course is mandatory for all first-year graduate students in the Department of Biological Sciences. The course focuses on developing professional skills and experiences that are broadly applicable to the science-related careers by participation and presentation in a weekly journal club along with relevant workshops and seminars. This course will also include an introduction to scientific writing. This course will facilitate identification of a departmental research advisor for each first-year student in order to initiate faculty-supervised research that leads to the development and writing of a thesis proposal. Credit, three hours.

BIOL-591. PROFESSIONAL DEVELOPMENT WORKSHOP II

This course is mandatory for all first-year graduate students in the Department of Biological Sciences, and is a continuation of BIOL 590. This course will enhance scientific writing by crafting the thesis research proposal, and will continue reinforcement of becoming a well-educated scientist through exercises in scientific integrity and through participation in the Departmental Journal Club. Credit, two hours.

BIOL-595. CAREERS SEMINAR IN BIOTECHNOLOGY/PHARMACOLOGY

This course will introduce students to leaders in industrial research companies and government regulatory agencies that hire large numbers of biologists. Each week a speaker from industry or government will present about their industry or agency and will present a case study of a related issue or problem. Prerequisites: MA graduate student in Department of Biological Sciences or related area; Bioscience major. Credit, one credit hour

BIOL-599. SPECIAL PROJECTS

The course is for continued participation in research, or other special needs.
Prerequisites: Consent of the Chair. Credit, three hours.

BIOL-600. MOLECULAR ENDOCRINOLOGY

The 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. Credit, three hours.

BIOL-603. STRATEGIES FOR EFFECTIVE TEACHING IN BIOLOGY

The course provides an introduction to the principles and techniques of effective pedagogy as it applies to teaching in the life sciences. While the course is focused on college-level instruction, secondary school teaching will be considered. This course is required for graduate students planning to teach in DSU's biology department.
Prerequisites: Second year biology graduate student status. Credit, three hours.

BIOL-604. SCIENTIFIC INTEGRITY

The course provides an introduction to the principles of ethical conduct of research including scientific integrity and relevant human subjects and animal use regulations. The course will be taught using a case-study method where students will read and discuss situations that they might encounter in the practice of research. Prerequisites: Second year graduate student status. Credit, three hours.

BIOL-605. CELL MORPHOGENESIS

Current topics related to basic processes of molecular aspects of differentiation and development in living cells. Credit, three hours.

BIOL-607. CANCER BIOLOGY

This course is designed to extend the concepts introduced in Cell Biology and Genetics and apply them to a well-known human disease. Cancer Biology covers current concepts and knowledge of cancer, including cancer research and cancer treatment. This course will explore the cellular and molecular mechanisms underlying cancer development with the aim of understanding how changes in the normal growth and division processes lead to the formation of tumors. Lecture topics include the natural

history of cancer, oncogenes, tumor suppressors, cancer-causing viruses, signal transduction, other genetic alternations in cancer, epidemiology, healthcare policy and current therapeutic approaches to cancer treatment.

Prerequisites: Graduate student in Department of Biological Sciences or related area. Credit, three hours.

BIOL-608. PATHOPHYSIOLOGY

Pathophysiology is the study of abnormal function in living tissue. This course describes the basic biology of various disease processes, building upon the knowledge gained in Genetics, Cell Biology, and Principles of Physiology. Physiological principles underlying the causes, signs, symptoms, and pattern of development of human disease will be examined. Building upon a basic background in human biology, the manifestations of various human diseases will be explained by the way these diseases disrupt normal physiology, anatomy, and biochemistry. Knowing how diseases disrupt normal physiology will also help in understanding the rationale behind many types of treatment. Health disparities will also be addressed.

Prerequisites: Graduate student in Department of Biological Sciences or related area. Credit, three hours.

BIOL-610. FUNCTIONAL NEUROANATOMY

The 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.

Credit, three hours.

BIOL-611. ADVANCED GENETICS

The course offers 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. Four (4) hours lecture/laboratory. Credit, three hours.

BIOL-612. NEUROCHEMISTRY

The 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. The 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. Credit, three hours.

BIOL-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. Credit, three hours.

BIOL-622. THE PHYSIOLOGY OF EXCITABLE CELLS

The 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. The course will help students understand 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.

Credit, three hours.

BIOL-625. IMMUNOLOGY

The course offers 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. Credit, three hours.

BIOL-631. CELL BIOCHEMISTRY/HISTOCHEMISTRY

The course offers 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 are included. Two (2) lecture hours and one two-hour lab each week.

Credit, three hours.

BIOL-650. BIOLOGICAL MECHANISMS

The course provides 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.

Credit, three hours.

BIOL-651. PROTEINS: STRUCTURES AND MOLECULAR PROPERTIES

The 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.

BIOL-653. DISEASES OF THE NERVOUS SYSTEM

With the dramatic advances in neuroscience and psychiatry, we are able to identify the anatomical, chemical, and psychological anomalies underlying many mental and nervous system disorders. These advances may help us find better treatment options as well as potential preventative measures. Using several different reading sources, the present course will cover epidemiology, symptoms, known causes, neurobiology and treatment of nervous system disorders that include Schizophrenia, addiction, autism, depression, bipolar disorder, anxiety disorder, Alzheimer's, Parkinson's and Huntington's diseases.

Prerequisites: Graduate student in Department of Biological Sciences or related area.

Credit, three hours.

BIOL-666. BIOTECHNOLOGY

The course provides 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 student.

Credit, three hours.

BIOL-689. PROBLEMS IN BIOLOGY

The course offers an in-depth individualized literature investigation of a research problem conducted under supervision of advisor. The course includes use of library, integrating data from various sources, and conceptual thinking to produce a final Review paper. The outcome will be reviewed by faculty and the student must defend to a committee in a seminar. Prerequisites: Graduate Biology student in M.A. program. Credit, typically three hours but may be one hour.

BIOL-690. THESIS RESEARCH I

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. Credit, typically three hours each, but may be taken for one to six.

BIOL-691. THESIS RESEARCH II

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. Credit, typically three hours each, but may be taken for one to six.

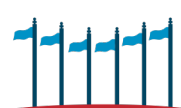
BIOL-692. THESIS RESEARCH III

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. Credit, typically three hours each, but may be taken for one to six.

23-698. THESIS SUSTAINING – BIOLOGY

Upon completion of all courses and research, this course is used to maintain registration until graduation. Credit, none.



**PROGRAM: MS IN MOLECULAR AND CELLULAR
 NEUROSCIENCE**

Year 1 Fall Semester			Year 1 Spring Semester		
Course	Course Name	Cr	Course	Course Name	Cr
BIOL 503*	Introduction to Neuroscience	3	BIOLXXX	Neuroscience Elective	3
BIOL 590*	Professional Development I	3	BIOLXXX	Foundation II	3
BIOLXXX	Foundation I	3	BIOL 591*	Professional Development II	2
			BIOL 690	Thesis Research	1
	Total Credits	9		Total Credits	9

Year 2 Fall Semester			Year 2 Spring Semester		
Course	Course Name	Cr	Course	Course Name	Cr
BIOL XXX	Neuroscience Elective	3	BIOL 505	Experimental Design/Biostats	3
BIOL xxx	Biology Elective	3	BIOL 691	Thesis Research III	2
BIOL 691	Thesis Research I	1			
	Total Credits	7		Total Credits	5
			Total Credits: 30		

*Denotes a Core Requirement

+Denotes an Elective

Total Core Credits = 21

Total Elective Credits = 9

Candidacy Requirement: Proposal Defense with Thesis Committee and submission with candidacy application to School of Graduate, Adult and Extended Studies

Capstone or Culminating Experience: Public thesis presentation and oral defense of Research Thesis

A. Courses listed in the above table with a definitive course number are required.

B. ANGR 501 and AGNR 551 are considered equivalent to BIOL 505.

C. Foundation Courses: Must take 2 out of 3 from BIOL 520, BIOL 521, and BIOL 650.

D. Neuroscience electives include BIOL 515, 610, 512, 522, 653.

E. Biology electives include any graduate level course offered by the Department of Biological Sciences or other CAST departments with Advisor approval.

F. A critical component of MS in Cellular & Molecular Neuroscience is a research thesis that includes experimental data collection and analyses, which is carried out by students along with coursework. Upon completion of above coursework and thesis credits, a student may register for sustaining thesis until successful public thesis presentation and oral defense of the research thesis.

DOCTOR OF PHILOSOPHY IN NEUROSCIENCE

PROGRAM OBJECTIVES

The objective of the Ph.D. in Neuroscience is to prepare students for a teaching and research professional career in neuroscience. Delaware State University provides students with a comfortable, familiar, and nurturing environment in which they can pursue their Ph.D. in Neuroscience, and our program also has linkages with faculty researchers at the University of Delaware and the A.I. DuPont Children's Hospital. This provides ample and diverse opportunities for students to access a broad range of research training with high-profile investigators working at the cutting edge of neuroscience research.

In order to best prepare our students for the fast-growing and opportunity-rich field of neuroscience, our Ph.D. program brings together students and faculty throughout the state, making neuroscience a truly inter-institutional program. Currently, Delaware State University has 13 faculty conducting neuroscience research in three departments plus research opportunities at the A.I. DuPont Children's Hospital that has an active basic neuroscience research -- program and the University of Delaware, which has neuroscientists scattered across six departments. Both UD and A.I. DuPont Hospital are less than a one hour drive from the University, and all three institutions have videoconferencing capabilities making joint seminars, classes, and an inter-institutional research training program easily managed.

Faculty mentors in the Department of Biological Sciences are supported by grants from the National Institutes of Health (NIH), National Science Foundation (NSF), and private foundations. As students of the only biology-based neuroscience degree program in the state, Delaware State University students will be recruited by neuroscience researchers at all institutions, while our specialized neuroscience graduate courses and seminars will be attractive to students in other programs who are interested in neuroscience.

PROGRAM GOALS

Students in the Neuroscience Program will have broadened knowledge in the fields of biology and / or neuroscience. Our programs aim to enhance student research skills and the ability to apply classroom and laboratory knowledge to real-world situations. Additionally, the student will be informed of recent trends in research and engineering practices. Students are required to complete a dissertation research project directed by a faculty mentor and submit a dissertation, which will be defended before their committee.

STUDENT LEARNING OUTCOMES

- Expanded knowledge of biological concepts;
- Proficiency in experimental design and laboratory research experiments and techniques; familiarity with current research topics in the field;
- Enriched skills in data analysis and interpretation;
- Enhanced experience with scientific writing and oral presentation of research findings.

ADMISSION AND DEGREE REQUIREMENTS

Application Deadlines (Fall Admission Only): April 15; however, currently the program admits very few international students due to federal funding grant constraints.

All applicants are required to:

- Have earned a baccalaureate degree in Biological Sciences or a related field including Neuroscience, Biological Psychology, or fundamental/basic Life Sciences, Biochemistry, Molecular or Cellular Biology.
- Have earned an overall minimum cumulative grade point average of at least 3.0.
- Provide official scores on the Graduate Record Examination (GRE) with a cumulative score of 100 or higher, and a minimum score of 30 percentile in each section of verbal reasoning, quantitative reasoning, and analytical writing. Testing must be within five years of application. (Due to COVID-19, GRE scores are not required for the 2023-2024 academic year.)
- Complete an application for admission.
- Submit official transcript(s).
- Submit three letters of recommendation.
- Submit a personal statement that addresses prior research, professional, and academic experiences as related to the student's objectives in obtaining the degree, and the student's research areas of interest pursuant to the degree within the Department of Biological Sciences.
- International applicants must meet all requirements.

NOTE: Only complete applications will be considered for admission.

The Department of Biological Sciences Graduate Program Committee will review students' application materials (priority review to commence on March 15) and make a recommendation for acceptance into the Graduate Program to the Dean of Graduate, Adult and Extended Studies, who extends an offer of admission to the applicant. Funding (i.e. a stipend and tuition waiver supported through a teaching or research assistantship) is not guaranteed to any student upon his or her recommendation for admission; funding status is assessed on an individual basis and depends on availability of funds along with evaluation of the student during his or her progression through the program.

DEGREE REQUIREMENTS

The Ph.D. in Neuroscience program is a specialty degree program designed to prepare students for professional careers in the area of neuroscience. The degree requirements include and emphasize a neuroscience-based research dissertation based on mentored research conducted in one of our neuroscience research laboratories. The program will require at least 60 credit hours, with 42 from coursework. To become a candidate for the Ph.D., the student must complete >50% of courses in good standing and pass a two-part qualifying exam; part I consists of a written examination covering any material related to the coursework taken within the first two years, and in part II, the students must write and defend a research proposal. Each student, upon achieving candidacy, is required to complete the teaching strategies course and to teach the equivalent of 4 credit hours, or one lecture course, before completion of the degree program.

FINANCIAL SUPPORT

A best effort will be made to support students in the Ph.D. program with either research or teaching assistantships and tuition support so that they may focus full-time on their studies and research.

BIOLOGICAL SCIENCES RESEARCH FACULTY

The Department of Biological Sciences is comprised of dedicated and well-prepared faculty with diverse educational backgrounds and areas of research specialization. Small class sizes for graduate courses ensure 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 faculty are involved not only with individual research projects but also participate in joint collaborative research themes. The students have the opportunity to select their departmental Advisor based on their area of interest, including biotechnology, microbiology, virology, cancer biology, and a range of neuroscience disciplines.

COURSE DESCRIPTIONS

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.

BIOLOGICAL SCIENCES (BIOL)

BIOL -503. INTRODUCTION TO NEUROSCIENCE

The course is a broad overview of the field of neuroscience covering three levels of analysis:

1.) molecular and cellular; 2.) systems neuroscience; and 3.) behavioral neuroscience. The course provides a common foundation in neuroscience for students planning further study or for those interested in learning about the area. Credit, three hours.

BIOL -505. EXPERIMENTAL DESIGN AND BIOSTATISTICS

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. Credit, three hours.

BIOL -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 pharmacodynamics, pharmacokinetic, and toxicological side-effects that underlies effective treatments. Credit, three hours.

BIOL -515. MOLECULAR FOUNDATIONS OF BEHAVIOR

Biological understanding of the brain has taken psychological accounts to new heights. Advances in multiple areas of modern biology are allowing deeper insights into the biological and genetic mechanisms that underlie behavior. It is important for today's students of behavior to comprehend the diverse approaches used by scientists to decipher complex neural processes that provide the foundational cores of functional neural mechanisms that underlie behavior. This course focuses on behavior as well as our current understanding at the cellular and molecular level. It is designed for students interested in Neuroscience, with examples drawn from recent as well as seminal studies on various model organisms as well as humans when available or applicable. Credit, three hours.

BIOL -520. CELL BIOLOGY

A biological cell represents the structural and functional unit of life, and this course focuses on the mechanisms that confer a cell its properties, and its interactions with the environment including other cells in multi-cellular processes. Topics focused in this course include proteins structure and function, cell biology techniques including modern imaging techniques, membrane structure and function, cell communication, cell cycle and development. This is a key foundational course for graduate students in all graduate programs in Biology and Neuroscience. Credit, three hours.

BIOL -521. MOLECULAR BIOLOGY

Understanding the molecular basis of the living state requires an in-depth understanding of the basic processes concerning the chemistry and biology of our genetic material. In this course, students study the molecular mechanisms that confer living systems their unique properties focusing on nucleic acids including chemical nature and structure of DNA, chromatin structure, replication, regulation of gene expression, recombinant DNA technology, small RNAs, sequence motifs, and genome analyses. Credit, three hours.

BIOL -542. BIOLOGY OF AGING. Biology of Aging presents biological principles that have led to a new understanding of the causes of aging and describes how these basic principles help one understand the human experience of biological aging, longevity, and age-related diseases. Prerequisites: Graduate Standing. Credit, three hours.

BIOL -575. MOLECULAR GENETICS AND GENOMICS

An in-depth discussion of molecular genetic principles and genomic methods as applied to model and commercially relevant biological organisms. Review of cutting-edge technology, literature, and methods applied on a genomic scale; this course will also investigate evolutionary relationships between various organisms and utilization of tools from the genomic era to better elucidate similarities and differences. Equivalent to AGRI-575. Credit, three hours.

BIOL -590. PROFESSIONAL DEVELOPMENT WORKSHOP I

This three credit course is mandatory for all first-year graduate students in the Department of Biological Sciences. The course focuses on developing professional skills and experiences that are broadly applicable to science-related careers by participation and presentation in a weekly journal club along with relevant workshops and seminars. This course will also include an introduction to scientific writing. This course will facilitate identification of a departmental research advisor for each first-year student in order to initiate faculty-supervised research that leads to the development and writing of a thesis proposal. Credit, three hours.

BIOL -591. PROFESSIONAL DEVELOPMENT WORKSHOP II

This course is mandatory for all first-year graduate students in the Department of Biological Sciences, and is a continuation of BIOL 590. This course will enhance scientific writing by crafting the thesis research proposal, and will continue reinforcement of becoming a well-educated scientist through exercises in scientific integrity and through the participation in the Departmental Journal Club. Credit, two hours.

BIOL-595. CAREERS SEMINAR IN BIOTECHNOLOGY/PHARMACOLOGY

This course will introduce students to leaders in industrial research companies and government regulatory agencies that hire large numbers of biologists. Each week a speaker from industry or government will present about their industry or agency and will present a case study of a related issue or problem. Prerequisites: MA graduate student in Department of Biological Sciences or related area; Bioscience major. Credit, one credit hour

BIOL -599. SPECIAL PROJECTS

The course is for continued participation in research, or other special needs.
Prerequisites: Consent of the Chair. Credit, three hours.

BIOL -600. MOLECULAR ENDOCRINOLOGY

The 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. Credit, three hours.

BIOL -603. STRATEGIES FOR EFFECTIVE TEACHING IN BIOLOGY

The course provides an introduction to the principles and techniques of effective pedagogy as it applies to teaching in the life sciences. While the course is focused on college-level instruction, secondary school teaching will be considered. This course is required for graduate students planning to teach in DSU's biology department.
Prerequisites: Second year biology graduate student status. Credit, three hours.

BIOL -604. SCIENTIFIC INTEGRITY

The course provides an introduction to the principles of ethical conduct of research including scientific integrity and relevant human subjects and animal use regulations. The course will be taught using a case-study method where students will read and discuss situations that they might encounter in the practice of research. Prerequisites: Second year graduate student status. Credit, three hours.

BIOL-605. CELL MORPHOGENESIS

Current topics related to basic processes of molecular aspects of differentiation and development in living cells.
Credit, three hours.

BIOL-607. CANCER BIOLOGY

This course is designed to extend the concepts introduced in Cell Biology and Genetics and apply them to a well-known human disease. Cancer Biology covers current concepts and knowledge of cancer, including cancer research and cancer treatment. This course will explore the cellular and molecular mechanisms underlying cancer development with the aim of understanding how changes in the normal growth and division processes lead to the formation of tumors. Lecture topics include the natural history of cancer, oncogenes, tumor suppressors, cancer-causing viruses, signal transduction, other genetic alternations in cancer, epidemiology, healthcare policy and current therapeutic approaches to cancer treatment.
Prerequisites: Graduate student in Department of Biological Sciences or related area. Credit, three hours

BIOL-608. PATHOPHYSIOLOGY

Pathophysiology is the study of abnormal function in living tissue. This course describes the basic biology of various disease processes, building upon the knowledge gained in Genetics, Cell Biology, and Principles of Physiology. Physiological principles

underlying the causes, signs, symptoms, and pattern of development of human disease will be examined. Building upon a basic background in human biology, the manifestations of various human diseases will be explained by the way these diseases disrupt normal physiology, anatomy, and biochemistry. Knowing how diseases disrupt normal physiology will also help in understanding the rationale behind many types of treatment. Health disparities will also be addressed.

Prerequisites: Graduate student in Department of Biological Sciences or related area. Credit, three credit hours

BIOL -610. FUNCTIONAL NEUROANATOMY

The 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. Credit, three hours.

BIOL -611. ADVANCED GENETICS

The course offers 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. Four (4) hours lecture/laboratory. Credit, three hours.

BIOL -612. NEUROCHEMISTRY

The 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. The 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. Credit, three hours.

BIOL -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. Credit, three hours.

BIOL -622. THE PHYSIOLOGY OF EXCITABLE CELLS

The 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. The course will help students understand 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. Credit, three hours.

BIOL -625. IMMUNOLOGY

The course offers 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. Credit, three hours.

BIOL -631. CELL BIOCHEMISTRY/HISTOCHEMISTRY

The course offers 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 are included. Two (2) lecture hours and one two-hour lab each week. Credit, three hours.

BIOL -650. BIOLOGICAL MECHANISMS

The course provides 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. Credit, three hours.

BIOL -651. PROTEINS: STRUCTURES AND MOLECULAR PROPERTIES

The 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.

BIOL-653. DISEASES OF THE NERVOUS SYSTEM

With the dramatic advances in neuroscience and psychiatry, we are able to identify the anatomical, chemical, and psychological anomalies underlying many mental and nervous system disorders. These advances may help us find better treatment options as well as potential preventative measures. Using several different reading sources, the present course will cover epidemiology,

symptoms, known causes, neurobiology and treatment of nervous system disorders that include Schizophrenia, addiction, autism, depression, bipolar disorder, anxiety disorder, Alzheimer's, Parkinson's and Huntington's diseases.

Prerequisites: Graduate student in Department of Biological Sciences or related area.

Credit, three hours

BIOL-666. BIOTECHNOLOGY

The course provides 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 student. Credit, three hours.

BIOL -689. PROBLEMS IN BIOLOGY

The course offers an in-depth individualized literature investigation of a research problem conducted under supervision of advisor. The course includes use of library, integrating data from various sources, and conceptual thinking to produce a final Review paper. The outcome will be reviewed by faculty and the student must defend to a committee in a seminar. Prerequisites: Graduate Biology student in M.A. program. Credit, typically three hours but may be one hour.

BIOL -690. THESIS RESEARCH I

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. Credit, typically three hours each, but may be taken for one to six.

BIOL -691. THESIS RESEARCH II

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. Credit, typically three hours each, but may be taken for one to six.

BIOL -692. THESIS RESEARCH III

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. Credit, typically three hours each, but may be taken for one to six.

BIOL -698. THESIS SUSTAINING – BIOLOGY

Upon completion of all courses and research, this course is used to maintain registration until graduation. Credit, none.

BIOL-700. CURRENT TOPICS I

The course will be a combination of presentations in both "Journal Club" and "lab meeting" format. Students will make presentations and discuss primary literature describing new and exciting scientific advances in the field of neuroscience. At least once each semester students will also make a presentation and lead a discussion about their own research project.

Prerequisites: Ph.D. Candidate status.

Credit, one hour. May be repeated to maximum of three (3) credits.

BIOL-701. CURRENT TOPICS II

The course is a continuation of BIOL-700.

Prerequisites: BIOL-700, Ph.D. Candidate status.

Credit, one hour. May be repeated to maximum of three (3) credits.

BIOL-800. DISSERTATION RESEARCH

The course is for students who have advanced to candidacy in a Ph.D. program in the Department of Biological Sciences and who are working on their dissertation research under the supervision of a faculty mentor. Prerequisites: Ph.D. Candidate status. Credit, six to eight per semester. May be repeated; no maximum.



PROGRAM: PHD IN NEUROSCIENCE

Year 1 Fall Semester			Year 1 Spring Semester		
Course	Course Name	Cr	Course	Course Name	Cr
BIOL 503	Introduction to Neuroscience	3	BIOL xxx	Foundation Course II	3
BIOL 590	Professional Development I	3	BIOL 505*	Experimental Design/Biostats	3
BIOL xxx	Foundation Course	3	BIOL 591	Professional Development II	2
			BIOL 690	Thesis Research	2
	Total Credits	9		Total Credits	10

Year 2 Fall Semester			Year 2 Spring Semester		
Course	Course Name	Cr	Course	Course Name	Cr
BIOL xxx	Neuroscience Elective	3	BIOL xxx	Neuroscience Elective	3
BIOL xxx	Biology Elective	3	BIOL xxx	Biology Elective	3
BIOL 690	Thesis Research I	2	BIOL 691	Thesis Research II	2
	Total Credits	8		Total Credits	8

Year 3 Fall Semester			Year 3 Spring Semester		
Course	Course Name	Cr	Course	Course Name	Cr
BIOL xxx	Neuroscience elective	3	BIOL xxx	Open Elective	3
BIOL xxx650 [#]	Biology Elective	3			
BIOL 603	Strategies for Effective Teaching in Biology	1	BIOL 800 ^{\$}	Dissertation Research	3
BIOL 692	Thesis Research III	2			
	Total Credits	9		Total Credits	6

Year 4 Fall Semester			Year 4 Spring Semester		
Course	Course Name	Cr	Course	Course Name	Cr
BIOL xxx	Open Elective	3	BIOL 800 ^{\$}	Dissertation Research	4
BIOL 800 ^{\$}	Dissertation Research	3			
	Total Credits	6		Total Credits	4

Total Credits: 60

*Denotes a Core Requirement
Must take 2 of the 3 Foundation Courses
+Denotes an Elective
\$After passing QE exam
Total Core Credits = 18

Total Foundation/Elective Credits = 18

Candidacy Requirement: Proposal Defense with Thesis Committee, Passing Qualifier Exams 1 and 2, teaching experience (approved by Research Advisor and Graduate Program Director), submission of examination results, research plan with Candidacy application to School of Graduate, Adult and Extended Studies

Capstone or Culminating Experience: Public dissertation presentation and Oral defense of Research Thesis

The critical component of the doctoral degree requires lab work including experimental data collection and analysis, which is carried out by students along with coursework. Upon completion of above coursework and thesis/dissertation credits, a student may register for sustaining thesis (BIOL 698) until successful public dissertation presentation and oral defense of research thesis. Additional information and requirements include:

A. Courses listed in the above table with a definite course number are required.

B. AGNR 501 and AGNR 551 are considered equivalent to BIOL 505.

C. Foundation Courses: Must take 2 out of 3 from BIOL 520, 521, and 650.

D. Neuroscience electives include BIOL 515, 610, 612, 622, 653.

E. Biology electives include any graduate level course offered by the Department of Biological Sciences or other CAST departments with Advisor approval.

F. Open electives include graduate level courses offered by the Department of Biological Sciences, or by other departments, with permission and approval of the Instructor and departmental Research Advisor.

G. Candidacy requirement: Proposal defense with Thesis Committee, passing Qualifier Exams 1 and 2, teaching experience (approved by Research Advisor and Graduate Program Director), submission of examination results, research plan with candidacy application to the School of Graduate, Adult and Extended Studies.

In addition to the courses listed above, other graduate courses at Delaware State University may count toward elective credits pending prior approval by the Dissertation Advisor, Departmental Graduate Program Director, and Chair of the Department of Biological Sciences. Transfer of credits adheres to the standards of Graduate Programs at Delaware State University. A maximum of nine (9) credit hours can be transferred into the program, after approval.

Mentored Research

After lab rotations, graduate students are to complete a research dissertation under the direction of a primary research mentor. This mentor is typically a member of the University's Department of Biological Sciences. All students are expected to uphold the expectations (time spent in lab, completion of research experiments, grant and manuscript writing, and other duties) that are established between the research mentor and student.

Professional and Social Conduct

It is expected that each graduate student in the Department of Biological Sciences conduct themselves in a professional manner. This includes treating colleagues, faculty, and staff with courtesy and respect; proudly representing the Program, Department, and University at all off-campus events (i.e., scientific conferences, recruitment efforts, etc.); and contributing to the surrounding community in a positive manner. Unprofessional conduct, sexual harassment, or similar situations will be addressed on a case-by-case basis, and may result in the student's recommendation for dismissal to the Department Chair and Graduate Dean.

Advancement to Candidacy

All PhD students are accepted as pre-candidates to the doctoral program. Advancement to Candidacy requires completion of the following items, in order:

1. Plan of Study
2. Establishment of a Dissertation Committee
3. Dissertation Proposal Defense with Dissertation Committee
4. Passing grade of QE1
5. Passing grade of QE2
6. Advancement to Candidacy
7. Completion of Strategies in Effective Teaching
8. Publication Requirement

DEPARTMENT OF CHEMISTRY

MASTER OF SCIENCE IN APPLIED CHEMISTRY (THESIS)

PROGRAM OBJECTIVES

The Master of Science Degree in Applied Chemistry (Thesis) is a specific degree program designed to train the new generation of chemist with broad knowledge in chemistry, independent chemistry laboratory working techniques, and strong chemistry communication skills. Students graduating from this program may become a good fit for positions including chemical industry lab/field research scientist, government agency office/lab chemist/technician, and educator in various levels of institutions/schools.

PROGRAM GOALS

Students in this program will be provided with a broader understanding of the areas of chemical laboratory practices and advanced chemistry theories. Courses will enhance the student's professional skills and capabilities for dealing with the complex laboratory hardware common to the chemical industry and research institutions. Additionally, the student will be informed of recent trends in research and engineering practices. Students involved in teaching will be exposed to the latest innovations in computer technology as related to laboratory practices and safety. As the Capstone, students will be required to complete research directed by faculty mentor and submit a thesis, which will be defended before his or her committee.

STUDENT LEARNING OUTCOMES

- Expanded knowledge of chemical concepts and theories;
- Enhanced skills in lab practices for independent research projects;
- Familiarity with new trends in chemical research and engineering practices;
- Improved capability in experimental data interpretation and analysis;
- Enriched skills in results organization and presentation.

ADMISSION DEADLINE AND DEGREE REQUIREMENTS

Application Deadlines: Fall – April 15 | Spring – November 1

International Application Deadlines: Fall – March 15 | Spring – October 1

- Completed online application form.
- Official transcript with overall GPA at 3.0 or higher (WES, AACRO, ECE, or GCE evaluation required for international applicants).
- Interest statement (1-2 pages).
- Official copy of GRE score (no more than 5 years old); due to COVID-19, GRE scores are not required for the 2023-2024 academic year.
- Official copy of TOEFL score (no more than 2 years old) (for international non-English speaking applicants only);
- Two recommendation letters from professionals.
- Up-to-date resume.
- All documents are required to be submitted online. The Graduate Committee of the Chemistry Department will review students' application materials and make recommendation for admission into the Applied Chemistry Master Degree (Thesis) Program to the Dean of Graduate, Adult and Extended Studies, who extends an offer of admission to the applicant.

For admission to this program, applicants must show evidence that they have earned (or will earn at the end of the semester before admission into the Graduate Program) the bachelor's degree in Chemistry, or a closely related field, at an accredited college or university and possess the ability to carry out graduate work of high quality.

In the case that a student does not have a bachelor's degree in Chemistry but has taken enough undergraduate chemistry credits at an accredited college or university, the Chemistry Department Graduate Committee may recommend the student for acceptance into the Graduate Program.

All applicants should have a minimum cumulative undergraduate grade point average of 3.0 in their undergraduate major with at least 24 credit hours in chemistry, including six credits in organic chemistry, six credits in physical chemistry, six credits in physics and six credits of calculus. If a student fails to meet these requirements, the Graduate Committee may recommend a conditional acceptance into the program. Students must meet all of the conditions of their acceptance by the end of the designated period of time in the Graduate Program in order to continue.

DEGREE REQUIREMENTS

The Master of Science Degree (Thesis) in Applied Chemistry Program requires the completion of a minimum of 30 credit hours, including the completion of thesis research (6 credit hours). Students in this program are required to submit a thesis and defend before their thesis committees.

Required Courses:	Credits
Chem 520 Advanced Organic Chemistry	3
Chem 573 Advanced Physical Chemistry	3
Chem 506 Structural Inorganic Chemistry	3
Chem 530 Advanced Analytical Chemistry	3
Chem 556 and 557 Seminar in Chemistry I and II	2 (total)
Chem 560 Chemical Literature	1
Electives*	9 (total)
Research and Thesis Chem 590 & 591	6
Total	30 hours minimum

Possible Elective Courses Include:

<i>Chemistry electives</i>	
CHEM 510 Environmental Chemistry	CHEM 518 Molecular Spectroscopy
CHEM 505 Inorganic Solution Chemistry	CHEM 562 Chemical Toxicology
CHEM 507 Theory and Application of Spectroscopy	CHEM 569 Polymer Chemistry
CHEM 508 Theory and Application of Chromatography	CHEM 630 Electroanalytical Chemistry
CHEM 511 Selected Topics in Chemistry	CHEM 670 Organic Spectroscopy
CHEM 516 Quantum Chemistry	CHEM 671 Bio-Organic Chemistry
CHEM 521 Advanced Biochemistry	
Biology Electives:	
BIOL 505 Exp. Design and Biostatistics	BIOL 521 Molecular Biology
BIOL 511 Pharmacology	BIOL 612 Neurochemistry
BIOL 520 Cell Biology	BIOL 651 Proteins: Structure and Molecular Properties
Physics Electives:	
PHYS 563 Math Methods III	PHYS 672 Advanced Electromagnetic Theory 2
PHYS 667 Math Methods IV	PHYS 675 Quantum Mechanics I
PHYS 665 Statistical Mechanics	PHYS 676 Quantum Mechanics II
PHYS 671 Advanced Electromagnetic Theory	

Transfer Credits: A maximum of 9 graduate credits may be transferred into the program from another accredited institution. For credit transfer, the following conditions apply:

The course curriculum to be transferred must be official (if translated, original copy must be provided).

The course curriculum to be transferred must be equivalent to that of the course to be substituted within the program.

The course to be transferred must have a grade of "B" or higher.

Course credit transfer must be applied in the first semester after the student comes into the program when filing a Plan of Study.

COURSE DESCRIPTIONS

CHEMISTRY (CHEM) (24)

CHEM-505. INORGANIC SOLUTION CHEMISTRY

The course provides a study of the chemical kinetics of chemical forces and their effects on structure and reactivity of coordination compounds. Two (2) 75-minute lectures per week. Prerequisites: CHEM-308 or equivalent. Credit, three hours.

CHEM-506. STRUCTURAL INORGANIC CHEMISTRY

The course provides detailed discussions of the nature of chemical forces and their effects on structure and reactivity of coordination compounds. One (1) 150-minute lecture per week. Prerequisites: CHEM-308 or equivalent. Credit, three hours.

CHEM-507. THEORY AND APPLICATIONS OF SPECTROSCOPY

The course offers a presentation of molecular spectra and structure correlations demonstrating the use of IR, Visible UV, NMR, and AA. One (1) 150-minute lecture per week. Prerequisites: CHEM-306 or equivalent. Credit, three hours.

CHEM-508. THEORY AND APPLICATIONS OF CHROMATOGRAPHY

The course provides investigations of the separation and identification of substances via packed and capillary column gas chromatography. HPLC and GLC using various detectors. One (1) 150-minute lecture per week. Prerequisites: CHEM-306 or equivalent. Credit, three hours.

CHEM-510. ENVIRONMENTAL CHEMISTRY

The course covers 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 (1) 150-minute lecture per week. Credit, three hours.

CHEM-511. SELECTED TOPICS IN CHEMISTRY

The course covers advanced topics in the various fields of chemistry. Topics may vary from year to year. One (1) 150-minute lecture per week. Credit, three hours.

CHEM-516. QUANTUM CHEMISTRY

The course covers the wave equation and approximate treatments of the hydrogen molecular ion, the hydrogen molecule, diatomic molecules, and polyatomic molecules. Two (2) 75-minute lectures per week. Prerequisites: CHEM-301, CHEM-302, CHEM-303, CHEM-304 or equivalent courses. Credit, three hours.

CHEM-518. MOLECULAR SPECTROSCOPY

The course covers the use of molecular symmetry and group theory to study rotational, vibrational, and electronic spectra of molecules. One (1) 150-minute lecture per week. Prerequisites: CHEM-301, CHEM-302 or equivalent. Credit, three hours.

CHEM-520. ADVANCED ORGANIC CHEMISTRY

The course covers an advanced study of reaction mechanisms, stereochemistry, and organic chemical bonding. One 150-minute lecture per week. Prerequisites: CHEM-301, CHEM-302. Credit, three hours.

CHEM-521. ADVANCED BIOCHEMISTRY

The course covers an advanced study of biochemical reactions and reaction mechanisms. One (1) 150-minute lecture per week. Prerequisites: CHEM-403 or equivalent. Credit, three hours.

CHEM-556. SEMINAR IN CHEMISTRY I

The course includes presentations of current topics and/or research by faculty and students. One (1) lecture per week. Credit, one hour.

CHEM-557. SEMINAR IN CHEMISTRY II

The course includes presentations of current topics and/or research by faculty and students. One (1) lecture per week. Credit, one hour.

CHEM-560. CHEMICAL LITERATURE

The course requires the use of the chemistry library, chemical journals, reference works, other technical publications, assembling and data use, and computer assisted literature searches. One (1) lecture per week. Credit, one hour.

CHEM-562. CHEMICAL TOXICOLOGY

The course provides a study of the adverse effects of chemical substances. The 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 (1) lecture per week. Credit, one hour.

CHEM-569. POLYMER CHEMISTRY

The course provides an introduction to the chemistry of macromolecules including biologically molecules, plastics, and other important classes of industrial polymers. One (1) 150-minute lecture per week. Prerequisites: CHEM-301, CHEM-302. Credit, three hours.

CHEM-573. ADVANCED PHYSICAL CHEMISTRY

The course provides an introduction to the thermodynamics of large molecular collections and the quantum statistics of these systems. One (1) 150-minute lecture per week.

Prerequisites: CHEM-303, CHEM-304. Credit, three hours.

CHEM-590. RESEARCH AND THESIS

The course requires publishable research work by students and the writing and defense of a thesis. Credit, three hours each semester.

CHEM-591. RESEARCH AND THESIS

The course requires publishable research work by students and the writing and defense of a thesis. Credit, three hours each semester.

CHEM-630. ELECTROANALYTICAL CHEMISTRY

The course introduces students to the basic principles involved in electroanalytical chemistry. The course will cover modern electrochemical methods such as cyclic, pulse and hydrodynamic voltammetry, chronoamperometry, chronocoulometry, polarography, and stripping analysis. Instrumentation and some practical aspects of electroanalytical chemistry will also be covered. Experiments of most of the electrochemical methods introduced will either be carried out by the students or will be demonstrated.

Prerequisites: B.S. degree in Chemistry or consent of the Department Chair. Credit, three hours.

CHEM-670. ORGANIC SPECTROSCOPY

The course will provide an in-depth presentation of recent advances in Infrared Spectroscopy, Nuclear Magnetic Spectroscopy, Ultraviolet and Visible Spectroscopy, Mass Spectroscopy, and other spectroscopic methods.

Prerequisites: B.S. degree in Chemistry or consent of the Department Chair. Credit, three hours.

CHEM-671. BIOORGANIC CHEMISTRY

This course will provide an in-depth understanding of Bioorganic Chemistry of Amino Acids and Polypeptides, Bioorganic Chemistry of DNA, Enzyme Chemistry & Enzyme Models, Metalloenzymes, and Molecular Devices. Prerequisites: B.S. degree in Chemistry or consent of the Department Chair. Credit, three hours.

Course descriptions for courses offered by the Biology and Physics Departments and chosen as possible electives in this degree program can be found in the catalogue of graduate programs in these two departments.

**MASTER'S PROGRAM
APPLIED CHEMISTRY (THESIS)**

Semester I (Fall)			Semester II (Spring)		
Course	Course Name	Cr	Course	Course Name	Cr
CHEM 520	*Advanced Organic Chemistry	3	CHEM 506	*Structural Inorganic Chemistry	3
CHEM 573	*Advanced Physical Chemistry	3	CHEM 530	*Advanced Analytical Chemistry	3
CHEM XXX	+Elective	3	CHEM XXX	+Elective	3
	Total Credits	9		Total Credits	9

Semester III (Fall)			Semester IV (Spring)		
Course	Course Name	Cr	Course	Course Name	Cr
CHEM 590	Research & Thesis	3	CHEM 590	Research & Thesis	3
CHEM 556	Seminar in Chemistry I	1	CHEM 557	Seminar in Chemistry II	1
CHEM XXX	+Elective	3	CHEM 560	Chemical Literature	1
	Total Credits	7		Total Credits	5

*Denotes a Core Requirement

+Denotes an Elective

Total Core Credits = 15

Total Elective Credits = 9

Candidacy Requirement: Not Applicable for Master's Degree

Capstone or Culminating Experience: Thesis

DOCTOR OF PHILOSOPHY IN APPLIED CHEMISTRY

PROGRAM OBJECTIVES

A Ph.D. degree is the highest degree in the chemistry field. This program aims to train students in the program to become leading chemistry professionals with profound knowledge of chemistry, independent research capability, and professional communication skills. Students' dissertation research may focus on areas which are hot topics/technologies which are critical for human society to solve some current crisis. Students graduating from this program may become experts in one or more subfields of chemistry, including physical chemistry polymer chemistry, biochemistry, environmental chemistry, organic chemistry, inorganic chemistry, and analytical chemistry.

PROGRAM GOALS

Students entering the program must formulate a course of study and research in consultation with the Graduate Program Director (or with the student's Dissertation Advisor once an Advisor has been chosen). Although coursework and seminar presentations/oral exams are important aspects in the program, the student's primary focus and devotion is on an independent research project in his or her chosen field. A PhD dissertation based on independent publishable original research must be defended in an oral presentation before the student's PhD Dissertation Committee in a formal presentation once the research is completed.

STUDENT LEARNING OUTCOMES

- Expanded knowledge of chemical concepts and theories;
- Expertized understanding in a chosen sub-field of chemistry or interdisciplinary intensive experience in lab practices for independent research projects;
- Familiarity with new trends in chemical research and engineering practices; specialized capability in result interpretation and analysis;
- Proficient skills in results organization and presentation.

ADMISSION DEADLINE AND DEGREE REQUIREMENTS

Application Deadlines: Fall – April 15 | Spring – November 1

International Application Deadlines: Fall – March 15 | Spring – October 1

Application Documents for Admission:

- Completed online application form.
- Official transcript with overall GPA at 3.0 or higher (WES, AACRO, ECE, or GCE evaluation required for international applicants).
- Interest statement (1-2 pages).
- Official copy of GRE score (no more than 5 years old); due to COVID-19, GRE scores are not required for the 2023-2024 academic year.
- Official copy of TOEFL score (no more than 2 years old) (for international non-English speaking applicants only).
- Two recommendation letters from professionals.
- A resume.
- All documents are required to be submitted online. The Graduate Committee of the Chemistry Department will review students' application materials and make recommendation for admission into the Doctor of Philosophy in Applied Chemistry Program to the Dean of Graduate, Adult and Extended Studies, who extends an offer of admission to the applicant.

For admission to this program, applicants must show evidence that they have earned (or will earn at the end of the semester before admission into the Graduate Program) the bachelor's degree in Chemistry, or a closely related field, at an accredited college or university and possess the ability to carry out graduate work of high quality.

In the case that a student does not have a bachelor's degree in Chemistry but has taken enough undergraduate chemistry credits at an accredited college or university, the Chemistry Department Graduate Committee may recommend the student for acceptance into the Graduate Program.

All applicants should have a minimum cumulative undergraduate grade point average of 3.0 in their undergraduate major with at least 20 credit hours in chemistry, including 8 credits in organic chemistry, 4 credits in physical chemistry, 4 credits in analytical chemistry and 4 credits of inorganic chemistry. If a student fails to meet these requirements, the Graduate Committee may recommend a conditional acceptance into the program. Students must meet all of the conditions of their acceptance by the end of the designated period of time in the Graduate Program in order to continue.

DEGREE REQUIREMENTS

The PhD of Science Degree in Applied Chemistry Program requires the completion a minimum of 60 credit hours, of which 18 credits are dissertation research. Students in this program are required to submit dissertations and defend before their committees. In addition, students are required to pass cumulative exams with enough points and pass literature review in their first two years of study.

Course	Credits
CHEM 520 Advanced Organic Chemistry	3
CHEM 573 Advanced Physical Chemistry	3
CHEM 506 Structural Inorganic Chemistry	3
CHEM 530 Advanced Analytical Chemistry	3
CHEM 556 and 557 Seminar in Chemistry I and II	2 (total)
CHEM 560 Chemical Literature	1
Electives*	27 (total)
Research and Thesis CHEM 590 & 591	18 total for research
Total	60 hours minimum

Possible elective courses are the same as those for Master of Science in Applied Chemistry (Thesis).

COURSE DESCRIPTIONS

CHEMISTRY (CHEM) (24)

CHEM-505. INORGANIC SOLUTION CHEMISTRY

The course provides a study of the chemical kinetics of chemical forces and their effects on structure and reactivity of coordination compounds. Two (2) 75-minute lectures per week. Prerequisites: CHEM-308 or equivalent. Credit, three hours.

CHEM-506. STRUCTURAL INORGANIC CHEMISTRY

The course provides detailed discussions of the nature of chemical forces and their effects on structure and reactivity of coordination compounds. One (1) 150-minute lecture per week. Prerequisites: CHEM-308 or equivalent. Credit, three hours.

CHEM-507. THEORY AND APPLICATIONS OF SPECTROSCOPY

The course offers a presentation of molecular spectra and structure correlations demonstrating the use of IR, Visible UV, NMR, and AA. One (1) 150-minute lecture per week. Prerequisites: CHEM-306 or equivalent. Credit, three hours.

CHEM-508. THEORY AND APPLICATIONS OF CHROMATOGRAPHY

The course provides investigations of the separation and identification of substances via packed and capillary column gas chromatography. HPLC and GLC using various detectors. One (1) 150-minute lecture per week. Prerequisites: CHEM-306 or equivalent. Credit, three hours.

CHEM-510. ENVIRONMENTAL CHEMISTRY

The course covers 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 (1) 150-minute lecture per week. Credit, three hours.

CHEM-511. SELECTED TOPICS IN CHEMISTRY

The course covers advanced topics in the various fields of chemistry. Topics may vary from year to year. One (1) 150-minute lecture per week. Credit, three hours.

CHEM-516. QUANTUM CHEMISTRY

The course covers the wave equation and approximate treatments of the hydrogen molecular ion, the hydrogen molecule, diatomic molecules, and polyatomic molecules. Two (2) 75-minute lectures per week. Prerequisites: CHEM-301, CHEM-302, CHEM-303, CHEM-304 or equivalent courses. Credit, three hours.

CHEM-518. MOLECULAR SPECTROSCOPY

The course covers the use of molecular symmetry and group theory to study rotational, vibrational, and electronic spectra of molecules. One (1) 150-minute lecture per week. Prerequisites: CHEM-301, CHEM-302 or equivalent. Credit, three hours.

CHEM-520. ADVANCED ORGANIC CHEMISTRY

The course covers an advanced study of reaction mechanisms, stereochemistry, and organic chemical bonding. One 150-minute lecture per week. Prerequisites: CHEM-301, CHEM-302. Credit, three hours.

CHEM-521. ADVANCED BIOCHEMISTRY

The course covers an advanced study of biochemical reactions and reaction mechanisms. One (1) 150-minute lecture per week. Prerequisites: CHEM-403 or equivalent. Credit, three hours.

CHEM-556. SEMINAR IN CHEMISTRY I

1:1:0

The course includes presentations of current topics and/or research by faculty and students. One (1) lecture per week. Credit, one hour.

CHEM-557. SEMINAR IN CHEMISTRY II

1:1:0

The course includes presentations of current topics and/or research by faculty and students. One (1) lecture per week. Credit, one hour.

CHEM-560. CHEMICAL LITERATURE**1:1:0**

The course requires the use of the chemistry library, chemical journals, reference works, other technical publications, assembling and data use, and computer assisted literature searches. One (1) lecture per week. Credit, one hour.

CHEM-562. CHEMICAL TOXICOLOGY

The course provides a study of the adverse effects of chemical substances. The 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 (1) lecture per week. Credit, one hour.

CHEM-569. POLYMER CHEMISTRY

The course provides an introduction to the chemistry of macromolecules including biologically molecules, plastics, and other important classes of industrial polymers. One (1) 150-minute lecture per week. Prerequisites: CHEM-301, CHEM-302. Credit, three hours.

CHEM-573. ADVANCED PHYSICAL CHEMISTRY

The course provides an introduction to the thermodynamics of large molecular collections and the quantum statistics of these systems. One (1) 150-minute lecture per week.

Prerequisites: CHEM-303, CHEM-304. Credit, three hours.

CHEM-590. RESEARCH AND THESIS**3:3:9**

The course requires publishable research work by students and the writing and defense of a thesis. Credit, three hours each semester.

CHEM-591. RESEARCH AND THESIS**3:3:9**

The course requires publishable research work by students and the writing and defense of a thesis. Credit, three hours each semester.

CHEM-630. ELECTROANALYTICAL CHEMISTRY

The course introduces students to the basic principles involved in electroanalytical chemistry. The course will cover modern electrochemical methods such as cyclic, pulse and hydrodynamic voltammetry, chronoamperometry, chronocoulometry, polarography, and stripping analysis. Instrumentation and some practical aspects of electroanalytical chemistry will also be covered. Experiments of most of the electrochemical methods introduced will either be carried out by the students or will be demonstrated.

Prerequisites: B.S. degree in Chemistry or consent of the Department Chair. Credit, three hours.

CHEM-670. ORGANIC SPECTROSCOPY

The course will provide an in-depth presentation of recent advances in Infrared Spectroscopy, Nuclear Magnetic Spectroscopy, Ultraviolet and Visible Spectroscopy, Mass Spectroscopy, and other spectroscopic methods.

Prerequisites: B.S. degree in Chemistry or consent of the Department Chair. Credit, three hours.

CHEM-671. BIOORGANIC CHEMISTRY

This course will provide an in-depth understanding of Bioorganic Chemistry of Amino Acids and Polypeptides, Bioorganic Chemistry of DNA, Enzyme Chemistry & Enzyme Models, Metalloenzymes, and Molecular Devices. Prerequisites: B.S. degree in Chemistry or consent of the Department Chair. Credit, three hours.

Course descriptions for courses offered by the Biology and Physics departments and chosen as possible electives in this degree program can be found in the catalog of graduate programs in these two departments.

PH.D. PROGRAM

APPLIED CHEMISTRY

Year 1: Fall			Year 1: Spring		
Course	Course Name	Cr	Course	Course Name	Cr
*CHEM 530	Advanced Analytical Chemistry	3	*CHEM 506	Structural Inorganic Chemistry	3
*CHEM 556	Seminar in Chemistry I	1	*CHEM 557	Seminar in Chemistry II	1
*CHEM 560	Chemical Literature	1	+CHEMxxx	Elective	3
+CHEMxxx	Elective	3			
		Total Credits			Total Credits
		8			7

Year 2: Fall			Year 2: Spring		
Course	Course Name	Cr	Course	Course Name	Cr
*CHEM 573	Advanced Physical Chemistry	3	*CHEM 520	Advanced Organic Chemistry	3
+CHEMxxx	Electives	6	+CHEM	Electives	6
		Total Credits			Total Credits
		9			9

Year 3: Fall			Year 3: Spring		
Course	Course Name	Cr	Course	Course Name	Cr
*CHEM 590/1	Research & Thesis	3	*CHEM 590/1	Research & Thesis	6
+CHEMxxx	Electives	6	+CHEMxxx	Electives	3
		Total Credits			Total Credits
		9			9

Year 4: Fall			Year 4: Spring		
Course	Course Name	Cr	Course	Course Name	Cr
*CHEM 590/1	Research & Thesis	6	*CHEM 590/1	Research & Thesis	3
				Thesis Sustaining (when needed)	
		Total Credits			Total Credits
		6			3
			Total Credits: 60		

- ***Denotes a Core Requirement**
- **+Denotes an elective**
- **Total Core Credits = 60**
- **Total Elective Credits = 27**
- **Candidacy Requirement:** (1) one year of course work with GPA of 3.0 or higher; (2) Approved Advisory Committee Form; (3) Approved Literature Review; (4) Adequate cumulative exam points (8) points in first two years with at least two full passes
- **Capstone or Culminating Experience:** Pass Dissertation Oral Defense

DEPARTMENT OF HUMAN ECOLOGY

MASTER OF SCIENCE IN FOOD SCIENCE AND BIOTECHNOLOGY

PROGRAM OBJECTIVES

The educational objectives for this degree program are to train a new cadre of food scientists through teaching and research. Our research activities are designed to expand understanding of the biological/microbiological, chemical, physical, sensory, and nutritional properties of foods and beverages. The program will prepare a high-tech workforce for the food industry through hands-on experience and integration of emerging technologies with the more traditional lecture. Integration of instruction and research will help students acquire the knowledge and skills needed to be successful food scientists in the global economy. The Graduate Program in Food Science is a multi-disciplinary program that integrates knowledge of biology, chemistry, biochemistry, microbiology, nutrition and engineering. Students entering the program must choose one of three concentrations: 1) Food Chemistry, 2) Food Microbiology or 3) Biotechnology. Foundation course requirements will normally be satisfied with completion of a B.S. degree in Food Science from an accredited institution. Students deficient in foundation courses will be required to complete selected undergraduate coursework to fulfill this requirement.

PROGRAM GOALS

The goal of the Food Science program is to educate, train, and prepare students as the next generation of food scientists for career opportunities in the food and allied industries, or for further studies in graduate or professional programs. To achieve this goal, the University's Food Science Graduate Program focuses on three signature areas: 1) Food Chemistry, 2) Food Microbiology and 3) Biotechnology.

STUDENT LEARNING OUTCOMES

Students will demonstrate an advanced knowledge and understanding in an area of emphasis offered by the Food Science and Biotechnology program.

Students will design an experiment, collect, analyze, interpret data and report findings.

Students will demonstrate competency in scholarly writing and oral communication by writing a M.S. thesis or M.S. report and presenting it to a committee of professors in their field, or, if in a non-thesis/report option, by presenting an original scientific seminar and passing an oral exam.

ADMISSION DEADLINES AND DEGREE REQUIREMENTS

Application Deadlines:

Fall – June 15

Spring – November 15

Summer – April 15

All applicants are required to submit evidence of the following for consideration of unconditional admission:

- An earned baccalaureate degree in Food Science, Biology, Chemistry, Nutrition, or a closely related field with a minimum undergraduate cumulative grade point average of 2.75.
- An online application for admission.
- Official transcript(s) of all academic work completed.
- Official GRE scores. Due to COVID-19, GRE scores are not required for the 2023-2024 academic year.
- A resume.
- Three letters of recommendation via the online application process.
- A statement of intent to include the following: (a) The student's objectives in obtaining the degree, (b) area(s) of research interest, and (c) the student's interest in the food science or biotechnology area (maximum two pages).

The Department of Human Ecology Graduate Committee will review students' application materials and make recommendations for acceptance into the Food Science program to the Dean of Graduate, Adult and Extended Studies, who extends an offer of admission to the applicant.

DEGREE REQUIREMENTS

The degree will involve a minimum of two years of advanced coursework in food science. Students entering the Food Science program must choose one of three concentrations: 1) Food Chemistry, 2) Food Microbiology or 3) Biotechnology. Foundation course requirements will normally be satisfied with completion of a BS degree in Food Science from an accredited institution. Students deficient in the foundation courses will be required to complete selected undergraduate course deficiencies within the first year to fulfill these requirements.

Foundation Courses:

Mathematics, including college algebra, calculus and statistics
Organic Chemistry and Biochemistry
Introduction to Physics
Introduction to Microbiology Botany or General Biology

The Food Science and Biotechnology program offers a master's degree with thesis and non-thesis options. All course credits toward the degree must be at 500-level or above.

M.S. Thesis Option:

Students selecting the thesis option are required to complete at least 30 credit hours of graduate-level coursework which includes 6 credits of thesis work. Candidacy requirement consists of the development of a thesis topic and preparation of a research prospectus which is subject to the approval of the Thesis Committee. Following admission to candidacy and as a graduation requirement, all students selecting the thesis option must develop their research prospectus into a full research project consisting of collection and analysis of data and documented in a thesis format which meets the standards established by the College of Agriculture, Science and Technology and School of Graduate, Adult and Extended Studies.

The completed thesis will be submitted to the Thesis Committee for review and if deemed acceptable, an oral examination, consisting principally of a defense of the thesis, will be scheduled. After the thesis has been read and approved by the Thesis Committee, it must be submitted to the Dean of the College and finally to the School of Graduate, Adult and Extended Studies. A majority of the student's Thesis Committee must approve the thesis and its defense. If approval is denied, the candidate will not be recommended for graduation. In this event, the student may be re-examined at a later period as determined by the Thesis Committee.

M.S. Non-Thesis Option:

Students selecting a non-thesis option are required to complete at least 33 credit hours of graduate-level coursework. Candidacy requirements require successful passage of a written comprehensive and oral examination. Students are also required to write a comprehensive term paper on a topic related to food microbiology or food chemistry. The examination will be administered each spring semester and during the first summer session each year. To be eligible to take the examination, the student must be within 6 hours or less of completing degree requirements the semester in which the comprehensive examination is scheduled.

Non-Degree Option:

This option provides an opportunity for MBA and other professionals who are seeking graduate coursework for their professional growth.

Required Coursework:

Students enrolled in the Food Science Graduate Program are required to complete a minimum of 31 credit hours for the thesis option or 33 credit hours for the non-thesis option.

Required courses include:

HMEC 530 - Food Chemistry
HMEC 501 - Molecular and Biotechnology Applications in Food Science
HMEC 520 - Food Microbiology
CHEM 521 - Advanced Biochemistry
HMEC 540 - Food Analysis
HMEC 565 - Experimental Design
HMEC 601 - Graduate Seminar (Thesis Option only)
HMEC 610 - Advanced Food Safety
HMEC 625 - Research Problems in Food Science
HMEC 630 - Thesis Research I
HMEC 630 - Thesis Research II
HMEC 661 Graduate Seminar

Student registration in graduate-level coursework is subject to the approval of an assigned Advisor.

List of Approved Electives

HMEC 510 – Food Processing
HMEC 535 – Food Toxicology
HMEC 600 - Food Product Development
HMEC 615 – Food Policy

FACULTY

The faculty members in the Food Science program are dedicated to their respective fields of study and have a diverse background. Specific areas of research interest of the Food Science faculty include food microbiology, food safety, food biotechnology, food chemistry, lipid chemistry, etc. Active research projects exist within these areas and offer graduate students many opportunities for active learning and discovery.

COURSE DESCRIPTIONS

(Note: Additional course descriptions can be found under Animal Science, Food Science, Plant Science, Natural Resources and Biology).

HMEC-500. FUNDAMENTALS OF FOOD SCIENCE

This course provides an in-depth review of the fundamental concepts in food science including food chemistry, food microbiology and safety, food processing and engineering, nutrition, sensory evaluation, and food product development. Students would develop the skills needed to analyze the composition, chemical and physical properties of food in the laboratory. Three (3) hours of lecture. Credit, three hours.

HMEC 501. MOLECULAR & BIOTECHNOLOGY APPLICATION IN FOOD SCIENCE

Basic concepts, investigation tools and fundamental issues of biotechnology, with emphasis on molecular biology technologies in food production and food safety. The course provides students basic lab protocols such as DNA and RNS extraction, PCR and RT_PCR procedure, gene cloning, gene mapping, fingerprinting, quality testing of DNA & RNA, gel electrophoresis, and gel documentation using imaging systems. One (1) hour lecture and two (2) hour lab work per week. Credit, three hours.

HMEC-510. FOOD PROCESSING

The course integrates principles of food chemistry including nutrition, food biotechnology, characteristics of raw food materials, principles of food preservation including low and high temperatures, pH, salinity, water activity, Principles of food processing techniques such as freeze drying, high pressure, aseptic processing, extrusion, packaging materials and methods, cleaning and sanitation, water and waste management. Two (2) hours of lecture and one (1) hour of lab. Credit, three hours.

HMEC-520. FOOD MICROBIOLOGY

The course deals with the identification, enumeration, and characterization of pathogenic and spoilage microorganisms associated with foods and food processing. Beneficial microorganisms in food systems will be discussed. Influence of the food system on the growth and survival of microorganisms and control of microorganisms will be studied. The course introduces techniques for detecting and quantifying microorganisms in foods. Application of colony counts, most probable numbers, immunoassays, and molecular techniques is used to understand the numbers and types of microorganisms or microbial end products in foods. Laboratory safety and oral and written reports are emphasized. The course provides students with standard techniques used in microbial analysis of foods and the major groups of organisms associated with food safety and spoilage problems, and food production. Two (2) hours of lecture and one (1) hours of lab. Credit, three hours.

HMEC-530. FOOD CHEMISTRY

The course covers the structure and properties of major and minor food components, including water, carbohydrates, protein, lipids, other nutrients and food additives, and the chemistry of changes occurring during food processing, storage and utilization. Three (3) hours lecture and three (3) hours lab a week. Prerequisites: HMEC-500, CHEM-302. Credit, three hours.

HMEC-535. FOOD TOXICOLOGY

This course emphasizes biological and chemical aspects of toxicology, microbial aspects of food borne infections and intoxications, food additives, toxic substances occurring in food, either naturally or formed during processing, and the toxic effects of these substances on the biological systems. Safety of genetically engineered foods, risk assessment and food safety policy will be discussed as general topics. Three (3) lecture hours a week. Prerequisites: HMEC-520, HMEC-530. Credit, three hours.

HMEC-540. FOOD ANALYSIS

Principles, methods and techniques used for quantitative physical and chemical analyses of food and food ingredients. Analytical techniques will include spectroscopy, chromatography, mass spectrometry, immunochemistry and atomic absorption. Physical measurements of food properties will cover color, pH, water activity, water holding capacity and textural characteristics. Two (2) hours lecture and three (3) hours lab a week. Prerequisites: CHEM-530. Credit, three hours.

HMEC-560. PRINCIPLES OF HACCP

The course provides an in-depth review of the Hazard Analysis and Critical Control Point (HACCP) system and its application in the food industry. Two (2) hours lecture a week. Credit, two hours.

HMEC-565. EXPERIMENTAL DESIGN AND DATA ANALYSIS

Students will be able to design an experiment and carry out an appropriate statistical analysis of the data, and properly interpret and communicate the analyses. Students will learn the most important techniques of how to design an experiment and analyze data using examples drawn from a student's experiment. Students will be required to use statistical computer software to complete many homework assignments and the project. Three (3) lecture hours. Credit, three hours.

HMEC-580. FOOD QUALITY ASSURANCE

All technical aspects of quality assurance and quality control will be covered. Topics covered will include quality management systems, selection of analytical methods, HACCP principles, acceptance sampling, product recall plans, statistical quality control methods, government regulation and food legislation. Three hours lecture a week. Prerequisites: HMEC-510. Credit, three hours.

HMEC-600. FOOD PRODUCT DEVELOPMENT

The course deals with all aspects of new food product development from concept to commercialization, including market screening; idea generation; prototype development; ingredient functionality and interactions; processing; packaging; safety and regulatory issues; labeling; physical, chemical, microbiological, and sensory evaluations; quality control procedures; and HACCP plans. Two (2) hours lecture and one (1) hour lab a week. Prerequisites: HMEC-530 or consent of the Instructor. Credit, three hours.

HMEC-610. ADVANCED FOOD SAFETY

The course provides and understanding of the relationship of environmental factors to occurrence, growth and survival of microorganisms in foods, Food Safety Epidemiology, HACCP, sanitation, food safety education, and risk assessment. Risk Management in the context of food safety is the process of weighing policy alternatives to control risks as effectively as possible. Food Safety Epidemiology. Three (3) hours lecture a week. Prerequisites: HMEC-560. Credit, three hours.

HMEC-615. FUNDAMENTALS OF FOOD POLICY

Fundamentals of Food Policy examines policy issues pertaining to the production, processing, marketing, and consumption of food. The course specifically reviews policy issues relevant to food production, food safety, international trade, sustainability of agricultural resources, food consumption and demographic changes, effects of renewable energy on food security, biotechnology, water supply, biodiversity, and effects of urbanization on food choice, nutrition and health. This course will also introduce students to the inherent risks associated with the food supply, and the use of public policy (laws and regulations) and technology to reduce those risks. After taking this course, students should be able to develop innovative ideas on how to create a sustainable food system for the increasing world population.

HMEC-625. RESEARCH PROBLEMS IN FOOD SCIENCE

A special problem course designed to provide research training in the area of the student's area of concentration and specification related to the needs of their research and thesis work. Credit, three to six hours.

HMEC-630. THESIS RESEARCH

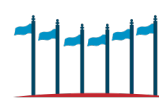
An in-depth individualized investigation of a research problem conducted under close supervision of the thesis advisor. Includes training in experimental techniques, problem design, testing, data collection, data analysis, and preparation of thesis. University and departmental guidelines are to be followed 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. Credit, three to six hours.

HMEC-631. THESIS RESEARCH II

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. Credit, three to six hours.

HMEC-661. GRADUATE SEMINAR

A seminar, meeting once per week with faculty and student presentations on their research and/or other relative scientific topics. Credit, one hour.



**PROGRAM: MASTER OF SCIENCE IN FOOD
SCIENCE AND BIOTECHNOLOGY**

YEAR 1: Fall Semester			YEAR 1: Spring Semester		
Course No.	Course Name	CR	Course No.	Course Name	CR
HMEC-500	Fundamentals of Food Sci.	3	HMEC-530	Food Chemistry & Analysis	3
HMEC-520	Food Microbiology	3	HMEC-610	Advanced Food Safety	3
CHEM 521	Advanced Biochemistry	3	HMEC-501	Mol. & Biotech. Appl. in Food Sci.	3
HMEC-565	Experimental Design	3			
	Total Credits	12		Total Credits	9
YEAR 2: Fall Semester			YEAR 2: Spring Semester		
Course No.	Course Name	CR	Course No.	Course Name	CR
HMEC-630	Thesis Research I	3	HMEC-630	Thesis Research II	3
HMEC-661	Graduate Seminar	1	HMEC-625	Res. Problems in Food Sci.	3
HMEC-***	Elective (optional)	3			
	Total Credits	7		Total Credits	6
Elective courses					
Course No.	Course Name	CR			
HMEC-510	Food Processing	3			
HMEC-535	Food Toxicology	3			
HMEC-600	Food Product Development	3			
HMEC-615	Food Policy	3			

- Total Core Credits = 24
- Total Research Credits = 6
- Total Credit Hours for Degree: 30-34
- Candidacy Requirement: Complete 18 hours of coursework
- Capstone or Culminating Experience: 1 credit (HMEC- 661)

Thesis Option: Submission of Research Plan with Candidacy Application to School of Graduate, Adult and Extended Studies, Thesis Defense and Submission of Thesis

Non-Thesis Option: Written and Oral Comprehensive Exam; Comprehensive Term Paper

MASTER OF SCIENCE IN NUTRITIONAL SCIENCES

The Master of Science in Nutritional Sciences prepares students to work in the healthcare sector or nutrition research. It has two concentrations. Concentration “one” is a stand-alone graduate degree in Nutritional Sciences for students who have completed a BS degree and do not need or seek the RDN credential. Concentration “two” is the [Coordinated Program in Dietetics](#) for students who want to become registered dietitian nutritionists. With both concentrations, students can choose between a thesis and a non-thesis option (a report option).

The mission of the MS in Nutritional Sciences is to graduate culturally competent professionals with an MS in Nutritional Sciences who demonstrate competency in assessing, promoting, and improving health through nutrition intervention, discovery, research, leadership, and service.

PROGRAM OBJECTIVES

- Of graduates who seek employment, at least 80 % are employed in nutrition and dietetics or related fields within 12 months of graduation.
- At least 80% of employers who respond to the employer survey will rate graduates as well or very well prepared for entry-level dietetic practice.
- At least 80% of graduates who respond to the alumni survey will rate themselves as well or very well prepared for entry-level dietetic practice.
- At least 80% of graduates who respond to the alumni survey will rate themselves as culturally competent in their food and nutrition services.
- At least 50% of graduates who respond to the alumni survey will participate in a professional or community organization within one year of graduation.

PROGRAM GOALS

- Program graduates meet or exceed entry-level competency in nutrition and dietetics practice.
- Program graduates are culturally competent leaders in their profession and/or community.

STUDENT LEARNING OUTCOMES

1. Demonstrate critical thinking and mastery of key concepts in the field of nutritional sciences.
2. Evaluate research and apply evidence-based guidelines, systematic reviews and scientific literature in nutrition sciences.
3. Develop and justify products, programs, and services using appropriate research and technologies.
4. Demonstrate scholarly writing and oral communication skills.
5. Design a research study or research review, collecting, analyzing and interpreting data and publishing the results

ADMISSION DEADLINES AND DEGREE REQUIREMENTS

Application Deadlines:

Fall – November 15

Summer – July 15

All applicants are required to submit evidence of the following for consideration of unconditional admission:

Requirements for Acceptance

- An overall GPA of 2.8
- A minimum grade of "B" in prerequisite nutrition and food science courses
- A minimum average GPA of 2.5 in support science courses with no grade below a C
- Evidence of leadership, professionalism, and motivation needed to complete the rigors of graduate school
- Two letters of recommendation
- Official transcripts of previously attended colleges and universities

The Basis for Graduate Student Selection

- Academic achievement
- Written and oral expression of interest in the field of nutrition/dietetics [personal statement, resume, and interview]
- References
- Research experience
- Professional/Work Experience
- Demonstrated Leadership

DEGREE REQUIREMENTS

To obtain the MS in Nutritional Sciences, students must complete a minimum of 37 credit hours (please see Curriculum Sequence) successfully. The majority of courses are taught using in-class instruction and provide opportunities for experiential learning in simulation, nutrition assessment, and culinary medicine.

Required Courses

- Human Nutrition Assessment
- Community Nutrition
- Medical Nutrition Therapy I
- Medical Nutrition Therapy II
- Culinary Medicine
- Nutritional Biochemistry
- Graduate Seminar
- Experimental design
- Thesis I and II

COURSE DESCRIPTIONS

HMEC 537. COMMUNITY NUTRITION

Review of major food and nutrition programs serving local-global citizens, their goals and target populations. Survey of major U.S. food and nutrition program evaluations. Review of nutrition-related chronic health problems and targeted interventions by private voluntary organizations, nonprofit organizations, public health, and other government entities. Exploration of the social, political, economic, and environmental factors that affect the demand and delivery of nutrition services and health prevention/promotion.

HMEC 547. HUMAN NUTRITION ASSESSMENT

Methods and techniques of nutritional screening and assessment in the pediatric and adult population. Discussions include, but are not limited to evaluation of dietary intake, anthropometric measurements, biochemical tests, and clinical assessment using the Nutrition-Focused Physical Exam.

HMEC 565. EXPERIMENTAL DESIGN AND DATA ANALYSIS

Students will be able to design an experiment and carry out an appropriate statistical analysis of the data, and properly interpret and communicate the analyses. Students will learn the most important techniques of how to design an experiment and analyze data using

examples drawn from a student's experiment. Students will be required to use statistical computer software to complete many homework assignments and their project.

HMEC 567. MEDICAL NUTRITION THERAPY I

This course lays the groundwork for medical nutrition therapy, implementing the nutrition care process, enteral and parenteral nutrition, fluid, electrolyte and acid-base balance, cellular immunity, and selected disease conditions.

HMEC 577. MEDICAL NUTRITION THERAPY II

This course examines the pathophysiology, biochemical and behavioral abnormalities, medical management, nutrition care process, and medical nutrition therapy as they relate to the various diseases providing a theoretical and practical base for diet modification and nutritional therapy.

HMEC 587. CULINARY MEDICINE

This course integrates evidence-based practice in Medical Nutrition Therapy, culinary medicine, and cultural foods, emphasizing sensory evaluation, nutrient quality, nutrition security, food safety, and disease prevention and modification. The laboratory training will empower the student to assist clients in developing lifestyles that reshape the course of their diseases within their cultural context and financial status.

HMEC 607. NUTRITIONAL BIOCHEMISTRY

This course gives students a thorough scientific understanding of biochemistry and cell and molecular biology and applies this to the impact of nutrition on health. This includes a basic understanding of metabolism, physiology, and molecular genetics. Knowledge of biochemistry is vital for understanding the growth and development of the animals and plants that make up our food chain. Biochemistry and nutrition are inextricably linked from the structure of the molecules in food to the processes by which nutrients are metabolized and digested.

HMEC 661. GRADUATE SEMINAR

Develop critical reading skills, evaluate scientific literature, and identify problems that can plague a research study, and be familiar with the methodology used in your field of research. Gather data or information from current journals and related publications, write reports, and prepare PowerPoint and oral presentations of thesis prospectus or capstone project.

HMEC 630. 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. Credit, three to six hours.



PROGRAM: MASTER OF SCIENCE IN NUTRITIONAL SCIENCES

GRADUATE YEAR 1: Fall Semester			GRADUATE YEAR 1: Spring Semester		
Course No.	Course Name	CR	Course No.	Course Name	CR
HMEC-537	Community Nutrition	3	HMEC-577	Med Nutr Therapy II	3
HMEC-547	Hum Nutr Assessment	3	HMEC-587	Culinary Medicine with Lab	3
HMEC-567	Med Nutr Therapy I	3	XXXX-xxx	Elective	3
HMEC-565	Experimental Design	3	HMEC-661	Graduate Seminar	1
	Total Credits	12		Total Credits	10
GRADUATE YEAR 1: Summer					
Thesis Studies					
GRADUATE YEAR 2: Fall Semester			GRADUATE YEAR 2: Spring Semester		
Course No.	Course Name	CR	Course No.	Course Name	CR
HMEC-607	Nutritional Biochemistry	3	XXXX-xxx	Elective	3
XXXX-xxx	Elective	3	HMEC-630	Thesis II	3
HMEC-630	Thesis I	3			
	Total Credits	9		Total Credits	6

Suggested Graduate Electives

HMEC 650/651	Community Rotation I and II	3
HMEC 530	Food Chemistry	3
HMEC 540	Food Analysis	3
HMEC 600	Food Product Development	3
HMEC 610	Advanced Food Safety	3
HMEC 615	Food Policy	3
BIOL 507	Introduction to Neuroscience	3
BIOL 607	Cancer Biology	3

MASTER OF SCIENCE IN NUTRITIONAL SCIENCES, COORDINATED PROGRAM IN DIETETICS CONCENTRATION

The Department of Human Ecology offers a master's degree in Nutritional Sciences with a Coordinated Program in Dietetics concentration. This program combines academic and supervised practice to qualify students to sit for the national Registration Examination for Dietitians after they graduate. For further detail on becoming a registered dietitian nutritionist, please refer to the Student Handbook: pgs. 3-4 (see sidebar).

For students enrolled in the BS/MS degree option in Food and Nutrition Science at Delaware State University, application for admission to the Coordinated Program in Dietetics should be made during the second semester of the student's junior year. All other students should apply in their senior year and must provide a current transcript with their application and a final transcript after graduation showing the completion of a bachelor's degree and all course prerequisites. Graduates with a bachelor's or master's degree in any field can apply for admission as long as they meet the admission requirements.

The application deadline for the fall semester is April 15 and for the spring semester November 15. Spring applications are rare, requiring the transfer of graduate credits to be able to complete the program within two years. All prerequisite courses must be completed with the required grades prior to the student's start in the MS in Nutritional Sciences.

The Commission on Dietetic Registration provides information on registration eligibility, career opportunities, and the registration examination. Please visit its website at: <https://www.cdrnet.org/>. Delaware requires that dietitians are licensed: <https://dpr.delaware.gov/boards/dietitians/newlicense/>. Licensure information for other states can be found on the CDR website: <https://www.cdrnet.org/>.

Delaware State University's Coordinated Program in Dietetics is accredited by the Accreditation Council for Education in Nutrition and Dietetics of the Academy of Nutrition and Dietetics: <http://www.eatrightpro.org/ACEND>.

Contact Information for ACEND

ACEND
120 South Riverside Plaza, Suite 2190
Chicago, IL 60606-6995
Phone: (800) 877-1600, extension 5400
E-Mail: ACEND@eatright.org

If you have any questions, please feel free to reach out to the program director Dr. Bettina Taylor at bctaylor@desu.edu, or call (302) 857-6865.

PROGRAM OBJECTIVES

Objectives for Goal 1

- At least 80% percent of program graduates take the CDR credentialing exam for dietitian nutritionists within 12 months of program completion.
- The program's one-year pass rate (graduates who pass the registration exam within one year of the first attempt) on the CDR credentialing exam for dietitian nutritionists is at least 80%.
- At least 80% of students complete program/degree requirements within 3 years (150% of the program length).
- Of graduates who seek employment, at least 80 % are employed in nutrition and dietetics or related fields within 12 months of graduation.

- At least 80% of employers who respond to the employer survey will rate graduates as well or very well prepared for entry-level dietetic practice.
- At least 80% of graduates who respond to the alumni survey will rate themselves as well or very well prepared for entry-level dietetic practice.

Objectives for Goal 2

- At least 80% of employers who respond to the employer survey will rate graduates as culturally competent in their food and nutrition services.
- At least 80% of graduates who respond to the alumni survey will rate themselves as culturally competent in their food and nutrition services.
- At least 50% of graduates who respond to the alumni survey will participate in a professional or community organization within one year of passing the credentialing exam.
- At least 50% of graduates who respond to the alumni survey will have identified and pursued a professional/personal mentor within one year of graduation.
- At least 80% of graduates who respond to the alumni survey serve as preceptors within two years of graduation if they have the opportunity.

PROGRAM MISSION

In accordance with the mission of Delaware State University and the College of Agriculture, Science & Technology, the Coordinated Program will prepare a diverse group of culturally competent leaders in dietetics to become entry-level registered dietitian nutritionists who provide quality food and nutrition services, promoting, improving, or restoring health and well-being of people in their state, nation, and/or around the globe.

Program Goals:

1. Coordinated Program in Dietetics graduates meet or exceed entry-level competency in nutrition and dietetics practice.
2. Coordinated Program in Dietetics graduates are culturally competent leaders in their profession and/or community.

STUDENT LEARNING OUTCOMES

- Demonstrate critical thinking and mastery of key concepts in the field of nutritional sciences.
- Evaluate research and apply evidence-based guidelines, systematic reviews, and scientific literature in nutrition sciences.
- Develop and justify products, programs, and services using appropriate research and technologies.
- Demonstrate scholarly writing and oral communication skills.
- Implement and document the Nutrition Care Process with diverse individuals and communities considering health, age, culture, religion, and sexuality.

ADMISSION DEADLINES AND DEGREE REQUIREMENTS

Application Deadlines:

Fall – April 15

Spring – November 15

All applicants are required to submit evidence of the following for consideration of unconditional admission:

Admission to Delaware State University's Graduate School does not guarantee admission to Coordinated Program in Dietetics, which requires a separate application. Students intending to select the 3 plus 2 BS/MS degree option should set up a conference with the program director as early as possible in their undergraduate studies to communicate interest

in the program. Application to the program for those students needs to occur during the fall of their junior year. Students who have already acquired a BS should apply directly to the graduate school for admission and then to the program.

OPTION 1: 3 PLUS 2 BS/MS DEGREE

Students in this option earn two degrees in five years, a Bachelor of Science degree in Food and Nutritional Sciences and a Master of Science degree in Nutritional Sciences. Delaware State University students enrolled in the undergraduate in Food and Nutritional Sciences who have a GPA > 3.0 can apply for admission into the Coordinated Program in Dietetics (CP) in their junior year, having the option to graduate in five years of which three years are undergraduate studies and the final two years graduate studies. To gain admission, students must complete their general education and science prerequisites and must meet the GPA requirements, providing evidence of completion of their academic study in communication, mathematics, and the sciences. Those students will graduate with a BS in Food and Nutrition Sciences after their fourth year at the university, and with a graduate degree in Nutritional Sciences and a concentration in the Coordinated Program in Dietetics at the end of the fifth year.

OPTION 2: GRADUATE DEGREE FOR STUDENTS WITH A BACHELOR'S DEGREE

Students who graduated with a bachelor's degree in any other field and have completed the program prerequisites can apply for admission to Delaware State University's Graduate School. Their graduate studies will last two years, including didactic and supervised practice required for the entry-level dietitian. Students who have not completed all prerequisite courses will be required to complete selected undergraduate coursework to fulfill these prior to the start of the MS program.

Requirements for Acceptance to the Coordinated Program in Dietetics

- An overall GPA of 3.0.
- A minimum grade of "B" in prerequisite nutrition and food science courses.
- A minimum average GPA of 2.5 in support science courses with no grade below a C.
- Evidence of leadership, professionalism, and motivation needed to complete the rigors of the Coordinated Program in Dietetics through a detailed resume.
- Two letters of recommendation.
- Official transcripts of previously attended colleges and universities.

Basis for Graduate Student Selection

- Academic achievement
- Written and oral expression of interest in the field of nutrition/dietetics [personal statement and interview]
- References
- Professional/Work Experience (see below)
- Demonstrated Leadership

WORK AND VOLUNTEER EXPERIENCE

Students who have gained volunteer experience in the food service, wellness, or healthcare industry tend to be better prepared for the supervised practice part of the Coordinated Program. Their experience will allow them to gain familiarity with the expectations in dietetic-related employment, develop the ability to interact and work with a wide variety of personnel, and integrate the gained experience into their didactic and supervised practice experiences. Previous work/volunteer experiences are highly valued and are one of the criteria for admission to the CP.

DEGREE REQUIREMENTS

The Coordinated Program in Dietetics is a full-time program that admits up to six students annually. Students complete 38 credits, consisting of 28 credits of didactic courses and 10 credits of supervised practice. Courses are taught using hybrid and in-class instruction, including experiential learning in simulation, nutrition assessment, and culinary medicine.

The supervised practice component of the program, requiring a minimum of 1,005 hours, allows students to apply the knowledge and skills acquired in their coursework and simulations and labs in a variety of clinical, community nutrition, and food service management settings to achieve entry-level competency of the registered dietitian nutritionists. Except for the enrichment rotation, the program coordinates student-supervised practice experiences. Our program demonstrates a strong commitment to individualized mentoring to ensure the success of our students.

Required Coursework:

The coursework for the Coordinated Program in Dietetics meets all the ACEND knowledge and competencies required to sit for the registration examination. Students who successfully complete the didactic content and a minimum of 1,000 hours of supervised practice will graduate with a master's degree in Nutritional Sciences and receive a verification statement needed to sign up for the registration exam with the Commission on Dietetic Registration.

Required courses include:

Didactic courses

- Human Nutrition Assessment
- Institutional Food Service Management
- Community Nutrition
- Medical Nutrition Therapy I
- Medical Nutrition Therapy II
- Nutrition Education and Counseling
- Culinary Medicine
- Nutritional Biochemistry
- Graduate Seminar

Supervised Practice

- Community Rotations I and II
- Food Service Management Rotation
- Clinical Rotation
- Enrichment Rotation

COURSE DESCRIPTIONS

Didactic Coursework

HMEC 507. INSTITUTIONAL FOOD SERVICE MANAGEMENT

This course will provide a firm foundation in the management of food service organizations which is a principal part of the role of a dietitian. The management of human resources, food, equipment, and facilities to provide quality products and services to customers is an integral component of dietetic education. As the “food and nutrition” expert, the dietitian is responsible for planning, organizing, leading, staffing, and controlling the food service or clinical nutrition management area. Thus, management and leadership are two essential skills required for effective dietetic practice.

HMEC 537. COMMUNITY NUTRITION

Review of major food and nutrition programs serving local-global citizens, their goals and target populations. Survey of major US food and nutrition program evaluations. Review of nutrition-related chronic health problems and targeted interventions by private voluntary organizations, non-profit organizations, public health, and other government entities. Exploration of the social, political, economic, and environmental factors that affect the demand and delivery of nutrition services and health prevention/promotion.

HMEC 547. HUMAN NUTRITION ASSESSMENT

Methods and techniques of nutritional screening and assessment in the pediatric and adult population. Discussions include, but are not limited to, evaluation of dietary intake, anthropometric measurements, biochemical tests, and clinical assessment using the Nutrition-Focused Physical Exam.

HMEC 557. NUTRITION EDUCATION AND COUNSELING

Study of instructional methods to nutrition education with the utilization of theories and principles of learning. Discussion of the interdisciplinary team approach to individual and group-centered nutrition counseling. Application of skills and techniques of nutrition counseling based on current theories of behavior change.

HMEC 567. MEDICAL NUTRITION THERAPY I

This course lays the groundwork for medical nutrition therapy, implementing the nutrition care process, enteral and parenteral nutrition, fluid, electrolyte and acid-base balance, cellular immunity, and selected disease conditions.

HMEC 577. MEDICAL NUTRITION THERAPY II

This course examines the pathophysiology, biochemical and behavioral abnormalities, medical management, nutrition care process, and medical nutrition therapy as they relate to the various diseases providing a theoretical and practical base for diet modification and nutritional therapy.

HMEC 587. CULINARY MEDICINE

This course integrates evidence-based practice in Medical Nutrition Therapy, culinary medicine, and cultural foods, emphasizing sensory evaluation, nutrient quality, nutrition security, food safety, and disease prevention and modification. The laboratory training will empower the student to assist clients in developing lifestyles that reshape the course of their diseases within their cultural context and financial status.

HMEC 607. NUTRITIONAL BIOCHEMISTRY

This course gives students a thorough scientific understanding of biochemistry and cell and molecular biology and applies this to the impact of nutrition on health. This includes a basic understanding of metabolism, physiology, and molecular genetics. Knowledge of biochemistry is vital for understanding the growth and development of the animals and plants that make up our food chain. Biochemistry and nutrition are inextricably linked from the structure of the molecules in food to the processes by which nutrients are metabolized and digested.

HMEC 661. GRADUATE SEMINAR

Develop critical reading skills, evaluate scientific literature, and identify problems that can plague a research study, and be familiar with the methodology used in your field of research. Gather data or information from current journals and related publications, write reports, and prepare PowerPoint and oral presentations of thesis prospectus or capstone project.

Supervised Practice

HMEC 650 AND 651. COMMUNITY ROTATIONS I AND II

Application of knowledge and competencies in supervised practice in community nutrition programs.

HMEC 652. FOOD SERVICE MANAGEMENT ROTATION

Application of knowledge and competencies in supervised practice in food service management settings.

HMEC 653. CLINICAL ROTATION

Application of knowledge and competencies in supervised practice in clinical settings.

HMEC 654. ENRICHMENT ROTATION

Supervised practice in approved, student-selected facility/program of dietetic practice.

**PROGRAM: MASTER OF SCIENCE IN NUTRITIONAL SCIENCES
COORDINATED PROGRAM IN DIETETICS**

GRADUATE YEAR 1: Fall Semester			GRADUATE YEAR 1: Spring Semester		
Course No.	Course Name	CR	Course No.	Course Name	CR
HMEC-507	Institutional Food Service	3	HMEC-577	Med Nutr Therapy II	3
HMEC-547	Hum Nutr Assessment	3	HMEC-587	Culinary Medicine with Lab	3
HMEC-567	Med Nutr Therapy I	3	HMEC-650	Community Rotation I	2
HMEC-537	Community Nutrition	3	HMEC-557	Nutr Ed & Counseling	3
	Total Credits	12		Total Credits	11
GRADUATE YEAR 1: Summer Semester			GRADUATE YEAR 1: Summer Semester		
			HMEC-651	Community Rotation II	1
GRADUATE YEAR 2: Fall Semester			GRADUATE YEAR 2: Spring Semester		
Course No.	Course Name	CR	Course No.	Course Name	CR
HMEC-607	Nutritional Biochemistry	3	XXXX-XXX	Elective Busin./Ed./Food Sci.	3
HMEC-653	Clinical Rotation	3	HMEC-652	Food Service Mgmt. Rotation	3
			HMEC-654	Enrichment Rotation	1
			HMEC-661	Graduate Seminar	1
	Total Credits	6		Total Credits	8

Suggested Graduate Electives

MBA 503	Financial Foundations	3
MBA 602	Marketing Management	3
MBA 616	Applied Strategic Management	3
HMEC 530	Food Chemistry	3
HMEC 600	Food Product Development	3
HMEC 615	Food Policy	3
EDUC 605	Contem Cur Designs & Impl Prac	3

DIVISION OF PHYSICS, ENGINEERING, MATHEMATICS AND COMPUTER SCIENCE

MASTER OF SCIENCE IN COMPUTER SCIENCE

PROGRAM OBJECTIVES

The educational objective for the Master of Science degree in Computer Science is to train students in breadth and depth in advanced computer science. To accomplish breadth across the discipline, students take a series of Core Courses in each of the three broad areas of computer science -- theory, systems, and computational intelligence and informatics. These courses survey key topics in each area at a level of rigor that builds beyond a typical undergraduate Computer Science curriculum. To accomplish depth within the discipline, students select and take a number of elective courses in their area of interest. Elective courses address advanced topics as well as current topics from the recent research literature in an area of interest. The elective courses also engage students in critical thinking and exercise their experimental skills with a semester project. The research component of the curriculum consists of a two-semester sequence of Graduate Seminar. During the first semester, in Graduate Seminar-Survey, students read selections from the research literature, make presentations on studied topics, and engage in discussion. Graduate Seminar-Survey gives students exposure to the research literature as they begin to develop their area of research interest. During the second semester, Graduate Seminar-Critical Thinking covers experimental design. In Graduate Seminar-Critical Thinking, students examine considerations and methods for posing research questions, designing experiments, analyzing data, and discussing results. In addition to dissecting selections from the research literature, students gain experience in applying learned techniques in a semester project. At the end of Graduate Seminar-Critical Thinking, students begin defining their thesis or project topic as well as select a Research Advisor. The last part of the research component is a master's thesis or project which is performed under the mentorship of the Thesis Advisor and committee.

PROGRAM GOALS

The Division of Physics, Engineering, Mathematics and Computer Science prepares students for career opportunities in research, technology development, professional studies, and further graduate studies in areas related to computer sciences and informatics. Graduates pursue careers in state and federal agencies, private industry, research, teaching, and entrepreneurial opportunities. The program provides rigorous training in computer science with a focus on inquiry, critical thinking, and experimentation.

STUDENT LEARNING OUTCOMES

- Students will develop a rigorous understanding and mastery of key advanced computer science topics across the three areas (theory, systems, computational intelligence and informatics) of the discipline;
- Students will demonstrate mastery of material through written work and reduction to practice;
- Students will develop and practice skills in critical analysis of the research literature, scientific inquiry, the design and execution of experiments, and interpretation and articulation of results;
- Students will demonstrate competency in scholarly activity through participation in research activity, development of an M.S. thesis or project, and written and oral presentation of the thesis or project to a committee of faculty experts in their field and the general scientific community.

ADMISSIONS DEADLINES AND DEGREE REQUIREMENTS

Application Deadline (Fall Admission Only): April 15

International Application Deadline (Fall Admission Only): March 15

All applicants are required to:

- Have earned a bachelor's degree in Computer Science or related technical field such as math, physics, psychology, or engineering. It is expected that incoming graduate students have had undergraduate preparation equivalent to the following courses in the Computer Science curriculum at Delaware State: Calculus I, Calculus II, Linear Algebra, Probability, Discrete Math, Data Structures and Algorithms I, Data Structures and Algorithms II, Operating Systems, Computer Networking, Principles of Programming Languages, Microprocessor Based Systems, Theory of Computing.

Students who are deficient in one or two areas may receive conditional admissions into the degree program. Accepted students who are deficient are expected to address deficiencies immediately by enrolling in and completing an appropriate undergraduate course with a minimum 3.0 average in the first year of their degree program.

- Have a minimum 3.0 GPA on a 4.0 scale.
- Have mathematical maturity (ability to read proofs) expected of a person beginning graduate studies as well as proficiency in high-level programming languages (such as C, C++, or Java).
- Provide official scores on the Graduate Record Examination (GRE). Testing must be within five years of application. Typical scores of applicants should be in the 65th percentile range. Due to COVID-19, GRE scores are not required for the 2023-2024 academic year.
- Complete an application for admission.
- Submit official transcript(s).
- Submit three letters of reference. Letters of reference must be submitted directly to the Computer and Information Sciences program by the references. The applicant must specify the name, address, and contact information of all references in his or her application.
- Include payment of the non-refundable application fee.
- International applicants must submit a transcript evaluation from World Education Services (WES)/Educational Credential Evaluators (ECE), or the Association of Collegiate Registrars and Admissions Officers (AACRAO).
- A personal statement and resume are accepted but not required.
- Non-English speaking international students applying for admissions must demonstrate a satisfactory level of proficiency in the English language by taking the TOEFL or IELTS. Typical scores for an applicant for TOEFL should be in the 575 range. A telephone interview may also be required.

FACULTY

The Division of Physics, Engineering, Mathematics and Computer Science is comprised of dedicated and well-prepared faculty with diverse educational backgrounds and areas of research specialization. Small class sizes for graduate courses ensure that students interact closely with faculty in the learning experience. All faculty have published in their respective fields, and maintain active research involvement. Scholarly involvement and continuous professional development in research keeps faculty current and able to offer exciting research opportunities to the students in a variety of areas. Faculty in the Department also engage in collaborative research with faculty at Delaware State University as well as outside of the University. The students have opportunity to select research projects from a variety of areas.

CURRICULUM

The M.S. program culminates in a thesis representing the proposal, investigation, and addressing of a substantial scientific question related to the student's area of interest and expertise. The process for the M.S. thesis requires the student to select a committee responsible for approval and guidance of the work. The student must conduct an oral defense of the thesis. Every thesis will consist of a writing component that will adhere to the Delaware State University thesis formatting guidelines. A thesis will consist of artifacts of the student's work (software, hardware, mathematical proofs, etc.). The thesis option is optimized to benefit graduate students training for a career of scientific inquiry. In order to accommodate nontraditional, full-time employed, part-time students whose career goals and objectives may not require a thesis, the M.S. program includes a project option. Students who utilize this option will propose, design, and implement a major computer science-related project, preferably related to their area of interest and expertise. The process for the project option is not different from the thesis option. A student who selects the project option must select a committee responsible for approving and guiding the project work. The student must also conduct an oral examination for the project. It is expected that the project will solve a substantial engineering problem in an area of computer science. the deliverables will vary depending on the project. Every project will have a writing component that will take one of a number of different forms (scholarly article, manual, etc.). A project will also include artifacts from the execution of the project work. This will also take one of a number of different forms (mathematical proof, software implementation, constructed system or prototype). The project option is optimized to benefit graduate students from various branches of industry.

Furthermore, to emphasize the research-oriented aspects of graduate studies, as well as to bolster critical thinking and analysis skills in our students, graduate students will complete two graduate seminars typically within the first two semesters. The seminars, in addition to boosting the aforementioned skills, will allow the students to make a selection of their specific area of interest to be pursued in the form of a dissertation or a project in the second year of study.

Graduate students will have the opportunity to enroll in elective courses in a few areas of computer science. The area of specialization for elective courses will change from semester-to-semester varying among the broad categories: 1) Theory, 2) Systems, and 3) Computational Intelligence and Informatics. Typically, students will take elective courses from one of those groups, which would provide an in-depth knowledge in a chosen sub- specialization.

Consequently, the program requires a total of 32 credit hours. This includes 18 credit hours of required Core Courses, 2 credit hours of graduate seminar, 6 credit hours of elective courses, and 6 credit hours of thesis or project research. The outline of the curriculum, assuming full-time attendance, is given in the following table. It is anticipated that, for part-time attendance (1 or 2 courses per semester), the curriculum would span a total of 3.5 to 5 years. It is important to note that the statute of limitations for the Master of Science degree is 5 years.

	Fall	Spring
Year 1	Algorithmics - (3 credits)	Theory of Computing - (3 credits)
	Operating systems - (3 credits)	Computer Networking and Communications (3 credits)
	Computational Intelligence and Informatics (3 credits)	Machine Learning - (3 credits)
	Graduate seminar – Survey - (1 credit)	Graduate seminar - Critical Analysis - (1 credit)
Year 2	Thesis research or project - (3 credits)	Thesis research or project - (3 credits)
	Elective 1 - (3 credits)	Elective 2 - (3 credits)

Table 1: M.S. Curriculum in Computer Science.

List of Core Courses:

CSCI-501 Algorithmics
CSCI-502 Theory of Computing
CSCI-510 Advanced Operating Systems
CSCI-520 Advanced Computer Networking and Communications
CSCI-530 Computational Intelligence and Informatics
CSCI-540 Machine Learning
CSCI-691 Graduate Seminar: Survey
CSCI-692 Graduate Seminar: Critical Analysis
CSCI-695 Thesis/Project

List of Approved Electives*Group: Theory*

CSCI-560 Numerical Analysis
CSCI-561 Computational Geometry
CSCI-562 Computer Simulation
CSCI-563 Scientific Computing
CSCI-564 Graph Theory
CSCI-565 Computational Learning Theory
CSCI-566 Advanced Statistics

Group: Systems

CSCI-511 Distributed Systems and Parallel Computing
CSCI-512 Computer and Network Security
CSCI-521 Mobile Networking and Computing
CSCI-531 Software Engineering
CSCI-541 Human-Computer Interaction
CSCI-542 Virtual Worlds
CSCI-543 Advanced Computer Graphics
CSCI-544 Game Programming
CSCI-550 Advanced Database Management Systems

Group: Computational Intelligence and Informatics

CSCI-551 Data Warehousing
CSCI-552 Data Mining and Visualization
CSCI-554 Pattern Recognition
CSCI-555 Artificial Neural Networks
CSCI-556 Emergent Algorithms
CSCI-557 Expert Systems
CSCI-558 Evolutionary Computation
CSCI-567 Image Processing
CSCI-570 Computer Vision
CSCI-571 Robotics
CSCI-580 Bioinformatics
CSCI-585 Medical Informatics
CSCI-590 Informatics for Homeland Security
CSCI-599 Topics in Computer Science
CSCI-698 Thesis/Project Sustaining

COURSE DESCRIPTIONS

CSCI-501. ALGORITHMICS

The main purpose of the course is to provide students with systematic overview of techniques for analysis and design of algorithms and to familiarize the students with notions related to computational complexity, intractability and approximation algorithms. Students will become more capable of designing efficient algorithms for specific tasks in computer sciences and their applications, including but not limited to computational geometry, image processing, video surveillance analysis, data mining, etc. Credit, three hours.

CSCI-502. THEORY OF COMPUTING

This course is a graduate level introduction to formal languages and the theoretical aspects of computing. It covers regular and context-free languages, as well as a hierarchy of formal languages and automata, finite and pushdown automata, the Turing machine, computability, decidability, and computational complexity. Credit, three hours.

CSCI-510. ADVANCED OPERATING SYSTEMS

This class will provide an advanced coverage of operating systems through examination of significant recent contributions in operating systems. This will be accomplished through 3 major components consisting of (1) examination of major operating system concepts through regular readings and writings on recent research literature, (2) reduction to practice through the identification of, and experimental design for, a topic of interest, (3) preparation of a research report and oral presentation. Credit, three hours.

CSCI-511. DISTRIBUTED SYSTEMS AND PARALLEL COMPUTING / CSCI-511

This course explores the collaboration of algorithm design, programming language structure, and computer architecture to achieve high performance. The nature of concurrent computations, idealized models of parallel systems, Interconnection networks, building-block parallel operations, optimality and efficiency, and mapping and scheduling of computations will be covered. Credit, three hours.

CSCI-512. COMPUTER AND NETWORK SECURITY / CSCI-512

This course will provide a graduate level introduction to aspects of computer and network security such as Operating System security issues, trusted computing base, access control, biometric security, network security issues, cryptographic systems, defense mechanisms, and use of secure communication and storage methodologies. Credit, three hours.

CSCI-520. ADVANCED COMPUTER NETWORKING AND COMMUNICATIONS

This course will provide advanced coverage of computer networking through examination of modern topics. This will be accomplished through 3 major components consisting of (1) examination of modern computer networking topics through regular readings and writings on recent research literature, (2) reduction to practice through the identification of, and experimental design for a topic of interest, (3) preparation of a research report and oral presentation. Credit, three hours.

CSCI-521. MOBILE NETWORKING AND COMPUTING / CSCI-521

This course will prepare the student to understand the issues in mobile computing and help in design and deployment of wireless infrastructure. Credit, three hours.

CSCI-530. COMPUTATIONAL INTELLIGENCE AND INFORMATICS

The purpose of this course is to provide students with a broad overview of computational intelligence and informatics through lecture, readings from textbooks, readings from the research literature, and programming projects. The topics covered in the course include a review of nature-inspired methods in computational intelligence, such as neurocomputing, evolutionary computing, fuzzy and rough logic, as well as hybrid systems. Various branches of informatics, such as bioinformatics, neuroinformatics, health/medical informatics, security informatics, business informatics, and legal informatics, with a special emphasis on applications of computational intelligence in those areas, are also reviewed. Credit, three hours.

CSCI-531. SOFTWARE ENGINEERING

This course provides a graduate introduction to the principles and paradigms of software engineering with a special focus on the pragmatic aspects, such as requirements analysis, cost estimation, design, team organization, quality control, configuration management, verification, testing and documentation. Students coming out of this course should be familiar with the core concepts and jargon in each area, have gone into a little more depth on some areas, and have experienced an attempt at applying software engineering methods to an actual project, as a member of a team. Credit, three hours.

CSCI-540. MACHINE LEARNING

This class will provide a graduate introductory survey of machine learning, through lecture, readings from textbooks, readings from the research literature, and programming projects. Topics include, what is machine learning, information theoretic methods, probabilistic methods, discrete and continuous distributions, max-likelihood estimation, regularization, the inference problem, feature spaces, considerations for model validation, generative models, discriminative models, model validation, considerations for building practical systems. Credit, three hours.

CSCI-541. HUMAN-COMPUTER INTERACTION

Human-computer interaction (HCI) is a discipline concerned with the design, evaluation and implementation of interactive computing systems for human use and with the study of major phenomena surrounding them. Interaction between users and computers occurs at the user interface (or simply interface), which includes both software and hardware. Students will learn material at the intersection of computer science, behavioral sciences, design and several other fields of study. The course will focus on important facets of design consideration for systems that offer a satisfying user experience. Topics will include human-computer interaction, HCI paradigms, requirements analysis, design, and validation of HCI systems. Credit, three hours.

CSCI-542. VIRTUAL WORLDS

Virtual worlds are interactive, simulated environments created by humans online. They have become an important and rapidly changing new mode of social and professional interaction. Virtual worlds have many practical applications such as tele-collaboration, computer-aided design and manufacturing, virtual tours, scientific modeling and visualization, and entertainment. Virtual worlds provide a very attractive area of research and development for computer scientists due to the plethora of computational issues related to an adequate design and implementation of such systems. Virtual worlds are also extensively studied by scientists in other disciplines, due to their significant impact on the relationship between technology, society, and economy, thus creating potential inter-disciplinary research opportunities. The course includes an overview of virtual worlds, with their history, technology, methodologies, and applications, as well as a discussion of the socio-economic impact of virtual worlds in everyday life. Credit, three hours.

CSCI-543. ADVANCED COMPUTER GRAPHICS

In this course we will survey classic papers and current research in computer graphics. Students will become acquainted with advanced topics in computer graphics; these include graphics pipelines, shading, texturing, illumination, anti-aliasing, perception, image accuracy, image-based rendering, non-photorealistic rendering, procedural modeling, simulation, texture synthesis, interaction, visualization, and virtual reality. Course activities include programming assignments, oral presentations and a term project. Credit, three hours.

CSCI-544. GAME PROGRAMMING

The Video Game industry is a fast growing, multi-billion-dollar industry. Video gaming is now one of the most popular forms of entertainment and a pervasive component of global culture. Academics have begun to recognize the ubiquity, cultural importance and growth of video gaming; as enriching tools for research and studies. In this course, students will gain experience in the engineering aspects, computer graphics methods and artificial intelligence techniques concerning the development of an interactive computer game. This provides students with an opportunity to bring together the theory of algorithms and data structures taught in early classes in an engaging and meaningful application. Credit, three hours.

CSCI-550. ADVANCED DATABASE MANAGEMENT SYSTEMS

Database management systems are important field of computer science with applications in business, science, homeland security, web design, etc. Proper use of the database technology can significantly improve productivity and lead to better use of resources. Databases are an irreplaceable tool of contemporary computer scientist who wants to be involved in cutting-edge research, development and implementations in one of aforementioned multidisciplinary fields. Main purpose of the course is to provide students with rigorous theoretical basis of databases and solid experience in applications so that they can actively join the work force in development and research in database management systems. Credit, three hours.

CSCI-551. DATA WAREHOUSING

Data warehousing is a discipline concerned with efficient storing and pre-processing (*i.e.*, cleaning, transforming, and cataloging) of corporate data to support managers and other business professionals in data mining, online analytical processing, market research, and decision making. As the volumes of data stored by companies continue increasing dramatically, there is a perpetual need for skilled professionals capable of planning, implementing, and maintaining a data warehouse. This course provides students with the technical skills required to plan, implement, and maintain a data warehouse. Topics include data

modeling for warehouses, data warehousing infrastructure and tool selection, data exploration, data synthesis and reduction, Online Analytical Processing (OLAP), organizational metadata, and data warehouse administration. Credit, three hours.

CSCI-552. DATA MINING AND VISUALIZATION

Data mining is active research area of computer science with substantial applications in sciences and commerce. Students in computer sciences need this course to become familiar with techniques that can be subsequently used for identifying interesting phenomena in observed data and/or for design and implementation of stand-alone real-time applications including applications in military and homeland security. This course provides the study of techniques for analysis and visualization of massive amounts of data. Includes hands-on experience in developing and using data mining software. Credit, three hours.

CSCI-554. PATTERN RECOGNITION

Pattern recognition is concerned with the design, development, and realization of algorithms that arrange data objects (images, records, sensor data) into groups. Students in this course will learn a number of algorithms and considerations for the design and development of pattern recognition systems. Topics include pattern recognition paradigms, supervised learning, feature extraction, feature selection, unsupervised learning, semi-supervised learning, feature spaces and transformations, kernels, support-vector machines, system design, model validation, and multivariate analysis. Students will gain experience from readings from texts, research literature, and a major semester project. Credit, three hours.

CSCI-555. ARTIFICIAL NEURAL NETWORKS

Artificial neural networks are important and emerging field of technology with applications in numerous fields such as classification, statistics, data processing, system identification and control, game-playing and decision making (backgammon, chess, racing), pattern recognition (radar systems, face identification, object recognition and more), sequence recognition (gesture, speech, handwritten text recognition), medical diagnosis, financial applications, etc. This course provides an overview of analysis and design principles for artificial neural networks. Topics include unsupervised and supervised learning, recurrent networks, as well as applications in various fields. Credit, three hours.

CSCI-556. EMERGENT ALGORITHMS

An emergent behavior (process) or emergent property can appear when a number of simple entities operate in an environment, forming more complex behaviors as a collective. In other words, high-level behavior resulting from low-level interaction of simpler building blocks. Emergent phenomenon can be seen in many places, such as snowflakes, sand dunes, flocking of birds, ant colony, traffic patterns, stock market, and evolution. Many of these phenomena can be studied with the model consisting of many autonomous agents, each with simple local rules (algorithm) controlling agent behavior relative to closest neighboring agents. An emergent algorithm is an algorithm that has the following characteristics: 1) it achieves predictable global effects, 2) it does not require global visibility, 3) it does not assume any kind of centralized control, and 4) it is self-stabilizing. Such algorithms typically are stochastic, involve parallel processing and iterative progress. The course includes a discussion of examples of emergence and self-organization in nature and human society, as well as an examination and implementation of selected emergent algorithms and models. Credit, three hours.

CSCI-557. EXPERT SYSTEMS

Expert systems have been applied to virtually every field of knowledge (e.g., chemistry, electronics, medicine, engineering, geology, computers, military) to perform various task including diagnostics, instruction, interpretation, monitoring, planning, prognosis, treatment and control. This course is designed to provide necessary theoretical foundation and hands-on experience for graduate students so that they can actively join the work force in further development and launching of the expert systems for commercial, scientific and military applications. Credit, three hours.

CSCI-558. EVOLUTIONARY COMPUTATION

Main purpose of the course is to provide students with systematic overview of techniques for analysis and design of algorithms of evolutionary computation (genetic algorithms, evolution strategies, evolutionary programming, and genetic programming) and to familiarize the students with notions related to their foundations and applications. This way, the students will become more capable of designing efficient genetic algorithm solutions for specific tasks in computer sciences and their applications, including but not data mining, engineering and optimization techniques.

CSCI-562. COMPUTER SIMULATION

With the advent of powerful computers, scientists and engineers have been able to replace real world situations with various models whose dynamics can be evaluated on computers and consequently simulate these real world situations. Examples are numerous, from aeronautical engineering to weather forecasting. Availability of modern computational tools makes feasible

simulation that was just a decade ago impossible. As a result, use of computer simulation is rapidly growing and future researchers and engineers have to be familiar with these methods. This course is designed to expose students in Computer Science and natural sciences to computer-based simulation and its applications to sciences, engineering, and management. Students in this course will be trained to design useful models of real world situations, and to implement them on computers. Credit, three hours.

CSCI-563. SCIENTIFIC COMPUTING

This course is designed to expose students in Computer Science and natural sciences to various aspects of scientific computing. Such topics have become of importance in today's highly technical scientific research environments and in contemporary engineering. In addition to a need to understand fundamental concepts of computing, a researcher or an engineer is hard pressed to acquire the highest possible proficiency in using available computational resources, which in addition to powerful computers include software packages capable of automatizing not only numerical work but also symbolic algebraic manipulations. This course is supposed to address these practical needs. Credit, three hours.

CSCI-564. GRAPH THEORY

Graphs are of particular importance in Computer Science. Many important data structures in Computer Science are described naturally via graphs (trees, for instance). Graphs are essential for describing networks, and on a more abstract level, for describing automata and some features of formal languages. As a consequence of this pervasiveness, numerous algorithms have been developed on graphs, and it is safe to say that a computer science student cannot study algorithms in depth without at least some understanding of Graph Theory. This course is a graduate level introduction to Graph Theory, along with some of its most interesting algorithms. In addition to discussing the theory, it covers miscellaneous applications from operations research, science and several engineering fields. Credit, three hours.

CSCI-565. COMPUTATIONAL LEARNING THEORY

This course is a graduate level introduction to advanced concepts of computational learning theory. It covers study of PAC and weak learners, boosting, concepts of algorithms complexity for learning discrete and continuous functions from examples, as well as study of algorithms including perceptron, winnow, support vector machines and on-line learning algorithms.

Credit, three hours.

CSCI-570. COMPUTER VISION

Computer vision is the study of systems that derive information from visual data (pictures, video, sensors). This course is a graduate introduction to computer visual algorithms, models, and techniques. Topics include image formation, projective geometry, color spaces and representations, kernels and visual features, segmentation, motion estimation, video feature, considerations for practical systems, models, and case studies. Credit, three hours.

CSCI-571. ROBOTICS

Robotics is unique among computer science sub-disciplines in that it draws from all three areas of computer science (Systems, Theory, Computational Intelligence/Informatics). Robotics has been identified as one of the next big growth industries in the United States. In order to prepare our students to become innovators and leaders in this field, they will need to have a rigorous grounding in the underlying concepts, tools, and techniques across robotics. This class will expose graduate students/advanced senior undergraduate students to fundamental issues related to the research and applications of robotic systems. This course will cover both manipulators and mobile robots. Students will learn the mathematical tools for modeling, analysis, and control of a robotic system. Credit, three hours.

CSCI-580. BIOINFORMATICS

The emerging field of bioinformatics has been consistently growing in importance over the past few decades. As an inherently interdisciplinary field situated at the intersection of biology, information technology, computer science, mathematics, and statistics, bioinformatics provides a vast range of career opportunities. In the face of ever-growing amounts of biological and biomedical data, there is a tremendous need for skilled computer scientists capable of fostering the advancement of computational techniques to solve various problems arising from the management and analysis of those data. This course provides an introduction of the most important and basic concepts, methods, and tools used in bioinformatics such as bioinformatics databases, sequence and structure alignment, protein structure prediction, protein folding, protein-protein interaction. Credit, three hours.

CSCI-585. MEDICAL INFORMATICS / CSCI-585

Medical Informatics (or Health Informatics) is an emerging, inter-disciplinary field concerned with the collection, storage, retrieval, communication, and optimal use of health-related data, information, and knowledge. It utilizes methods from various spheres of science and technology, such as computer science, information technology, bioinformatics, biomedicine, and social sciences. In the climate of a strong push towards a health-care reform and digitization of medical records in the United States, there is an ever-growing need for skilled computer scientists experienced in medical information systems design and engineering, as well as medical decision support methods. This course provides an interdisciplinary introduction to the technological advances in the field of medical informatics and their applications at the intersection of computer science and biomedical research.

Credit, three hours.

CSCI-590. INFORMATICS FOR HOMELAND SECURITY

In the post-9/11 world, Homeland Security is one of the top priorities of the U.S. government. Within the scope of the War on Terror, various government agencies place an increasing emphasis on the efficient use of informatics for the purpose of prevention or management of threats of terrorist attacks. Therefore, there is an ever-growing need for professionals skilled in utilizing informatics methodologies for the purpose of intelligent data mining and analysis (e.g., threat detection), audio/video surveillance, or security-centered information system design and development.

The course provides an introduction to issues and policies related to Homeland Security (HS) in the United States, as well as an overview of applications of informatics to HS-related problems such as detection of threats of terrorist attacks, audio/video surveillance, and design of reliable security-centered information systems. Credit, three hours.

CSCI-691. GRADUATE SEMINAR: SURVEY / CSCI-691

In this seminar we survey across a number of research areas in Computer Science in order to give student knowledge and breadth in understanding the discipline. This will help students in selecting a research topic for their graduate degree program. Credit, one hour.

CSCI-692. GRADUATE SEMINAR: CRITICAL ANALYSIS

In this seminar we cover research problem formulation, experimental design, and empirical methods in Computer Science in order to train students in the scientific method as it pertains to computer science. At the end of this seminar, students will have begun identifying and formulating a research topic for their M.S. degree program. This seminar will train students in research problem formulation, experimental design, and empirical methods in Computer Science. Credit, one hour.

CSCI-695. THESIS/PROJECT SUSTAINING / CSCI-695

This course is used to maintain registration until graduation upon completion of all courses and research. Credit, three hours.



Year I Semester I			Year I Semester II		
Course	Course Name	Cr	Course	Course Name	Cr
CSCI-501	Algorithmics*	3	CSCI-502	Theory of Computing*	3
CSCI-510	Advanced Operating Systems*	3	CSCI-520	Advanced Computer Networking and Communications*	3
CSCI-530	Computational Intelligence and Informatics*	3	CSCI-540	Machine Learning*	3
CSCI-691	Graduate Seminary — Survey*	1	CSCI-692	Graduate Seminar — Critical Analysis*	1
	Total Credits	10		Total Credits	10

Year II Semester III			Year II Semester IV		
Course	Course Name	Cr	Course	Course Name	Cr
CSCI-695	Thesis or Research Project*	3	CSCI-695	Thesis or Research Project*	3
CSCI-5XX	Elective 1*	3	CSCI-5XX	Elective 2*	3
	Total Credits	6		Total Credits	6
			Total Credits: 32		

*Denotes a Core Requirement

+Denotes an Elective

Total Core Credits = 26

Total Elective Credits = 6

Candidacy Requirement: Coursework, select committee, proposal and oral proposal defense

Capstone or Culminating Experience: Thesis or project

List of Approved Electives

Group: Theory

CSCI-560 Numerical Analysis
CSCI-561 Computational Geometry
CSCI-562 Computer Simulation
CSCI-563 Scientific Computing
CSCI-564 Graph Theory
CSCI-565 Computational Learning Theory
CSCI-566 Advanced Statistics

Group: Systems

CSCI-511 Distributed Systems and Parallel Computing
CSCI-512 Computer and Network Security
CSCI-521 Mobile Networking and Computing
CSCI-531 Software Engineering
CSCI-541 Human-Computer Interaction
CSCI-542 Virtual Worlds
CSCI-543 Advanced Computer Graphics
CSCI-544 Game Programming
CSCI-550 Advanced Database Management Systems

Group: Computational Intelligence and Informatics

CSCI-551 Data Warehousing
CSCI-552 Data Mining and Visualization
CSCI-554 Pattern Recognition
CSCI-555 Artificial Neural Networks
CSCI-556 Emergent Algorithms
CSCI-557 Expert Systems
CSCI-558 Evolutionary Computation
CSCI-567 Image Processing
CSCI-570 Computer Vision
CSCI-571 Robotics
CSCI-580 Bioinformatics
CSCI-585 Medical Informatics
CSCI-590 Informatics for Homeland Security
CSCI-599 Topics in Computer Science

MASTER OF SCIENCE IN MATHEMATICS

Concentration: Applied Mathematics

PROGRAM OBJECTIVES AND GOALS

The master's programs in the 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.

STUDENT LEARNING OUTCOMES

- Students will apply mathematics in novel situations that may require the development and acquisition of new skills;
- Students will demonstrate the ability to read, comprehend and communicate abstract mathematical concepts and procedures;
- Students will be able to read, comprehend, and communicate (written/verbal) abstract proofs;
- Students will make conjectures and prove or disprove the conjecture by providing a counter example or a well-organized and logical proof;
- Students will be able to interpret real-life industrial problems, convert them into mathematical language, and use advanced mathematical techniques to solve them;
- Students will be able to assess and synthesize mathematics research literature to develop a research plan and incorporate into their research.

ADMISSION DEADLINES AND DEGREE REQUIREMENTS

Application Deadline:

Fall – April 15

International Application Deadline:

Fall – March 15

Required of all applicants:

- Earned baccalaureate degree.
- Must possess the ability to carry out graduate work of high quality.
- 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.
- Applicants who have not taken the required test(s) can be admitted provisionally, but must satisfy this requirement during the first semester of graduate study in order to continue.

- Official scores on the Graduate Record Examination (GRE) are required. Testing must be within five years of application. Due to COVID-19, GRE scores are not required for the 2023-2024 academic year.
- Complete an application for admission.
- Submit official transcript(s).
- Submit two letters of recommendation from professionals in the area of interest.
- Personal statement.
- International applicants must meet all requirements.

DEGREE REQUIREMENTS

Each student must take 18 credit hours of required courses, and complete an additional 15 hours either in the Thesis Option or the Non-Thesis Option. The students who select Thesis Option must defend their thesis before the Department Graduate Committee. A student must complete a 6 hour research thesis.

The student who selects either one of the following non-thesis options must pass a written examination within two attempts. The written examination is administered in February. A student must pass the written exam by the beginning of his or her 6th semester of study. A second and final attempt is permitted in the following August. In the examination a student must choose two topics from Algebra, Analysis, and Applied Mathematics. The exam is based on both MTSC-561 for Analysis, MTSC-511 for Algebra, and (or) MTSC-651 and MTSC-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.

RESEARCH AREAS

- BIOMATHEMATICS
- COMPUTATIONAL ELECTRODYNAMICS
- COMPUTATIONAL FLUID DYNAMICS
- COMPUTATIONAL GEOMETRY
- GROUND PENETRATING RADAR
- NUMERICAL ANALYSIS
- IMAGE AND SIGNAL PROCESSING
- THEORY OF SOLITONS

MASTER OF SCIENCE IN APPLIED MATHEMATICS THESIS AND NON-THESIS OPTION:

COURSE NO.	CREDITS	COURSE NAME
MTSC-500	3	Foundations of Mathematics*
MTSC-511	3	Introduction to Abstract Algebra*
MTSC-561	3	Real Analysis I*
MTSC-562	3	Real Analysis II*
MTSC-571	3	Complex Analysis*
MTSC-541	3	Advanced Probability Theory°
MTSC-521	3	General Topology°
MTSC-xxx	6	Applied Mathematics Electives
xx-xxx	3	Pure or Applied Mathematics Electives (or other graduate level courses with Advisor approval)
THESIS OPTION		
MTSC-699	6	Thesis or Directed Project 6
NON-THESIS OPTION		
xx-xxx	6	Pure or Applied Mathematics Electives (or other level courses with Graduate Advisor approval)
TOTAL CREDIT HOURS: 33		
°Select one of these courses. *Each of these courses is required.		

COURSE DESCRIPTIONS

MATHEMATICAL SCIENCES (MTSC) (25)

MTSC-500. FOUNDATIONS OF MATHEMATICS

This course is specifically designed to bridge undergraduate and graduate study in mathematics. It is an introduction to abstract ideas, proofs, set theory, relations, and number systems and their connections. Prerequisites: MTSC-252. Credit, three hours.

MTSC-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. Emphasis will be on epistemological, pedagogical, social, psychological, effective teaching, classroom management, and cultural concerns as well as the teaching profession. This course is also a study of methods and materials used in teaching mathematics and will expose students to current educational theory and reform organizations. Through research, practice, and presentations, students will take an active role in the instruction and development of materials for this course.

Prerequisites: MTSC-252, MTSC-313, MTSC-341, MTSC-241 and MTSC-203. Credit, three hours.

MTSC-504. MODERN GEOMETRY

The course covers Menelaus and Ceva's Theorem, Cross Ratio, Elementary Transformations, Euclidean Constructions, and Non-Euclidean Geometry. The course illustrates to the students the strength of deductive reasoning in proofs involving Euclidean axioms and transformation theory. The student will also be familiar with Non-Euclidean Geometry.

Prerequisites: MTSC-303 with minimum grade of "C". Credit, three hours.

MTSC-505. MATHEMATICAL LOGIC

The course is designed to examine the logical foundations of mathematics. Formal systems are shown to model real life relationships, and these formal systems are studied and analyzed using mathematical methods and rigor. The results of the study show both the inherent limitation of reasoning and at the same time the richness of what can be expressed and proven.

Prerequisites: MTSC-251, MTSC-313. Credit, three hours.

MTSC-511. INTRODUCTION TO ABSTRACT ALGEBRA

The 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. Credit, three hours.

MTSC-521. GENERAL TOPOLOGY

The purpose of the course is to give the students the basic concepts of topology and lead them to algebraic topology.

The course also presents as a related discipline to the proper understanding of various branches of analysis and geometry.

The students should become familiar with topological spaces, point-set topology and homotopy theory. Prerequisites: MTSC-451, MTSC-452. Credit, three hours.

MTSC-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. The course is flexible and fundamental enough to be taken by Math and Math Ed Majors. Credit, three hours.

MTSC-541. ADVANCED PROBABILITY THEORY

The course covers the mathematical structure of probability theory with applications of the theory from a wide variety of experimental situations.

Prerequisites: MTSC-253 with a minimum grade of "C". Credit, three hours

MTSC-551. ORDINARY DIFFERENTIAL EQUATIONS

The purpose of the 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.

Prerequisites: MTSC-351. Credit, three hours.

MTSC-561. REAL ANALYSIS I

The purpose of the course is to cover the basic material that every graduate should know in the classical theory of functions of a real variable and in measure and integration theory. 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 itself, measure and integration, point-set topology, and the theory of normed linear space.

Prerequisites: MTSC-402 with a minimum grade of "C", or its equivalent. Credit, three hours.

MTSC-562. REAL ANALYSIS II

This course is the extension of real analysis I. The purpose of the course is to further provide students the background of modern mathematics. The course is to cover the theories of (improper) Riemann integrals and a brief introduction of Lebesgue integrals, the theories of pointwise and uniform convergence of sequences of functions, and the theories of infinite series of functions.

Prerequisites: MTSC-561 with minimum grade of "C", or its equivalent. Credit, three hours.

MTSC-571. COMPLEX ANALYSIS

This is a first-semester course at the graduate level, in the field of Functions of one Complex Variable. The rigorous approach adopted herein will set a firm foundation for leading the students to the next level of Complex Analysis. To prepare the student for further studies in the field of Complex Analysis. To provide the students with sufficient background for various applications of Complex Analysis physical and engineering disciplines. Prerequisites: MTSC-471. Credit, three hours.

MTSC-621. FUNCTIONAL ANALYSIS

The course gives students an introduction to Metric Spaces, Hilbert Spaces, and Banach Spaces with emphasis on Hilbert Spaces.

Prerequisites: MTSC-561. Credit, three hours.

MTSC-631. OPERATIONS RESEARCH

The course is designed to expose students in computer science to linear, nonlinear, and integer programming, simplex method, duality theorem, transport and other application problems, and different optimization methods and techniques.

The topics to be covered include: Optimization problems; the subject of Operations Research; Linear programming; Simplex method and duality theorem; Integer programming; Nonlinear programming; Optimization techniques; Applications; and MATLAB Optimization Toolbox. Credit, three hours.

MTSC-641. COMBINATORICS

The student will be introduced to the theory involved in combinatorial reasoning. The two combinatorial theories of enumeration and graph theory will be developed. Students will apply combinatorial reasoning to problems in the analysis of computer systems, in discrete operations research and in finite probability. Credit, three hours.

MTSC-643. STATISTICS

The course provides students with the fundamental theory of statistics. The students will be familiar with descriptive and inferential statistical methods, theory, and applications. Prerequisites: MTSC-541 with minimum grade of "C". Credit, three hours.

MTSC-651. PARTIAL DIFFERENTIAL EQUATIONS

The course is designed to acquaint students to Classifications of Partial Differential Equations, Methods of Solution for the Wave Equation, Laplace's Equation, and the Heat Equation. Prerequisites: A second course in Ordinary Differential Equations. Credit, three hours.

MTSC-661. NUMERICAL ANALYSIS

The student should become familiar with advanced techniques for solving numerically large problems in Linear Algebra. In particular, students should become familiar with the effects of ill conditioning, and of ways in which special information about matrices, such as sparsity can be used. An important part of all of this is the consideration of error from various sources and ways of controlling its accumulation. Prerequisites: MTSC-313. Credit, three hours.

MTSC-699. THESIS OR DIRECTED PROJECT 6

A student may register three (3) or six (6) hours thesis with the approval of his/her thesis advisor. Credit, three to six hours.

**PROGRAM: MS PROGRAM IN APPLIED MATH
(NON-THESIS OPTION)**

First Year Fall Semester			First Year Spring Semester		
Course	Course Name	Cr	Course	Course Name	Cr
MTSC 500	Foundations of Math *	3	MTSC 571	Complex Analysis *	3
MTSC 511	Intro to Abstract Algebra *	3	MTSC 541	Advanced Probability Theory *	3
MTSC 561	Real Analysis I *	3	MTSC 562	Real Analysis II *	3
	Total Credits	9		Total Credits	9

Second Year Fall Semester			Second Year Spring Semester		
Course	Course Name	Cr	Course	Course Name	Cr
MTSC-xxx	Mathematics Elective +	3	MTSC-xxx	Mathematics Elective +	3
MTSC-xxx	Mathematics Elective +	3	MTSC-xxx	Mathematics Elective +	3
MTSC-xxx	Mathematics Elective +	3			
	Total Credits	9		Total Credits	6

			Total Credits: 33
--	--	--	--------------------------

*Denotes a Core Requirement

+Denotes an Elective

Total Core Credits = 18

Total Elective Credits = 15

Candidacy Requirements: Complete 9 hours with minimum GPA 3.0.

Capstone or Culminating Experience:

Pass a written examination within two attempts. In the examination a student must choose two topics from Algebra, Analysis, and Applied Mathematics.

Submission of Outcomes report to School of Graduate, Adult and Extended Studies prior to graduation

**PROGRAM: MS PROGRAM IN APPLIED
MATH (THESIS OPTION)**

First Year Fall Semester			First Year Spring Semester		
Course	Course Name	Cr	Course	Course Name	Cr
MTSC 500	Foundations of Math *	3	MTSC 571	Complex Analysis *	3
MTSC 511	Intro to Abstract Algebra *	3	MTSC 541	Advanced Probability Theory *	3
MTSC 561	Real Analysis I *	3	MTSC 562	Real Analysis II *	3
	Total Credits	9		Total Credits	9

Second Year Fall Semester			Second Year Spring Semester		
Course	Course Name	Cr	Course	Course Name	Cr
MTSC-xxx	Mathematics Elective +	3	MTSC-xxx	Mathematics Elective +	3
MTSC-xxx	Mathematics Elective +	3	MTSC-699	Thesis	3
MTSC-699	Thesis	3			
	Total Credits	9		Total Credits	6

	Total Credits: 33
--	--------------------------

*Denotes a Core Requirement

+Denotes an Elective

Total Core Credits = 18

Total Elective Credits = 9

Candidacy Requirement: Complete 9 hours with minimum GPA 3.0 along with submission of research plan.

Submission of plan along with Candidacy Application to School of Graduate, Adult and Extended Studies.

Capstone or Culminating Experience: Successful completion of 6 credit hours of MTSC-699 thesis; to write and successfully defend the thesis.

MASTER OF SCIENCE MATHEMATICS

Concentration: Pure Mathematics

PROGRAM OBJECTIVES AND GOALS

The master's 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 required courses, and complete an additional 18 hours either in the Thesis Option or the Non-Thesis Option.

STUDENT LEARNING OUTCOMES

- Students will apply mathematics in novel situations that may require the development and acquisition of new skills;
- Students will demonstrate the ability to read, comprehend and communicate abstract mathematical concepts and procedures;
- Students will be able to read, comprehend, and communicate (written/verbal) abstract proofs;
- Students will make conjectures and prove or disprove the conjecture by providing a counter example or a well-organized and logical proof;
- Students will be able to interpret real-life industrial problems, convert them into mathematical language, and use advanced mathematical techniques to solve them;
- Students will be able to assess and synthesize mathematics research literature to develop a research plan and incorporate into their research.

ADMISSION DEADLINES AND DEGREE REQUIREMENTS

Application Deadline:

Fall – April 15

International Application Deadline:

Fall – March 15

Required of all applicants:

- Earned baccalaureate degree.
- Must possess the ability to carry out graduate work of high quality.
- 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.

- Applicants who have not taken the required test(s) can be admitted provisionally, but must satisfy this requirement during the first semester of graduate study in order to continue.
- Official scores on the Graduate Record Examination (GRE) are required. Testing must be within five years of application. Due to COVID-19, GRE scores are not required for the 2023-2024 academic year.
- Complete an application for admission.
- Submit official transcript(s).
- Submit two letters of recommendation from professionals in the area of interest.
- Personal statement.
- International applicants must meet all requirements.

DEGREE REQUIREMENTS

Each student must take 18 credit hours of required courses, and complete an additional 15 hours either in the Thesis Option or the Non-Thesis Option. The students who select thesis option must defend their thesis before the Department Graduate Committee. A student must complete a 6 hour research thesis.

The student who selects either one of the following non-thesis options must pass a written examination within two attempts. The written examination is administered in February. A student must pass the written exam by the beginning of his or her 6th semester of study. A second and final attempt is permitted in the following August. In the examination a student must choose two topics from *Algebra*, *Analysis*, and *Applied Mathematics*. The exam is based on both MTSC-561 for Analysis, MTSC-511 for Algebra, and (or) MTSC-651 and MTSC-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.

RESEARCH AREAS

- BIOMATHEMATICS
- COMPUTATIONAL ELECTRODYNAMICS
- COMPUTATIONAL FLUID DYNAMICS
- COMPUTATIONAL GEOMETRY
- GROUND PENETRATING RADAR
- NUMERICAL ANALYSIS
- IMAGE AND SIGNAL PROCESSING
- THEORY OF SOLITONS

MASTER OF SCIENCE IN PURE MATHEMATICS THESIS AND NON-THESIS OPTION

COURSE NO.	CREDITS	COURSE TITLE
MTSC-500	3	Foundations of Mathematics*
MTSC-511	3	Introduction to Abstract Algebra*
MTSC-561	3	Real Analysis I*
MTSC-562	3	Real Analysis II*
MTSC-571	3	Complex Analysis*
MTSC-541	3	Advanced Probability Theory°
MTSC-521	3	General Topology°
xx-xxx	3	Pure or Applied Mathematics Electives (or other level graduate courses with Advisor approval)
Electives (Select 6 credit hours)		
MTSC-525	3	Logic
MTSC-531	3	Number Theory
MTSC-621	3	Introduction to Functional Analysis
MTSC-504	3	Modern Geometry
MTSC-611	3	Topics in Pure Mathematics
THESIS OPTION		
MTSC-699	6	Thesis or Directed Project 6
NON-THESIS OPTION		
xx-xxx	6	Pure or Applied Mathematics Electives (or other graduate courses with Advisor approval)
TOTAL CREDIT HOURS: 33		
°Select one of these courses. *Each of these courses is required.		

COURSE DESCRIPTIONS

MATHEMATICAL SCIENCES (MTSC) (25)

MTSC-500. FOUNDATIONS OF MATHEMATICS

This course is specifically designed to bridge undergraduate and graduate study in mathematics. It is an introduction to abstract ideas, proofs, set theory, relations, and number systems and their connections. Prerequisites: MTSC-252. Credit, three hours.

MTSC-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. Emphasis will be on epistemological, pedagogical, social, psychological, effective teaching, classroom management, and cultural concerns as well as the teaching profession. This course is also a study of methods and materials used in teaching mathematics and will expose students to current educational theory and reform organizations. Through research, practice, and presentations, students will take an active role in the instruction and development of materials for this course.

Prerequisites: MTSC-252, MTSC-313, MTSC-341, MTSC-241 and MTSC-203. Credit, three hours.

MTSC-504. MODERN GEOMETRY

The course covers Menelaus and Ceva's Theorem, Cross Ratio, Elementary Transformations, Euclidean Constructions, and Non-Euclidean Geometry. The course illustrates to the students the strength of deductive reasoning in proofs involving Euclidean axioms and transformation theory. The student will also be familiar with Non-Euclidean Geometry.

Prerequisites: MTSC-303 with minimum grade of "C". Credit, three hours.

MTSC-505. MATHEMATICAL LOGIC

The course is designed to examine the logical foundations of mathematics. Formal systems are shown to model real life relationships, and these formal systems are studied and analyzed using mathematical methods and rigor. The results of the study show both the inherent limitation of reasoning and at the same time the richness of what can be expressed and proven.

Prerequisites: MTSC-251, MTSC-313. Credit, three hours.

MTSC-511. INTRODUCTION TO ABSTRACT ALGEBRA

The 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. Credit, three hours.

MTSC-521. GENERAL TOPOLOGY

The purpose of the course is to give the students the basic concepts of topology and lead them to algebraic topology.

The course also presents as a related discipline to the proper understanding of various branches of analysis and geometry.

The students should become familiar with topological spaces, point-set topology and homotopy theory. Prerequisites: MTSC-451, MTSC-452. Credit, three hours.

MTSC-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. The course is flexible and fundamental enough to be taken by Math and Math Ed Majors. Credit, three hours.

MTSC-541. ADVANCED PROBABILITY THEORY

The course covers the mathematical structure of probability theory with applications of the theory from a wide variety of experimental situations.

Prerequisites: MTSC-253 with a minimum grade of "C". Credit, three hours

MTSC-551. ORDINARY DIFFERENTIAL EQUATIONS

The purpose of the 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.

Prerequisites: MTSC-351. Credit, three hours.

MTSC-561. REAL ANALYSIS I

The purpose of the course is to cover the basic material that every graduate should know in the classical theory of functions of a real variable and in measure and integration theory. 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 itself, measure and integration, point-set topology, and the theory of normed linear space.

Prerequisites: MTSC-402 with a minimum grade of "C", or its equivalent. Credit, three hours.

MTSC-562. REAL ANALYSIS II

This course is the extension of real analysis I. The purpose of the course is to further provide students the background of modern mathematics. The course is to cover the theories of (improper) Riemann integrals and a brief introduction of Lebesgue integrals, the theories of pointwise and uniform convergence of sequences of functions, and the theories of infinite series of functions.

Prerequisites: MTSC-561 with minimum grade of "C", or its equivalent. Credit, three hours.

MTSC-571. COMPLEX ANALYSIS

This is a first-semester course at the graduate level, in the field of Functions of one (1) Complex Variable. The rigorous approach adopted herein will set a firm foundation for leading the students to the next level of Complex Analysis. To prepare the student for further studies in the field of Complex Analysis. To provide the students with sufficient background for various applications of Complex Analysis physical and engineering disciplines. Prerequisites: MTSC-471.

Credit, three hours.

MTSC-621. FUNCTIONAL ANALYSIS

The course gives students an introduction to Metric Spaces, Hilbert Spaces, and Banach Spaces with emphasis on Hilbert Spaces.

Prerequisites: MTSC-561. Credit, three hours.

MTSC-631. OPERATIONS RESEARCH

The course is designed to expose students in computer science to linear, nonlinear, and integer programming, simplex method, duality theorem, transport and other application problems, and different optimization methods and techniques.

The topics to be covered include: Optimization problems; the subject of Operations Research; Linear programming; Simplex method and duality theorem; Integer programming; Nonlinear programming; Optimization techniques; Applications; and MATLAB Optimization Toolbox. Credit, three hours.

MTSC-641. COMBINATORICS

The student will be introduced to the theory involved in combinatorial reasoning. The two (2) combinatorial theories of enumeration and graph theory will be developed. Students will apply combinatorial reasoning to problems in the analysis of computer systems, in discrete operations research and in finite probability. Credit, three hours.

MTSC-643. STATISTICS

The course provides students with the fundamental theory of statistics. The students will be familiar with descriptive and inferential statistical methods, theory, and applications. Prerequisites: MTSC-541 with minimum grade of "C". Credit, three hours.

MTSC-651. PARTIAL DIFFERENTIAL EQUATIONS

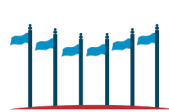
The course is designed to acquaint students to Classifications of Partial Differential Equations, Methods of Solution for the Wave Equation, Laplace's Equation, and the Heat Equation. Prerequisites: A second course in Ordinary Differential Equations. Credit, three hours.

MTSC-661. NUMERICAL ANALYSIS

The student should become familiar with advanced techniques for solving numerically large problems in Linear Algebra. In particular, students should become familiar with the effects of ill conditioning, and of ways in which special information about matrices, such as sparsity can be used. An important part of all of this is the consideration of error from various sources and ways of controlling its accumulation. Prerequisites: MTSC-313. Credit, three hours.

MTSC-699. THESIS OR DIRECTED PROJECT 6

A student may register three (3) or six (6) hours thesis with the approval of his/her thesis advisor. Credit, three to six hours.



**PROGRAM: MS PROGRAM IN PURE MATH
(NON-THESIS OPTION)**

First Year Fall Semester			First Year Spring Semester		
Course	Course Name	Cr	Course	Course Name	Cr
MTSC 500	Foundations of Math *	3	MTSC 571	Complex Analysis *	3
MTSC 511	Intro to Abstract Algebra *	3	MTSC 541	Advanced Probability Theory *	3
MTSC 561	Real Analysis I *	3	MTSC 562	Real Analysis II *	3
	Total Credits	9		Total Credits	9

Second Year Fall Semester			Second Year Spring Semester		
Course	Course Name	Cr	Course	Course Name	Cr
MTSC-xxx	Mathematics Elective +	3	MTSC-xxx	Mathematics Elective +	3
MTSC-xxx	Mathematics Elective +	3	MTSC-xxx	Mathematics Elective +	3
MTSC-xxx	Mathematics Elective +	3			
	Total Credits	9		Total Credits	6

	Total Credits: 33
--	--------------------------

*Denotes a Core Requirement

+Denotes an Elective

Total Core Credits = 18

Total Elective Credits = 15

Candidacy Requirements: Complete 9 hours with minimum GPA 3.0.

Capstone or Culminating Experience: Pass a written examination within two attempts. In the examination a student must choose two topics from Algebra, Analysis, and Applied Mathematics.

Submission of Outcomes report to School of Graduate, Adult and Extended Studies prior to graduation



**PROGRAM: MS PROGRAM IN PURE MATH
(THESIS OPTION)**

First Year Fall Semester			First Year Spring Semester		
Course	Course Name	Cr	Course	Course Name	Cr
MTSC 500	Foundations of Math *	3	MTSC 571	Complex Analysis *	3
MTSC 511	Intro to Abstract Algebra *	3	MTSC 541	Advanced Probability Theory *	3
MTSC 561	Real Analysis I *	3	MTSC 562	Real Analysis II *	3
	Total Credits	9		Total Credits	9

Second Year Fall Semester			Second Year Spring Semester		
Course	Course Name	Cr	Course	Course Name	Cr
MTSC-xxx	Mathematics Elective +	3	MTSC-xxx	Mathematics Elective +	3
MTSC-xxx	Mathematics Elective +	3	MTSC-699	Thesis	3
MTSC-699	Thesis	3			
	Total Credits	9		Total Credits	6

			Total Credits: 33
--	--	--	--------------------------

*Denotes a Core Requirement

+Denotes an Elective

Total Core Credits = 18

Total Elective Credits = 9

Candidacy Requirement: Complete 9 hours with minimum GPA 3.0 along with submission of research plan with candidacy application to School of Graduate, Adult and Extended Studies.

Capstone or Culminating Experience: Successful completion of 6 credit hours of MTSC-699 thesis; write and successfully defend the thesis

DOCTOR OF PHILOSOPHY IN INTERDISCIPLINARY APPLIED MATHEMATICS AND MATHEMATICAL PHYSICS

PROGRAM OBJECTIVES AND GOALS

This program is designed for students interested in research careers in mathematics in the military, industry or government. It also prepares individuals to teach and/or do research at a college. The Ph.D. program in Interdisciplinary Applied Mathematics and Mathematical Physics is flexible enough to accommodate students with diversified backgrounds. Each student develops a course of study in the Applied Mathematics concentration or Mathematical Physics concentration, whichever is most relevant to his or her professional and career objectives.

STUDENT LEARNING OUTCOMES

- Students will become experts at creating advanced and fully detailed proofs in a specialized area;
- Students will be able to assess and synthesize mathematics research literature to develop a research plan and incorporate into their research;
- Students will be able to present a mathematics paper to a mathematically informed audience (i.e., professional mathematician);
- Students will make an original contribution to the discipline by writing a publishable quality research document.

ADMISSION DEADLINES AND DEGREE REQUIREMENTS

Application Deadline:

Fall – April 15

International Application Deadline:

Fall – March 15

Required of all applicants:

- Earned baccalaureate degree.
- Minimum cumulative undergraduate grade point average of 2.50 (on a 4-point scale) and a GPA of 3.0 in the courses related to the field of the Ph.D.
- Provide official scores on the Graduate Record Examination (GRE). Testing must be within five years of application. Due to COVID-19, GRE scores are not required for the 2023-2024 academic year.
- Complete an application for admission.
- Submit a resume.
- Submit official transcript(s).
- Submit three letters of recommendation from professionals in the area of interest.

DEGREE REQUIREMENTS

APPLIED MATHEMATICS CONCENTRATION

A student who enters the program with a baccalaureate degree must complete his or her master's degree before his or her Ph.D. study, so he or she must complete 72 credit hours of graduate-level credits (33 credits at MS level and 39 credits at Ph.D. level).

Students who have master's degrees with no prior Ph.D. graduate coursework 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 GPA 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 approved by the Director of Graduate Programs.

RESEARCH AREAS

- BIOMATHEMATICS
- COMPUTATIONAL ELECTRODYNAMICS
- COMPUTATIONAL FLUID DYNAMICS
- COMPUTATIONAL GEOMETRY
- FUNCTIONAL ANALYSIS
- GROUND PENETRATING RADAR
- IMAGE AND SIGNAL PROCESSING
- MATHEMATICS EDUCATION
- NUMERICAL ANALYSIS

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 Graduate Committee. A student must pass an oral examination on a subject area directly related to his or her dissertation.

CANDIDACY REQUIREMENTS

- Complete at least 30 credits of graduate Ph.D.-level coursework.
- A cumulative GPA of at least 3.0 on all graduate-level coursework with no grade below a C.
- Pass the written Qualifying Examinations.
- Submission of Research Plan.
- Oral Defense of Research Plan.

**DOCTOR OF PHILOSOPHY IN INTERDISCIPLINARY APPLIED MATHEMATICS AND MATHEMATICAL PHYSICS
APPLIED MATHEMATICS CONCENTRATION**

Required Courses: (12 credit hours)		
COURSE NO.	CREDITS	COURSE TITLE
MTSC-863	3	Functional Analysis
MTSC-861	3	Real Analysis
MTSC-871	3	Complex Analysis
MTSC-887	3	Image Processing OR
MTSC-821	3	Scientific Computation I
MTSC-890	9	Dissertation
Electives: (Select 18 credit hours)		
MTSC-821	3	Scientific Computation I
MTSC-822	3	Scientific Computation II
MTSC-833	3	Stochastic Processes
MTSC-853	3	Partial Differential Equations
MTSC-867	3	Numerical Analysis
MTSC-851	3	Ordinary Differential Equations
MTSC-885	3	Computational Geometry*
MTSC-857	3	Integral Equations
MTSC-875	3	Inverse Problems
MTSC-887	3	Image Processing
MTSC-811	3	Abstract Algebra
PHYS-655	3	Computational Methods
PHYS-665	3	Statistical Mechanics
PHYS-671	3	Advanced Electromagnetic Theory I*
PHYS-672	3	Advanced Electromagnetic Theory II
PHYS-652	3	Classical Mechanics
PHYS-667	3	Mathematical Methods IV*
PHYS-661	3	Solid State Physics
PHYS-675	3	Quantum Mechanics I
MTSC-883	3	Wavelet Analysis*
MTSC-845	3	Theory of Solitons
MTSC-852	3	Pattern Recognition
MTSC-886	3	Digital Signal Processing
MTSC-850	3	Mathematical Theory of Algorithms
MTSC-854	3	Numerical Methods for Partial Differential Equations
MTSC-843	3	Advanced Statistics
MTSC-835	3	Advanced Perturbation Theory
MTSC-889	3	Topics in Applied Mathematics
TOTAL CREDIT HOURS: 39^		
*Students must take any two of these courses.		

^ A student who enters the program with a baccalaureate degree must complete his/her master's degree before his/her Ph.D. study, so he/she must complete a total of 72 credit hours of graduate-level credits (33 credits at MS level and 39 credits at Ph.D. level).

MATHEMATICAL PHYSICS CONCENTRATION

DEGREE REQUIREMENTS

A student who enters the program with a baccalaureate degree must complete his or her master's degree before his or her Ph.D. study, so he or she must complete 72 credit hours of graduate-level credits (33 credits at MS level and 39 credits at Ph.D. level).

Students who have master's degrees with no prior Ph.D. graduate coursework must complete 30 credit hours of graduate level courses listed below. In addition, at least 9 credit hours of research and dissertation are required. A GPA 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 approved by the Director of Graduate Programs.

A sequence of Core Courses required by all Ph.D. candidates includes the following: PHYS-665 Statistical Mechanics, PHYS-672 Advanced Electromagnetic Theory, PHYS-676 Quantum Mechanics II, PHYS-655 Computational Methods, MTSC-863 Functional Analysis or MTSC-857 Integral Equations, and MTSC- 871 Complex Analysis. Any student found deficient in any of these areas may be required to take appropriate courses to remove that deficiency.

RESEARCH AREAS

- BIOMATHEMATICS
- COMPUTATIONAL ELECTRODYNAMICS
- COMPUTATIONAL FLUID DYNAMICS
- COMPUTATIONAL GEOMETRY
- FUNCTIONAL ANALYSIS
- GROUND PENETRATING RADAR
- IMAGE AND SIGNAL PROCESSING
- MATHEMATICS EDUCATION
- NUMERICAL ANALYSIS

QUALIFYING EXAMINATIONS

Each student must successfully pass the written general examination in physics which encompasses the areas of Thermodynamics and Kinetic Theory, Classical Mechanics, Advanced Electromagnetic Theory, and Quantum Mechanics. In addition, a student must pass an oral examination in a subject area chosen by his or her advisor.

CANDIDACY REQUIREMENTS

- Complete at least 30 credits of graduate Ph.D.-level coursework.
- A cumulative GPA of at least 3.0 on all graduate-level coursework with no grade below a C.
- Pass the written Qualifying Examinations.
- Submission of Research Plan.
- Oral Defense of Research Plan.

**DOCTOR OF PHILOSOPHY IN INTERDISCIPLINARY APPLIED MATHEMATICS AND MATHEMATICAL PHYSICS
MATHEMATICAL PHYSICS CONCENTRATION**

Required Courses: (18 credit hours)		
COURSE NO.	CREDITS	COURSE TITLE
PHYS-665	3	Statistical Mechanics
PHYS-672	3	Advanced Electromagnetic Theory
PHYS-676	3	Quantum Mechanics II
PHYS-655	3	Computational Methods
MTSC-871	3	Complex Analysis
MTSC-863	3	Functional Analysis OR
MTSC-857	3	Integral Equations
MTSC-890	9	Dissertation
Electives: (Select 12 credit hours)		
MTSC-821	3	Scientific Computation I
MTSC-822	3	Scientific Computation II
MTSC-833	3	Stochastic Processes
MTSC-853	3	Partial Differential Equations
MTSC-867	3	Numerical Analysis
MTSC-851	3	Ordinary Differential Equations
MTSC-885	3	Computational Geometry
MTSC-857	3	Integral Equations
MTSC-875	3	Inverse Problems
MTSC-887	3	Image Processing
MTSC-811	3	Abstract Algebra
PHYS-655	3	Computational Methods
PHYS-665	3	Statistical Mechanics
PHYS-671	3	Advanced Electromagnetic Theory I
PHYS-672	3	Advanced Electromagnetic Theory II
PHYS-652	3	Classical Mechanics
PHYS-667	3	Mathematical Methods IV
PHYS-661	3	Solid State Physics
PHYS-675	3	Quantum Mechanics I
MTSC-883	3	Wavelet Analysis
MTSC-845	3	Theory of Solitons
MTSC-852	3	Pattern Recognition
MTSC-886	3	Digital Signal Processing
MTSC-850	3	Mathematical Theory of Algorithms
MTSC-854	3	Numerical Methods for Partial Differential Equations
MTSC-843	3	Advanced Statistics
MTSC-835	3	Advanced Perturbation Theory
MTSC-889	3	Topics in Applied Mathematics
TOTAL CREDIT HOURS: 39^		

^ A student who enters the program with a baccalaureate degree must complete his/her master's degree before his/her Ph.D.

COURSE DESCRIPTIONS

PHYSICS (PHYS)

PHYS-652. CLASSICAL MECHANICS

Lagrangian formulation, the Kepler problem, Rutherford scattering, rotating coordinate systems, rigid body motion, small oscillations, stability problems, and Hamiltonian formulation. Credit, three hours.

PHYS-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. Credit, three hours.

PHYS-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. Credit, three hours.

PHYS-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. Credit, three hours.

PHYS-667. MATHEMATICAL METHODS OF PHYSICS IV

An advanced treatment of mathematical topics including operators, matrix mathematics, complex variables and eigenvalue problems. Credit, three hours.

PHYS-671. ADVANCED ELECTROMAGNETIC THEORY I

Treatment of boundary value problems of electrostatics and magnetostatics, electromagnetic radiation, radiating systems, wave guides, resonating systems and multipole fields. Credit, three hours.

PHYS-672. ADVANCED ELECTROMAGNETIC THEORY II

Treatment of boundary value problems of electrostatics and magnetostatics, electromagnetic radiation, radiating systems, wave guides, resonating systems and multipole fields. Credit, three hours.

PHYS-675. QUANTUM MECHANICS I

A study of the Schrodinger wave equation, operators and matrices, perturbation theory, collision and scattering problems classification of atomic states, and introduction to field quantization. Credit, three hours.

PHYS-676. QUANTUM MECHANICS II

Quantum Mechanics of molecules and solid state. Relativistic quantum mechanics. Field quantization. Quantum theory of light. Basics of quantum electrodynamics. Credit, three hours.

PHYS-691. RESEARCH I

Independent student research or laboratory work in a specialized field of interest. Credit, three hours.

PHYS-692. RESEARCH II

Independent student research or laboratory work in a specialized field of interest. Credit, three hours.

PHYS-695. MASTER'S THESIS

A research problem in a selected physics topic resulting in a written thesis. Credit, one to six hours.

PHYS-800. MODERN LASER SPECTROSCOPIC METHODS

Basics of laser spectroscopic techniques and instrumentation.

Topics include: ultraviolet and visible (uv-vi) absorption spectroscopy; Fourier transform infrared spectroscopy; Raman, fluorescence, and saturation spectroscopy; polarization, correlation, and ultra-fast spectroscopy.

Prerequisites: PHYS-600, PHYS-601, PHYS-605. Credit, three hours.

PHYS-801. QUANTUM THEORY OF LIGHT

Quantum mechanical description of light matter interaction. Presentation of basic quantum mechanics and quantum mechanical treatment of light and atoms. Prerequisites: Consent of the Instructor.

Credit, three hours.

PHYS-802. THEORY OF LIGHT SCATTERING

An advanced electricity and magnetism course focused on light interactions with small particles. Topics include Raleigh and Mie scattering, optical properties of nanoparticles and surface plasmon resonance. Credit, three hours.

PHYS-803. MODERN LASER SPECTROSCOPIC METHODS

The laser revolution in spectroscopy. Absorption within the Doppler line, Doppler-free broadening spectroscopy, saturation spectroscopy, multiphoton spectroscopy, laser fluorescence, laser Raman, coherent stokes and antistokes Raman spectroscopy, photon echo and coherent spectroscopy. Ultrafast spectroscopy. Modern trends in spectroscopy.

Credit, three hours.

PHYS-804. PRINCIPLES OF PHOTOCHEMISTRY AND PHOTOBIOLOGY

Review of the main phenomena related to the interaction of light with matter that results in chemical or biological activity. The study of inorganic and organic photochemistry, environmental aspects of photochemistry, atmospheric photochemistry, photosynthesis, visual processing, bio-luminescence, interaction of light with bio-organisms, photo- medicine, and phototherapy. Credit, three hours.

PHYS-805. PHOTOACOUSTIC AND THERMAL SPECTROSCOPY

Fundamentals of photo-acoustic and photo-thermal interaction of light with optical samples. Examination of basic instrumentations and their applications for characterization of complex samples including biological samples. Credit, three hours.

PHYS-806. MOLECULAR BIOPHYSICS

An overview of the physics of bio-molecular interactions. Topics will include physical models for DNA and protein systems. Credit, three hours.

PHYS-807. OPTICAL SOLITONS

Basic concepts of the mathematical aspects of optical solitons. Presentation of optical waveguides, the nonlinear Schrodinger's equation, laws of nonlinearity, soliton perturbation, soliton-soliton interactions, Stochastic perturbation of optical solitons, optical couplers, optical switching, magneto-optic waveguides and optical bullets. Prerequisites: PHYS-601, MTSC-853, MTSC-845.

Credit, three hours.

PHYS-808. FIBER OPTICS AND FIBER OPTICS COMMUNICATION

Light propagation in fiber, its dispersion and nonlinear characteristics that play an important role in light communication. Types of fiber-optic devices and their applications to communication. Wavelength division multiplexing. Credit, three hours.

PHYS-809. PHOTONICS AND INFORMATION PROCESSING

Wave propagation in linear optical systems and optical information processing. Topics include fundamentals of optical propagation, diffraction, optical imaging, Fourier transform, wave-front modulation, signal processing, and basics of optical processing devices. Credit, three hours.

PHYS-810. CURRENT TOPICS IN OPTICS I

Current topics in optics and spectroscopy. Credit, three hours.

PHYS-811. CURRENT TOPICS IN OPTICS II

Current topics in optics and spectroscopy. Credit, three hours.

PHYS-820. DISSERTATION RESEARCH

The course is for Ph.D. students in the optics program working on their dissertation research project.

Credit, two to eight hours.

PHYS-890. DISSERTATION

Written work that describes the main research results obtained during the completion of the Graduate Program. The format must comply with the requirements of the College for thesis and dissertations. Credit, three to nine hours.

PHYS-999. DOCTORAL SUSTAINING

Public oral defense of the thesis that includes presentation of the main research results obtained during the completion of the Graduate Program. It takes place after evaluation of the written dissertation by the members of the corresponding academic committee. Credit, none.

MATHEMATICAL SCIENCES (MTSC) (25)**MTSC-886. DIGITAL SIGNAL PROCESSING**

The goal of the course is to provide the student with the mathematical tools and techniques for analyzing, modeling, and implementing digital signal processing systems. The course also provides the relevant background knowledge to students of applied mathematics and theoretical physics who need the signal processing tools for the analysis of data obtained during research in their fields.

Credit, three hours.

MTSC-811. ABSTRACT ALGEBRA

The student should understand the theory of groups, rings and fields. Credit, three hours.

MTSC-821. SCIENTIFIC COMPUTATION I

The student should become familiar with matrix analysis and matrix computation. Credit, three hours.

MTSC-822. SCIENTIFIC COMPUTATION II

The student should become familiar with numerical approximations such as finite element methods in computational electromagnetism. Credit, three hours.

MTSC-833. STOCHASTIC PROCESSES

The student should become familiar with the theory and applications of Stochastic processes.

Credit, three hours.

MTSC-843. ADVANCED STATISTICS

Main purpose of the course is to provide students with systematic overview of advanced statistical techniques that can be useful in their research and future careers. The statistical techniques are applicable in various fields including video surveillance analysis, data mining, natural resources, finance, etc.

Credit, three hours.

MTSC-845. THEORY OF SOLITONS

The aim of the course is to introduce the basic concepts of the mathematical aspects of Soliton Theory. This will include the derivation and the introduction to the Korteweg-de Vries equation; the travelling wave solution; Inverse Scattering Transform; N-soliton solution; Lax pair; Integrals of Motion; Hirota's bilinear method; Backlund Transform; AKNS (Ablowitz, Kaup, Newell and Segur) scheme; Zakharov-Shabat scheme; Painleve transcendents; Painleve conjecture; perturbation of solitons; adiabatic parameter dynamics; Topological solitons, kinks and anti-kinks, breathers, phonons, skyrimions; Chiral solitons.

Credit, three hours.

MTSC-850. MATHEMATICAL THEORY OF ALGORITHMS

Main purpose of the course is to provide students with systematic overview about techniques for analysis and design of algorithms and to familiarize the students with notions related to computational complexity, intractability and approximation algorithms. This way, the students will become more capable of designing efficient algorithms for specific tasks in applied mathematics, included but not limited to computational geometry, image processing, video surveillance analysis, data mining, etc. Credit, three hours.

MTSC-851. ORDINARY DIFFERENTIAL EQUATIONS

The purpose of the course is to present techniques of solving ordinary differential equations. The students should become familiar with Boundary Value Problems, Systems of Ordinary Differential Equations, and Phase Diagrams and Stability. Credit, three hours.

MTSC-852. PATTERN RECOGNITION

Pattern recognition is integral part of image processing, video surveillance and data mining, which are research areas at Delaware State University. Potential junior researchers in applied mathematics and/or applied optics field need this course to become familiar with techniques that can be subsequently used for identifying interesting phenomena in observed data and/or for design and implementation of stand-alone real-time applications for military and homeland security. Credit, three hours.

MTSC-853. PARTIAL DIFFERENTIAL EQUATIONS

The course is designed to acquaint students to Classifications of Partial Differential Equations, Methods of Solution for the Wave Equation, Laplace's Equation, and the Heat Equation. Credit, three hours.

MTSC-854. NUMERICAL METHODS FOR PARTIAL DIFFERENTIAL EQUATIONS

Numerical methods for Partial Differential Equations (PDEs) are a part of the problem solving skills that are expected to be mastered by most of the university graduates working in a quantitative field. The same fundamental concepts of convection, diffusion, dispersion and nonlinearity are used to simulate applications in physics, economics, biology, engineering and social sciences. Quantitative answers for the real world can generally be obtained only from computations. The goal of this course is to provide a basic foundation in numerical methods for PDEs include finite difference method and finite element method. Credit, three hours.

MTSC-857. INTEGRAL EQUATIONS

The student should become familiar with the theory and applications of Integral Equations. Credit, three hours.

MTSC-860. ADVANCED PERTURBATION THEORY

The aim of the course is to lay an introduction to the perturbation theory to solve ordinary differential equations, partial differential equations as well as integral equations. Topics that will be covered in this course are Regular perturbations; Error Estimates; Periodic solutions and Lindstedt Series, Harmonic Resonance, Duffing's equation, Multiple Scales, Struble's Method, Averaging, Krylov-Bogoliubov Method of Averaging, Krylov-Bogoliubov- Mitropoloski generalized method of Averaging; Forced Duffing and Van der Pol's equations, Wentzel-Kramer-Brillouin-Jeffreys (WKBJ) Approximation, Fredholm's Alternative, Latta's method of composite expansion; Matched Asymptotic Expansion. The emphasis in this course is on the adaptation of these mathematical methods and techniques to their swift and effective application in solving advanced problems in applied mathematics and theoretical physics. Credit, three hours.

MTSC-861. REAL ANALYSIS

The course is 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 itself, measure and integration, point-set topology, and the theory of normed linear space. Credit, three hours.

MTSC-863. FUNCTIONAL ANALYSIS

To provide students theories of Metric Spaces, Hilbert Spaces and Banach Spaces. Credit, three hours.

MTSC-867. NUMERICAL ANALYSIS

The student should become familiar with advanced techniques for solving numerically large problems in Linear Algebra. In particular, students should become familiar with the effects of ill conditioning, and of ways in which special information about matrices, such as sparsity can be used. An important part of all of this is the consideration of error from various sources and ways of controlling its accumulation. Credit, three hours.

MTSC-871. COMPLEX ANALYSIS

The course provides students with an understanding of Complex Analysis and Various applications of Complex Analysis in physical and engineering disciplines. It covers topics of analytic functions, contour integrals, series, singularities, residues, mappings and transformations, and conformal mapping at the advanced level. Credit, three hours.

MTSC-875. INVERSE PROBLEMS

The student should become familiar with ill-posed problems, regularization methods, Tikhonov regularization, the discrepancy principle, and the regularization by discretization. Credit, three hours.

MTSC-883. WAVELET ANALYSIS

The student should become familiar with Wavelets and their applications in signal and image processing. Credit, three hours.

MTSC-885. COMPUTATIONAL GEOMETRY

The student should become familiar with communication complexity, pseudo-randomness, rapidly mixing Markov chains, points on a sphere, derandomization, convex hulls and Voronoi diagrams, linear programming, geometric sampling and VC- dimension theory, minimum spanning trees, circuit complexity, and multidimensional searching. Credit, three hours.

MTSC-887. IMAGE PROCESSING

The student should become familiar with Image Enhancement, Image Restoration, Wavelets and Multiresolution Processing, Image Compression, Morphological Image Processing, Image Segmentation, Representation and Description, and Object Recognition. Credit, three hours.

MTSC-889. TOPICS IN APPLIED MATHEMATICS

The topics of this course will be determined and the course will be offered whenever needed. Credit, three hours.

MTSC-890. DISSERTATION

A student may register 3-9 hours' dissertation with approval of his/her dissertation advisor each semester. Credit, three to nine hours.

MTSC - 899 SUSTAINING THESIS

**PROGRAM: PH.D. IN INTERDISCIPLINARY APPLIED
MATHEMATICS AND MATHEMATICAL
PHYSICS (MATHEMATICAL PHYSICS
CONCENTRATION)**



First Year Fall Semester			First Year Spring Semester		
Course	Course Name	Cr	Course	Course Name	Cr
MTSC-871	Complex Analysis *	3	MTSC-863	Functional Analysis *	3
PHYS-655	Computational Methods *	3	PHYS-672	Advanced EM Theory II *	3
PHYS-665	Statistical Mechanics *	3	PHYS-676	Quantum Mechanics II *	3
	Total Credits	9		Total Credits	9

Second Year Fall Semester			Second Year Spring Semester		
Course	Course Name	Cr	Course	Course Name	Cr
MTSC-8xx or PHYS-	Math or Physics Elective +	3	MTSC-8xx or PHYS-6xx/8xx	Math or Physics Elective +	3
MTSC-8xx or PHYS-	Math or Physics Elective +	3	MTSC-8xx or PHYS-6xx/8xx	Math or Physics Elective +	3
	Total Credits	6		Total Credits	6

Third Year Fall Semester			Third Year Spring Semester		
Course	Course Name	Cr	Course	Course Name	Cr
	Total Credits	3/6		Total Credits	3/6

NOTE: This information is on the next page after the 4th semester.

**PROGRAM: PH.D. IN INTERDISCIPLINARY APPLIED
 MATHEMATICS AND MATHEMATICAL PHYSICS
 (MATHEMATICAL PHYSICS CONCENTRATION)**



(MATHEMATICAL PHYSICS CONCENTRATION) - Continued

Fourth Year Fall Semester			Fourth Year Spring Semester		
Course	Course Name	Cr	Course	Course Name	Cr
MTSC-890	Dissertation	3/6	MTSC-890	Dissertation	3/6
	Total Credits	3/6		Total Credits	3/6
			Total Credits: ≥ 39		

*Denotes a Core Requirement

+Denotes an Elective

Total Core Credits = 12

Total Elective Credits = 18

Candidacy Requirement:

- Complete at least 30 credits of graduate-level coursework beyond the master's degree
- A cumulative GPA of at least 3.0 on all graduate-level coursework with no grade below a C
- Complete a MS degree
- Pass PhD Qualifying Exams
- Submission of a research plan along with candidacy application and qualifying exam results to School of Graduate, Adult and Extended Studies
- Oral Defense of the Research Plan
- Capstone or Culminating Experience:
- Successful completion of at least 9 hours but not more than 18 hours of MTSC-890 dissertation
- Write and successfully defend the dissertation.

DOCTOR OF PHILOSOPHY IN OPTICS DEGREE

PROGRAM OBJECTIVES

The objectives of the Graduate Program in Physics and Optics aim at training future workforce and researchers in diverse fields of physics and optical sciences. Our educational activities are combined and integrated with our research focus, creating a stimulating and engaging environment for the students to achieve professional success and leadership status and opening opportunities to a highly demanding multidisciplinary market.

PROGRAM GOALS

The primary goals of the program are to: 1) prepare each graduate for success in professional careers in industry, research, government, or academia in the 21st century global society by providing them with necessary skills and knowledge in their area of study; 2) prepare each graduate to think critically to analyze and solve problems through research and/or coursework; 3) produce graduates that have the broad-based knowledge and communication skills needed for success in the global society. The students will be educated and trained to be creative and productive scientists using state-of-the-art research and educational facilities. Each student will join a well-seasoned research group and focus his or her research activities in one or multiple areas of optics and its applications.

STUDENT LEARNING OUTCOMES

- Students will learn advanced content needed to solve problems quantitatively using analytic and numerical methods to find their carriers in different organizations;
- Students will engage in one or more research projects to learn laboratory techniques, research protocol, and appropriate behavior expected in a research environment by using instruments, computers and associated technologies;
- Students will be able to integrate content knowledge and analytic thinking skills to collect, analyze and interpret a variety of problems and issues involving physical systems;
- Students will be able to organize and conduct original investigations and reach scientifically appropriate conclusions;
- Students will be capable of effectively communicating the results of their studies in a variety of formats, including written reports, poster presentations, and PowerPoint-like presentations to communicate orally with peers as colleagues in the scientific community using appropriate language skills and professional vocabulary;
- Students will be able to use their knowledge to analyze and reflect on technical problems and issues that span more than a single discipline, including problems that have broad social and economic impact.

ADMISSION DEADLINES AND DEGREE REQUIREMENTS

Application Deadline:

Fall – June 30

International Application Deadline:

Fall – April 15

All applicants are required to provide and/or meet:

- Earned baccalaureate degree in physics or a related field.
- A sound background in intermediate level in mechanics, electricity and magnetism, and mathematical methods of physics. Any student found deficient in any of these areas may be required to take appropriate courses to remove that deficiency.
Recommendation will be made for the student to enter the PhD program after evaluation of the candidate's documents.
- Official scores on the Graduate Record Examination (GRE). Due to COVID-19, GRE scores are not required for the 2023-2024 academic year.
- Completed application for admission.
- Official transcript(s).
- Two letters of recommendation completed by persons acquainted with their ability for graduate study.
- A statement of intent to include why research in optics.
- All additional requirements if the applicant is international.

The Committee of the Graduate Program of PhD in Optics will review the application materials of each applicant and make recommendation for acceptance into the Graduate Program to the Chair of the Department who, after his or her review, will send the Department recommendation to the Dean of the College of Agriculture, Science and Technology (CAST) and the Dean of Graduate, Adult and Extended Studies, who extends the offer of admissions.

DEGREE REQUIREMENTS

Students in the Ph.D. degree program are required to complete 36 credits of core coursework from the 600-level (or 500-level with consent from the Department). For 6 credits of electives, the student may take other 600-level courses offered with the prefix PHYS or similar level courses offered by other departments in the College of Agriculture, Science & Technology with the consent of the Department. Students are also required to complete 12 credits of courses in Special Topics as well 18 credits of Dissertation Research. Altogether, students in the PhD program need 72 credits to obtain the degree.

Required Core Coursework:

Students enrolled in the PhD program are required to complete a minimum of 36 required courses:

PHYS-600: Modern Optics

PHYS-671 and PHYS 672: Advanced Electromagnetic Theory I & II

PHYS 601: Nonlinear Optics

PHYS 563 and PHYS 667: Mathematical Methods of Physics III and IV

PHYS 605: Principles of Lasers & Optical Devices

PHYS 675 and PHYS 676: Quantum Mechanics I & II

PHYS 665: Statistical Mechanics

PHYS 803 Modern Laser Spectroscopic Methods

Special Topics are noted below:**PHYS 691** Research I**PHYS 692** Research II**PHYS 810** Current Topics in Optics I**PHYS 811** Current Topics in Optics II**PHYS 820** Dissertation**PHYS 890** Dissertation**PhD Candidacy Requirements**

All students will be required to take and pass a PhD qualifier exam upon completion of the required core courses. All students must develop their research prospectus into a full research project either theoretical or experimental and documented in a thesis format which meets the standards established by CAST and the School of Graduate, Adult and Extended Studies.

Dissertation and Defense

The completed thesis will be submitted to the Thesis Advisory Committee for review and if deemed acceptable, an oral examination, consisting principally of a defense of the thesis, will be scheduled. After the thesis has been read and approved by the Thesis Advisory Committee, it must be submitted to the Dean of CAST and finally to the Dean of Graduate, Adult and Extended Studies. The Thesis Advisory Committee is uniquely qualified to approve the thesis and its defense. If denied, the candidate will not be recommended for graduation. In this event, the student may be re-examined at a later period as determined by the Thesis Committee.

FACULTY

All faculty members in the graduate programs of physics and engineering have terminal degrees in physics or a related field, are dedicated to their respective fields of study and research, and have a diverse background. Specific areas of research interest include optical physics, spectroscopy, soft-matter physics and biophysics, space exploration, medical optics, photonics, imaging, and computational physics. Active research projects exist within these areas and offer graduate students many opportunities for active learning and discovery.

COURSE NO.	CREDITS	COURSE TITLE
PHYS-563*	3	Mathematics Methods of Physics III
PHYS-600*	4	Modern Optics
PHYS-601*	4	Nonlinear Optics
PHYS-605*	4	Principles of Lasers & Optical Devices
PHYS-665*	3	Statistical Mechanics
PHYS-667*	3	Mathematical Methods of Physics IV
PHYS-671*	3	Advanced Electromagnetic Theory I
PHYS-672*	3	Advanced Electromagnetic Theory II
PHYS-675*	3	Quantum Mechanics I
PHYS-676*	3	Quantum Mechanics II
PHYS-691	3	Research I
PHYS-692	3	Research II
PHYS-803*	3	Modern Laser Spectroscopic Methods
PHYS-810	3	Special Topics in Optics I
PHYS-811	3	Special Topics in Optics II
PHYS-820	Up to 9	Dissertation Research
PHYS-890*	Up to 9	Dissertation
PHYS-6XX or 8XX	3	Elective
PHYS-6XX or 8XX	3	Elective
TOTAL CREDIT HOURS : 72		

*Required Courses

+ Elective

COURSE DESCRIPTIONS

PHYSICS (PHYS)

PHYS-501. ELECTRICITY AND MAGNETISM I

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. Credit, three hours. **3:3:0**

PHYS-502. ELECTRICITY AND MAGNETISM II

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. Credit, three hours. **3:3:0**

PHYS-505. MATHEMATICAL METHODS OF PHYSICS I

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. Credit, three hours. **3:3:0**

PHYS-506. MATHEMATICAL METHODS OF PHYSICS 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. Credit, three hours.

PHYS-511. MECHANICS I

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. Credit, three hours. **3:3:0**

PHYS-5EDUC. MECHANICS II

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. Credit, three hours. **3:3:0**

PHYS-516. LASER OPTICS

A study of geometric and physical optics with particular application to optical instruments and an introduction to lasers and holography. Credit, three hours. **3:3:0**

PHYS-523. MODERN PHYSICS

Important contributions to atomic and nuclear physics since 1900, including electrical discharges in gases, atomic spectra, Bohr's atom, Schrodinger's equation, natural radioactivity, and elementary relativity. Credit, three hours.

PHYS-525. THERMAL 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. Credit, three hours. **3:3:0**

PHYS-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, and photothermal systems. Credit, three hours. **3:3:0**

PHYS-535. METHODS OF EXPERIMENTAL PHYSICS I

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. Credit, three hours. **3:3:0**

PHYS-536. METHODS OF EXPERIMENTAL PHYSICS II**3:3:0**

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. Credit, three hours.

PHYS-563. MATHEMATICAL METHODS OF PHYSICS III

An intermediate course in applied mathematics. Topics covered include the solution of differential equations, vector calculus, Fourier series and Laplace transforms. Credit, three hours.

PHYS-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. Credit, three hours.

PHYS-567. INTERMEDIATE ELECTRICITY AND MAGNETISM I

A treatment of electrostatics, Dielectric Theory, magnetic phenomena, magnetic media, ac circuits and Maxwell's equations. Vector calculus is used throughout. Credit, three hours.

PHYS-568. INTERMEDIATE ELECTRICITY AND MAGNETISM II

A treatment of electrostatics, Dielectric Theory, magnetic phenomena, magnetic media, ac circuits and Maxwell's equations. Vector calculus is used throughout. Credit, three hours.

PHYS-574. SELECTED TOPICS FOR MIDDLE SCHOOL TEACHERS**3:3:0**

A course that allows middle school teachers to pursue physics concepts as they relate to middle school science. Credit, three hours.

PHYS-577. SELECTED TOPICS I

A course allowing practicing teachers to pursue independent study of a topic in physics and physical science at the graduate level. Credit, three hours.

3:3:0**PHYS-578. SELECTED TOPICS II**

A course allowing practicing teachers to pursue additional independent study of a topic in physics and physical science at the graduate level. Credit, three hours.

3:3:0**PHYS-579. SELECTED TOPICS III**

A course allowing practicing teachers to pursue additional independent study of a topic in physics and physical science at the graduate level. Credit, three hours.

4:4:0**PHYS-600. MODERN OPTICS**

Electromagnetic description of light and its interaction with matter. Topics include interference, coherence, diffraction, holography, dispersion, polarization, scattering, and confinement. Credit, four hours.

PHYS-601. NONLINEAR OPTICS**4:4:0**

Principles of nonlinear interaction of light and matter based on the semi-classical approximation. Definition of nonlinear induced polarization and nonlinear susceptibility. Basic model of the coherent interaction of light with a two-level system is included. Main nonlinear optical effects are studied: harmonic generation, optical parametric amplification, saturation effects, Kerr effect, coherent effects, stimulated light scattering including stimulated Raman scattering, self-focusing and self-defocusing effects, multi-photon ionization, multi-photon ionization, and other nonlinear optical effects. The course also discusses practical applications of the nonlinear optical phenomena and related technology.

Prerequisites: PHYS-600. Credit, four hours.

PHYS-602. BIOPHOTONICS I: PRINCIPLES OF LUMINESCENCE**4:4:0**

A study of the physics behind light emitting molecules and their applications in biology. Credit, four hours.

PHYS-603. BIOPHOTONICS II: INSTRUMENTATION	3:3:0
An overview of microscopes and other optical instruments used in the biomedical field. Credit, three hours.	
PHYS-604. APPLIED OPTICS IN BIOMEDICINE	3:3:0
A treatment of concepts of physics and optics applied to the medical field. Topics include DNA sequencing, in situ fluorescence, enzyme-based assays, glucose monitoring, HIV detection, and cancer diagnostics. Credit, three hours.	
PHYS-605. PRINCIPLES OF LASERS AND OPTICAL DEVICES	4:4:0
Treatment of basic principles of lasers and their applications. Topics to be covered include, fundamentals of quantum electronics, oscillator model, rate equations, stimulated transitions, population inversion, laser amplification, design of laser resonators, principles of q-switching, mode locking, injection locking and modern applications of lasers. Credit, four hours.	
PHYS-606. LABORATORY TECHNIQUES IN OPTICS AND SPECTROSCOPY	3:3:0
Modern spectroscopic methods. Human chromosomes, human leukocyte antigen (hla) haplotyping, enzyme-linked immune-assays (Elisa), diabetes testing and glucose monitoring, pregnancy testing, drug testing, HIV detection, and cancer diagnostics. Prerequisites: PHYS-602, PHYS-603. Credit, three hours.	
PHYS-607. INTRODUCTION TO LABVIEW	3:3:0
A hands-on approach to the national instruments labview programming language. Credit, three hours.	
PHYS-608. SELECTED TOPICS IN OPTICS AND SPECTROSCOPY I	3:3:0
Current research topics in optics and spectroscopy. Credit, three hours.	
PHYS-609. SELECTED TOPICS IN OPTICS AND SPECTROSCOPY II	3:3:0
Current research topics in optics and spectroscopy. Credit, three hours.	
PHYS-621. OPTICAL SYSTEM DESIGN	3:2:2
An advanced course in analysis and design of optical and photonic systems. The laboratory part of the course consists in learning and using optical design software for the assessment of optical system image quality. Credit, three hours. 2-hour lecture and 2-hour laboratory	
PHYS-633. SELECTED TOPICS IN SCIENCE EDUCATION	3:3:0
Current developments in physics education. Credit, three hours.	
PHYS-652. CLASSICAL MECHANICS	3:3:0
Lagrangian formulation, the Kepler problem, Rutherford scattering, rotating coordinate systems, rigid body motion, small oscillations, stability problems, and Hamiltonian formulation. Credit, three hours.	
PHYS-655. COMPUTATIONAL METHODS	3:3:0
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. Credit, three hours.	
PHYS-661. SOLID STATE PHYSICS	3:3:0
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. Credit, three hours.	
PHYS-665. STATISTICAL MECHANICS	3:3:0
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. Credit, three hours.	

PHYS-667. MATHEMATICAL METHODS OF PHYSICS IV	3:3:0
An advanced treatment of mathematical topics including operators, matrix mathematics, complex variables and eigenvalue problems. Credit, three hours.	
PHYS-671. ADVANCED ELECTROMAGNETIC THEORY I	3:3:0
Treatment of boundary value problems of electrostatics and magnetostatics, electromagnetic radiation, radiating systems, wave guides, resonating systems and multipole fields. Credit, three hours.	
PHYS-672. ADVANCED ELECTROMAGNETIC THEORY II	3:3:0
Treatment of boundary value problems of electrostatics and magnetostatics, electromagnetic radiation, radiating systems, wave guides, resonating systems and multipole fields. Credit, three hours.	
PHYS-675. QUANTUM MECHANICS I	3:3:0
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. Credit, three hours.	
PHYS-676. QUANTUM MECHANICS II	3:3:0
Quantum Mechanics of molecules and solid state. Relativistic quantum mechanics. Field quantization. Quantum theory of light. Basics of quantum electrodynamics. Credit, three hours.	
PHYS-691. RESEARCH I	3:3:3
Independent student research or laboratory work in a specialized field of interest. Credit, three hours.	
PHYS-692. RESEARCH II	3:3:3
Independent student research or laboratory work in a specialized field of interest. Credit, three hours.	
PHYS-695. MASTER'S THESIS	6:6:6
A research problem in a selected physics topic resulting in a written thesis. Credit, one to six hours.	
PHYS-800. MODERN LASER SPECTROSCOPIC METHODS	3:3:0
Basics of laser spectroscopic techniques and instrumentation. Topics include: ultra violet and visible (uv-vi) absorption spectroscopy; Fourier transform infrared spectroscopy; Raman, fluorescence, and saturation spectroscopy; polarization, correlation, and ultra-fast spectroscopy. Prerequisites: PHYS-600, PHYS-601, PHYS-605. Credit, three hours.	
PHYS-801. QUANTUM THEORY OF LIGHT	3:3:0
Quantum mechanical description of light matter interaction. Presentation of basic quantum mechanics and quantum mechanical treatment of light and atoms. Prerequisites: Consent of the Instructor. Credit, three hours.	
PHYS-802. THEORY OF LIGHT SCATTERING	3:3:0
An advanced electricity and magnetism course focused on light interactions with small particles. Topics include Raleigh and Mie scattering, optical properties of nanoparticles and surface plasmon resonance. Credit, three hours.	
PHYS-803. MODERN LASER SPECTROSCOPIC METHODS	3:3:0
The laser revolution in spectroscopy. Absorption within the Doppler line, Doppler-free broadening spectroscopy, saturation spectroscopy, multiphoton spectroscopy, laser fluorescence, laser Raman, coherent stokes and antistokes Raman spectroscopy, photon echo and coherent spectroscopy. Ultrafast spectroscopy. Modern trends in spectroscopy. Credit, three hours.	
PHYS-804. PRINCIPLES OF PHOTOCHEMISTRY AND PHOTOBIOLOGY	3:3:0
Review of the main phenomena related to the interaction of light with matter that results in chemical or biological activity. The study of inorganic and organic photochemistry, environmental aspects of photochemistry, atmospheric photochemistry, photosynthesis, visual processing, bio-luminescence, interaction of light with bio-organisms, photo-medicine, and phototherapy. Credit, three hours.	

PHYS-805. PHOTOACOUSTIC AND THERMAL SPECTROSCOPY	3:3:0
Fundamentals of photo-acoustic and photo-thermal interaction of light with optical samples. Examination of basic instrumentations and their applications for characterization of complex samples including biological samples. Credit, three hours.	
PHYS-806. MOLECULAR BIOPHYSICS	3:3:0
An overview of the physics of bio-molecular interactions. Topics will include physical models for DNA and protein systems. Credit, three hours.	
PHYS-807. OPTICAL SOLITONS	3:3:0
Basic concepts of the mathematical aspects of optical solitons. Presentation of optical waveguides, the nonlinear Schrodinger's equation, laws of nonlinearity, soliton perturbation, soliton-soliton interactions, Stochastic perturbation of optical solitons, optical couplers, optical switching, magneto-optic waveguides and optical bullets. Prerequisites: PHYS- 601, MTSC-853, MTSC-845. Credit, three hours.	
PHYS-808. FIBER OPTICS AND FIBER OPTICS COMMUNICATION	3:3:0
Light propagation in fiber, its dispersion and nonlinear characteristics that play an important role in light communication. Types of fiber-optic devices and their applications to communication. Wavelength division multiplexing. Credit, three hours.	
PHYS-809. PHOTONICS AND INFORMATION PROCESSING	3:3:0
Wave propagation in linear optical systems and optical information processing. Topics include: fundamentals of optical propagation, diffraction, optical imaging, Fourier transform, wave-front modulation, signal processing, and basics of optical processing devices. Credit, three hours.	
PHYS-810. CURRENT TOPICS IN OPTICS I	3:3:0
Current topics in optics and spectroscopy. Credit, three hours.	
PHYS-811. CURRENT TOPICS IN OPTICS II	3:3:0
Current topics in optics and spectroscopy. Credit, three hours.	
PHYS-820. DISSERTATION RESEARCH	9:9:9
The course is for Ph.D. students in the optics program working on their dissertation research project. Credit, two to eight hours.	
PHYS-890. DISSERTATION	9:9:0
Written work that describes the main research results obtained during the completion of the Graduate Program. The format must comply with the requirements of the College for thesis and dissertations. Credit, three to nine hours.	
PHYS-999. DOCTORAL SUSTAINING	0:0:0
Public oral defense of the thesis that includes presentation of the main research results obtained during the completion of the Graduate Program. It takes place after evaluation of the written dissertation by the members of the corresponding academic committee. Credit, none	



**PROGRAM: IN OPTICS
PHD**

Year 1 / Semester 1			Year 1 / Semester 2		
Course	Course Name	Cr	Course	Course Name	Cr
PHYS-600*	Modern Optics	4	PHYS-601*	Nonlinear Optics	4
PHYS-671*	Advanced Electromagnetic Theory I	3	PHYS-672*	Advanced Electromagnetic Theory II	3
PHYS-563*	Mathematical Methods in Physics III	3	PHYS-667*	Mathematical Methods of Physics IV	3
		Total Credits			Total Credits
		10			10

Year 2 / Semester 3			Year 2 / Semester 4		
Course	Course Name	Cr	Course	Course Name	Cr
PHYS-605*	Principles of Lasers & Optical Devices	4	PHYS-676*	Quantum Mechanics II	3
PHYS-675*	Quantum Mechanics I	3	PHYS-803+	Modern Laser Spectroscopic Methods	3
PHYS 665*	Statistical Mechanics	3			
		Total Credits			Total Credits
		10			6

Year 3 / Semester 5			Year 3 / Semester 6		
Course	Course Name	Cr	Course	Course Name	Cr
PHYS 691^	Special Topics/Research I	3	PHYS 692^	Special Topics/Research II	3
PHYS 6xxx/8xxx+	Technical Elective	3	PHYS 6xxx/8xxx+	Technical Elective	3
		Total Credits			Total Credits
		6			6

Year 4 / Semester 7			Year 4 / Semester 8		
Course	Course Name	Cr	Course	Course Name	Cr
PHYS 810^	Current Topics in Optics I	3	PHYS 811^	Current Topics in Optics II	3
PHYS 820	Dissertation Research	3	PHYS 820	Dissertation Research	3
		Total Credits			Total Credits
		6			6

Year 5 / Semester 9			Year 5 / Semester 10		
Course	Course Name	Cr	Course	Course Name	Cr
PHYS 820 or PHYS 890	Dissertation Research	6	PHYS 820 or PHYS 890	Dissertation Research	6
		Total Credits			Total Credits
		6			6

Total Credits: 72

- *Denotes a Core Course
- +Denotes an elective
- ^Denotes a Special Topic
- Total Core Credits = 33 (Core Courses) + 12 (Special Topics) + 18 (Dissertation)
- Total Elective Credits = 9
- Candidacy Requirement: Ph.D. Qualifier, Submission of Candidacy Application and Research Plan to SGSR
- Capstone or Culminating Experience: Doctoral Dissertation

MASTER OF SCIENCE IN APPLIED OPTICS

PROGRAM OBJECTIVES

The objectives of the Graduate Program in Physics and Optics aim at training future workforce and researchers in diverse fields of physics and optical sciences. Our educational activities are combined and integrated with our research focus, creating a stimulating and engaging environment for the students to achieve professional success and leadership status and opening opportunities to a highly demanding multidisciplinary market.

PROGRAM GOALS

The primary goals of the program are to: 1) prepare each graduate for success in professional careers in industry, research, government, or academia in the 21st century global society by providing them with necessary skills and knowledge in their area of study; 2) prepare each graduate to think critically to analyze and solve problems through research and/or coursework; 3) produce graduates that have the broad-based knowledge and communication skills needed for success in the global society. The students will be educated and trained to be creative and productive scientists using state-of-the-art research and educational facilities. Each student will join a well-seasoned research group and focus his or her research activities in one or multiple areas of optical physics and its applications, including fundamental spectroscopy, medical imaging, space exploration, and environmental science.

STUDENT LEARNING OUTCOMES

- Students will learn advanced content needed to solve problems quantitatively using analytic and numerical methods to find their carriers in different organizations;
- Students will engage in one or more research projects to learn laboratory techniques, research protocol, and appropriate behavior expected in a research environment by using instruments, computers and associated technologies;
- Students will be able to integrate content knowledge and analytic thinking skills to collect, analyze and interpret a variety of problems and issues involving physical systems;
- Students will be able to organize and conduct original investigations and reach scientifically appropriate conclusions;
- Students will be capable of effectively communicating the results of their studies in a variety of formats, including written reports, poster presentations, and PowerPoint-like presentations to communicate orally with peers as colleagues in the scientific community using appropriate language skills and professional vocabulary;
- Students will be able to use their knowledge to analyze and reflect on technical problems and issues that span more than a single discipline, including problems that have broad social and economic impact.

ADMISSION DEADLINES AND DEGREE REQUIREMENTS

Application Deadline:

Fall – June 30

International Application Deadline:

Fall – April 15

All applicants are required to provide and/or meet:

- Earned baccalaureate degree in physics or a related field.
A sound background in intermediate level in mechanics, electricity and magnetism, thermal physics, and mathematical methods of physics. Any student found deficient in any of these areas may be required to take appropriate courses to remove that deficiency.
Recommendation will be made for the student to enter the M.S. program after evaluation of the candidate's documents.
- Official scores on the Graduate Record Examination (GRE). Due to COVID-19, GRE scores are not required for the 2023-2024 academic year.
- Completed application for admission.
- Official transcript(s).
- Two letters of recommendation completed by persons acquainted with their ability for graduate study.
- A cover letter.
- A statement of intent.
- All additional requirements if the applicant is international.

The Committee of the Graduate Program of the Department of Physics and Engineering will review the application materials of each applicant and make recommendation for acceptance into the Graduate Program to the Chair of the Department who, after his or her review, will send the Department recommendation to the Dean of the College of Agriculture, Science and Technology (CAST) and the Dean of Graduate, Adult and Extended Studies. The Dean of Graduate, Adult and Extended Studies makes the final decision.

DEGREE REQUIREMENTS

M.S. Thesis and Non-Thesis Options:

The student has an option of earning the Master of Science degree in Applied Optics on either a thesis or non-thesis option. If the non-thesis track is selected, the student must complete 33 credits of graduate coursework, of which 24 must be above the 600-level (or 500-level with consent from the Department). In the thesis option, the student must complete a minimum of 36 credits of graduate coursework (all above the 600-level or 500-level with Department approval), including at least 6 credits of thesis research, and submit and defend a written thesis. For both the thesis and non-thesis options, only a maximum of 6 credit hours of graduate credit may be granted for physics courses in the 500 level, or other graduate-level courses in the sciences with the approval of the Department Chair. A grade of "B" or better must be attained in each of the physics Core Courses taken, and a student must achieve a 3.0 overall GPA on a scale of 4.0 to receive a degree.

For electives, the student may take other 500 or 600 level courses offered with the prefix of PHYS or similar level courses offered by other departments in the College of Agriculture, Science & Technology with the consent of the Department. A master's student may also take 800-level optics courses with approval of the Instructor and student's Advisor.

Foundation Courses are noted below:

Mathematical Methods of Physics
Advanced Electromagnetic Theory Optics
and Spectroscopy
Quantum Mechanics

M.S. Thesis Option:

Students selecting the thesis option are required to complete at least 36 credit hours of graduate-level coursework, which includes 6 credits of thesis work. All students selecting the thesis option must develop their research prospectus into a full research project either theoretical or experimental and documented in a thesis format which meets the standards established by CAST and the School of Graduate, Adult and Extended Studies. The completed thesis will be submitted to the Thesis Committee for review and if deemed acceptable, an oral examination, consisting principally of a defense of the thesis, will be scheduled. After the thesis has been read and approved by the Thesis Committee, it must be submitted to the Dean of CAST and finally to the Dean of Graduate, Adult and Extended Studies. The Thesis Committee is uniquely qualified to approve the thesis and its defense. If denied, the candidate will not be recommended for graduation. In this event, the student may be re-examined at a later period as determined by the Thesis Committee.

M.S. Non-Thesis Option:

Students selecting a non-thesis option are required to complete at least 33 credit hours of graduate-level coursework. Candidacy requirement requires successful completion of a directed project under PHYS 691.

Required Coursework:

PHYS-600: Modern Optics
PHYS-671 and PHYS 672: Advanced Electromagnetic Theory I & II
PHYS 601: Nonlinear Optics
PHYS 563 and PHYS 667: Mathematical Methods of Physics III and IV
PHYS 605: Principles of Lasers & Optical Devices
PHYS 675: Quantum Mechanics I
PHYS 803: Modern Laser Spectroscopic Methods

Transfer Credits: A maximum of 9 graduate credits may be transferred into the program from another accredited institution of higher learning provided that the following conditions apply: the course curriculum must have covered material equivalent to that of the substituted course within the program, the student must have earned a minimum grade of "B" for the course, the credit cannot have been used toward a prior degree, and the course must be approved by the Committee of the Graduate Program of the Department.

FACULTY

All faculty members in the graduate programs of physics and engineering have terminal degrees in physics or a related field, are dedicated to their respective fields of study and research, and have a diverse background. Specific areas of research interest include optical physics, spectroscopy, soft-matter physics and biophysics, space exploration, medical optics, photonics, imaging, and computational physics. Active research projects exist within these areas and offer graduate students many opportunities for active learning and discovery.

MASTER OF SCIENCE IN APPLIED OPTICS (Thesis Option)

COURSE NO.	CREDITS	COURSE TITLE
PHYS-563	3	Mathematical Methods of Physics III
PHYS-600	4	Modern Optics
PHYS-601	4	Nonlinear Optics
PHYS-605	4	Principles of Lasers & Optical Devices
PHYS-667	3	Mathematical Methods of Physics IV
PHYS-671	3	Advanced Electromagnetic Theory I
PHYS-672	3	Advanced Electromagnetic Theory II
PHYS-675	3	Quantum Mechanics I
PHYS-695	6	Thesis Research
PHYS-803	3	Modern Laser Spectroscopic Methods
TOTAL CREDIT HOURS : 36		

MASTER OF SCIENCE IN APPLIED OPTICS (Non-Thesis Option)

COURSE NO.	CREDITS	COURSE TITLE
PHYS-563	3	Mathematical Methods of Physics III
PHYS-600	4	Modern Optics
PHYS-601	4	Nonlinear Optics
PHYS-605	4	Principles of Lasers & Optical Devices
PHYS-667	3	Mathematical Methods of Physics IV
PHYS-671	3	Advanced Electromagnetic Theory I
PHYS-672	3	Advanced Electromagnetic Theory II
PHYS-675	3	Quantum Mechanics I
PHYS-691	3	Special Topics/Research
PHYS-803	3	Modern Laser Spectroscopic Methods
TOTAL CREDIT HOURS : 33		

COURSE DESCRIPTIONS

PHYSICS (PHYS)

PHYS-501. ELECTRICITY AND MAGNETISM I 3:3:0

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. Credit, three hours.

PHYS-502. ELECTRICITY AND MAGNETISM II 3:3:0

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. Credit, three hours.

PHYS-505. MATHEMATICAL METHODS OF PHYSICS I 3:3:0

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. Credit, three hours.

PHYS-506. MATHEMATICAL METHODS OF PHYSICS II 3:3:0

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. Credit, three hours.

PHYS-511. MECHANICS I 3:3:0

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. Credit, three hours.

PHYS-5EDUC. MECHANICS II 3:3:0

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. Credit, three hours.

PHYS-516. LASER OPTICS 3:3:0

A study of geometric and physical optics with particular application to optical instruments and an introduction to lasers and holography. Credit, three hours.

PHYS-523. MODERN PHYSICS 3:3:0

Important contributions to atomic and nuclear physics since 1900, including electrical discharges in gases, atomic spectra, Bohr's atom, Schrodinger's equation, natural radioactivity, and elementary relativity. Credit, three hours.

PHYS-525. THERMAL AND KINETIC THEORY 3:3:0

Study of first and second laws of thermodynamics, general thermodynamic formulas with application to matter, kinetic theory of gases and Maxwell-Boltzmann statistics. Credit, three hours.

PHYS-531. ENERGY SYSTEMS 3:3:0

Physical and chemical principles of energy conversion and their application to potential sources of power, fossil fuels, fission and fusion, fuel cells, photovoltaics, and photothermal systems. Credit, three hours.

PHYS-535. METHODS OF EXPERIMENTAL PHYSICS I 3:3:0

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. Credit, three hours.

PHYS-536. METHODS OF EXPERIMENTAL PHYSICS II 3:3:0

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. Credit, three hours.

PHYS-563. MATHEMATICAL METHODS OF PHYSICS III 3:3:0

An intermediate course in applied mathematics. Topics covered include the solution of differential equations, vector calculus, Fourier series and Laplace transforms. Credit, three hours.

PHYS-565. THERMAL PHYSICS 3:3:0

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. Credit, three hours.

PHYS-567. INTERMEDIATE ELECTRICITY AND MAGNETISM I 3:3:0

A treatment of electrostatics, Dielectric Theory, magnetic phenomena, magnetic media, ac circuits and Maxwell's equations. Vector calculus is used throughout. Credit, three hours.

PHYS-568. INTERMEDIATE ELECTRICITY AND MAGNETISM II 3:3:0

A treatment of electrostatics, Dielectric Theory, magnetic phenomena, magnetic media, ac circuits and Maxwell's equations. Vector calculus is used throughout. Credit, three hours.

PHYS-574. SELECTED TOPICS FOR MIDDLE SCHOOL TEACHERS 3:3:0

A course that allows middle school teachers to pursue physics concepts as they relate to middle school science. Credit, three hours.

PHYS-577. SELECTED TOPICS I 3:3:0

A course allowing practicing teachers to pursue independent study of a topic in physics and physical science at the graduate level. Credit, three hours.

PHYS-578. SELECTED TOPICS II 3:3:0

A course allowing practicing teachers to pursue additional independent study of a topic in physics and physical science at the graduate level. Credit, three hours.

PHYS-579. SELECTED TOPICS III 3:3:0

A course allowing practicing teachers to pursue additional independent study of a topic in physics and physical science at the graduate level. Credit, three hours.

PHYS-600. MODERN OPTICS 4:4:0

Electromagnetic description of light and its interaction with matter. Topics include interference, coherence, diffraction, holography, dispersion, polarization, scattering, and confinement. Credit, four hours.

PHYS-601. NONLINEAR OPTICS 4:4:0

Principles of nonlinear interaction of light and matter based on the semi-classical approximation. Definition of nonlinear induced polarization and nonlinear susceptibility. Basic model of the coherent interaction of light with a two-level system is included. Main nonlinear optical effects are studied: harmonic generation, optical parametric amplification, saturation effects, Kerr effect, coherent effects, stimulated light scattering including stimulated Raman scattering, self-focusing and self-defocusing effects, multi-photon ionization, multi-photon ionization, and other nonlinear optical effects. The course also discusses practical applications of the nonlinear optical phenomena and related technology. Prerequisites: PHYS-600. Credit, four hours.

PHYS-602. BIOPHOTONICS I: PRINCIPLES OF LUMINESCENCE 4:4:0

A study of the physics behind light emitting molecules and their applications in biology. Credit, four hours.

PHYS-603. BIOPHOTONICS II: INSTRUMENTATION 3:3:0

An overview of microscopes and other optical instruments used in the biomedical field. Credit, three hours.

PHYS-604. APPLIED OPTICS IN BIOMEDICINE 3:3:0

A treatment of concepts of physics and optics applied to the medical field. Topics include DNA sequencing, in situ fluorescence, enzyme-based assays, glucose monitoring, HIV detection, and cancer diagnostics. Credit, three hours.

- PHYS-605. PRINCIPLES OF LASERS AND OPTICAL DEVICES** 4:4:0
Treatment of basic principles of lasers and their applications. Topics to be covered include, fundamentals of quantum electronics, oscillator model, rate equations, stimulated transitions, population inversion, laser amplification, design of laser resonators, principles of q-switching, mode locking, injection locking and modern applications of lasers. Credit, four hours.
- PHYS-606. LABORATORY TECHNIQUES IN OPTICS AND SPECTROSCOPY** 3:3:0
Modern spectroscopic methods. Human chromosomes, human leukocyte antigen (hla) haplotyping, enzyme-linked immune-assays (Elisa), diabetes testing and glucose monitoring, pregnancy testing, drug testing, HIV detection, and cancer diagnostics. Prerequisites: PHYS-602, PHYS-603. Credit, three hours.
- PHYS-607. INTRODUCTION TO LABVIEW** 3:3:0
A hands-on approach to the national instruments labview programming language. Credit, three hours.
- PHYS-608. SELECTED TOPICS IN OPTICS AND SPECTROSCOPY I** 3:3:0
Current research topics in optics and spectroscopy. Credit, three hours.
- PHYS-609. SELECTED TOPICS IN OPTICS AND SPECTROSCOPY II** 3:3:0
Current research topics in optics and spectroscopy. Credit, three hours.
- PHYS-621. OPTICAL SYSTEM DESIGN** 3:2:2
An advanced course in analysis and design of optical and photonic systems. The laboratory part of the course consists in learning and using optical design software for the assessment of optical system image quality. Credit, three hours. 2 hour lecture and 2 hour laboratory
- PHYS-633. SELECTED TOPICS IN SCIENCE EDUCATION** 3:3:0
Current developments in physics education. Credit, three hours.
- PHYS-652. CLASSICAL MECHANICS** 3:3:0
Lagrangian formulation, the Kepler problem, Rutherford scattering, rotating coordinate systems, rigid body motion, small oscillations, stability problems, and Hamiltonian formulation. Credit, three hours.
- PHYS-655. COMPUTATIONAL METHODS** 3:3:0
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. Credit, three hours.
- PHYS-661. SOLID STATE PHYSICS** 3:3:0
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. Credit, three hours.
- PHYS-665. STATISTICAL MECHANICS** 3:3:0
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. Credit, three hours.
- PHYS-667. MATHEMATICAL METHODS OF PHYSICS IV** 3:3:0
An advanced treatment of mathematical topics including operators, matrix mathematics, complex variables and eigenvalue problems. Credit, three hours.
- PHYS-671. ADVANCED ELECTROMAGNETIC THEORY I** 3:3:0
Treatment of boundary value problems of electrostatics and magnetostatics, electromagnetic radiation, radiating systems, wave guides, resonating systems and multipole fields. Credit, three hours.

- PHYS-672. ADVANCED ELECTROMAGNETIC THEORY II** 3:3:0
Treatment of boundary value problems of electrostatics and magnetostatics, electromagnetic radiation, radiating systems, wave guides, resonating systems and multipole fields. Credit, three hours.
- PHYS-675. QUANTUM MECHANICS I** 3:3:0
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. Credit, three hours.
- PHYS-676. QUANTUM MECHANICS II** 3:3:0
Quantum Mechanics of molecules and solid state. Relativistic quantum mechanics. Field quantization. Quantum theory of light. Basics of quantum electrodynamics. Credit, three hours.
- PHYS-691. RESEARCH I** 3:3:3
Independent student research or laboratory work in a specialized field of interest. Credit, three hours.
- PHYS-692. RESEARCH II** 3:3:3
Independent student research or laboratory work in a specialized field of interest. Credit, three hours.
- PHYS-695. MASTER'S THESIS** 6:6:6
A research problem in a selected physics topic resulting in a written thesis. Credit, one to six hours.
- PHYS-800. MODERN LASER SPECTROSCOPIC METHODS** 3:3:0
Basics of laser spectroscopic techniques and instrumentation. Topics include: ultra violet and visible (uv-vi) absorption spectroscopy; Fourier transform infrared spectroscopy; Raman, fluorescence, and saturation spectroscopy; polarization, correlation, and ultra-fast spectroscopy.
Prerequisites: PHYS-600, PHYS-601, PHYS-605. Credit, three hours.
- PHYS-801. QUANTUM THEORY OF LIGHT** 3:3:0
Quantum mechanical description of light matter interaction. Presentation of basic quantum mechanics and quantum mechanical treatment of light and atoms. Prerequisites: Consent of the Instructor. Credit, three hours.
- PHYS-802. THEORY OF LIGHT SCATTERING** 3:3:0
An advanced electricity and magnetism course focused on light interactions with small particles. Topics include Raleigh and Mie scattering, optical properties of nanoparticles and surface plasmon resonance. Credit, three hours.
- PHYS-803. MODERN LASER SPECTROSCOPIC METHODS** 3:3:0
The laser revolution in spectroscopy. Absorption within the Doppler line, Doppler-free broadening spectroscopy, saturation spectroscopy, multiphoton spectroscopy, laser fluorescence, laser Raman, coherent stokes and anti-stokes Raman spectroscopy, photon echo and coherent spectroscopy. Ultrafast spectroscopy. Modern trends in spectroscopy. Credit, three hours.
- PHYS-804. PRINCIPLES OF PHOTOCHEMISTRY AND PHOTOBIOLOGY** 3:3:0
Review of the main phenomena related to the interaction of light with matter that results in chemical or biological activity. The study of inorganic and organic photochemistry, environmental aspects of photochemistry, atmospheric photochemistry, photosynthesis, visual processing, bio-luminescence, interaction of light with bio-organisms, photo- medicine, and phototherapy. Credit, three hours.
- PHYS-805. PHOTOACOUSTIC AND THERMAL SPECTROSCOPY** 3:3:0
Fundamentals of photo-acoustic and photo-thermal interaction of light with optical samples. Examination of basic instrumentations and their applications for characterization of complex samples including biological samples. Credit, three hours.
- PHYS-806. MOLECULAR BIOPHYSICS** 3:3:0
An overview of the physics of bio-molecular interactions. Topics will include physical models for DNA and protein systems. Credit, three hours.

PHYS-807. OPTICAL SOLITONS**3:3:0**

Basic concepts of the mathematical aspects of optical solitons. Presentation of optical waveguides, the nonlinear Schrodinger's equation, laws of nonlinearity, soliton perturbation, soliton-soliton interactions, Stochastic perturbation of optical solitons, optical couplers, optical switching, magneto-optic waveguides and optical bullets. Prerequisites: PHYS-601, MTSC-853, MTSC-845. Credit, three hours.

PHYS-808. FIBER OPTICS AND FIBEROPTICS COMMUNICATION**3:3:0**

Light propagation in fiber, its dispersion and nonlinear characteristics that play an important role in light communication. Types of fiber-optic devices and their applications to communication. Wavelength division multiplexing. Credit, three hours.

PHYS-809. PHOTONICS AND INFORMATION PROCESSING**3:3:0**

Wave propagation in linear optical systems and optical information processing. Topics include: fundamentals of optical propagation, diffraction, optical imaging, Fourier transform, wave-front modulation, signal processing, and basics of optical processing devices. Credit, three hours.

PHYS-810. CURRENT TOPICS IN OPTICS I**3:3:0**

Current topics in optics and spectroscopy. Credit, three hours.

PHYS-811. CURRENT TOPICS IN OPTICS II**3:3:0**

Current topics in optics and spectroscopy. Credit, three hours.

PHYS-820. DISSERTATION RESEARCH**9:9:9**

The course is for Ph.D. students in the optics program working on their dissertation research project. Credit, two to eight hours.

PHYS-890. DISSERTATION**9:9:0**

Written work that describes the main research results obtained during the completion of the Graduate Program. The format must comply with the requirements of the College for thesis and dissertations. Credit, three to nine hours.

PHYS-999. DOCTORAL SUSTAINING**0:0:0**

Public oral defense of the thesis that includes presentation of the main research results obtained during the completion of the Graduate Program. It takes place after evaluation of the written dissertation by the members of the corresponding academic committee. Credit, none



MS IN APPLIED OPTICS –THESIS OPTION

Year 1 and Semester 1			Year 1 and Semester 2		
Course	Course Name	Cr	Course	Course Name	Cr
PHYS-600*	Modern Optics	4	PHYS-601*	Nonlinear Optics	4
PHYS-671*	Advanced Electromagnetic Theory I	3	PHYS-672*	Advanced Electromagnetic Theory II	3
PHYS-563*	Mathematical Methods in Physics III	3	PHYS-667*	Mathematical Methods of Physics IV	3
Total Credits		10	Total Credits		10

Year 2 and Semester 3			Year 2 and Semester 4		
Course	Course Name	Cr	Course	Course Name	Cr
PHYS-605*	Principles of Lasers & Optical Devices	4	PHYS-695*	Thesis Research	6
PHYS-675*	Quantum Mechanics I	3	PHYS-803*	Modern Laser Spectroscopic Methods	3
Total Credits		7	Total Credits		9

			Total Credits: 36		
--	--	--	-------------------	--	--

- *Denotes a Core Requirement
- +Denotes an elective
- Total Core Credits = 36
- Total Elective Credits = 0
- **Candidacy Requirement:** Complete 15 credits of course work with GPA ≥ 3.0 , submission of candidacy application with research proposal to Graduate Studies and Research.
- **Capstone or Culminating Experience:** Public Thesis presentation and oral defense of Research Thesis



MS IN APPLIED OPTICS – NON-THESIS OPTION

Year 1 and Semester 1			Year 1 and Semester 2		
Course	Course Name	Cr	Course	Course Name	Cr
PHYS-600*	Modern Optics	4	PHYS-601*	Nonlinear Optics	4
PHYS-671+	Advanced Electromagnetic Theory I	3	PHYS-672*	Advanced Electromagnetic Theory II	3
PHYS-563*	Mathematical Methods in Physics III	3	PHYS-667*	Mathematical Methods of Physics IV	3
		Total Credits			Total Credits
		10			10

Year 2 and Semester 3			Year 2 and Semester 4		
Course	Course Name	Cr	Course	Course Name	Cr
PHYS-605*	Principles of Lasers & Optical Devices	4	PHYS-691*	Special Topics/Research I (Directed Project)	3
PHYS-675*	Quantum Mechanics I	3	PHYS-803*	Modern Laser Spectroscopic Methods	3
		Total Credits			Total Credits
		7			6

			Total Credits: 33		
--	--	--	-------------------	--	--

- *Denotes a Core Requirement
- +Denotes an elective
- Total Core Credits = 33
- Total Elective Credits = 0
- Candidacy Requirement: Complete 15 credits of course work with GPA ≥ 3.0 , submission of candidacy application with research proposal to Graduate Studies and Research.
- Capstone or Culminating Experience: Presentation in PHYS691 class about directed project

MASTER OF SCIENCE IN PHYSICS

PROGRAM OBJECTIVES

The objectives of the M.S. degree in Physics aim at training future workforce and researchers in the basic foundations of physics. Our educational activities are combined and integrated with our research focus, creating a stimulating and engaging environment for the students to achieve professional success and leadership status and opening opportunities to a highly demanding multidisciplinary market.

PROGRAM GOALS

The primary goals of the program are to: 1) prepare each graduate for success in professional careers in industry, research, government, or academia in the 21st century global society by providing them with necessary skills and knowledge in their area of study; 2) prepare each graduate to think critically to analyze and solve problems through research and/or coursework; 3) produce graduates that have the broad-based knowledge and communication skills needed for success in the global society. The students will be educated and trained to be creative and productive scientists using state-of-the-art research and educational facilities. Each student will join a well-seasoned research group and focus his/her research activities in one or multiple areas of optical physics and its applications, including fundamental spectroscopy, medical imaging, space exploration, and environmental science.

STUDENT LEARNING OUTCOMES

- Students will learn advanced content needed to solve problems quantitatively using analytic and numerical methods to find their carriers in different organizations;
- Students will engage in one or more research projects to learn laboratory techniques, research protocol, and appropriate behavior expected in a research environment by using instruments, computers and associated technologies;
- Students will be able to integrate content knowledge and analytic thinking skills to collect, analyze and interpret a variety of problems and issues involving physical systems;
- Students will be able to organize and conduct original investigations and reach scientifically appropriate conclusions;
- Students will be capable of effectively communicating the results of their studies in a variety of formats, including written reports, poster presentations, and PowerPoint-like presentations to communicate orally with peers as colleagues in the scientific community using appropriate language skills and professional vocabulary;
- Students will be able to use their knowledge to analyze and reflect on technical problems and issues that span more than a single discipline, including problems that have broad social and economic impact.

ADMISSION DEADLINES AND DEGREE REQUIREMENTS

Application Deadline:

Fall – June 30

International Application Deadline:

Fall – April 15

All applicants are required to provide and/or meet:

- Earned baccalaureate degree in Physics or a related field.
- A sound background in intermediate level in mechanics, electricity and magnetism, thermal physics, and mathematical methods of physics. Any student found deficient in any of these areas may be required to take appropriate courses to remove that deficiency. Recommendation will be made for the student to enter the M.S. program, after evaluation of the candidate's documents.
- Official scores on the Graduate Record Examination (GRE). Due to COVID-19, GRE scores are not required for the 2023-2024 academic year.
- Completed application for admission.
- Official transcript(s).
- Two letters of recommendation completed by persons acquainted with their ability for graduate study.
- A cover letter.
- A statement of intent.
- All additional requirements if the applicant is international.

The Committee of the Graduate Program of MS in Physics will review the application materials of each applicant and make recommendation for acceptance into the Graduate Program to the Chair of the Department who, after his or her review, will send the Department recommendation to the Dean of CAST and the Dean of Graduate, Adult and Extended Studies, who extends an offer of admission.

DEGREE REQUIREMENTS

MS Thesis and Non-Thesis Options -- The student has an option of earning the Master of Science degree in Physics on either a thesis or non-thesis option. If the non-thesis track is selected, the student must complete 30 credits of graduate coursework of which 24 must be above the 600-level. In the thesis option, the student must complete a minimum of 24 credits of graduate coursework (all above the 600-level or 500-level with Department approval), at least 6 credits of thesis research, and submit and defend a written thesis. For both the thesis and non-thesis options, only a maximum of 6 credit hours of graduate credit may be granted for physics courses in the 500 level, or other graduate-level courses in the sciences with the approval of the Department Chair. A grade of "B" or better must be attained in each of the physics Core Courses taken, and a student must achieve a 3.0 overall GPA on a scale of 4.0 to receive a degree.

For electives, the student may take other 500 or 600 level courses offered in prefix PHYS, or similar level courses offered by other departments in CAST with the consent of the Department. A master's student may also take 800-level optics courses with approval of the Instructor and student's Advisor.

Foundation Courses are noted below:

Mathematical Methods of Physics
Advanced Electromagnetic Theory
Classical Mechanics
Quantum Mechanics
Statistical Mechanics

M.S. Thesis Option:

Students selecting the thesis option are required to complete at least 30 credit hours of graduate-level coursework which includes 6 credits of thesis work. All students selecting the thesis option must develop their research prospectus into a full research project either theoretical or experimental and documented in a thesis format which meets the standards established by CAST and the School of Graduate, Adult and Extended Studies. The completed thesis will be submitted to the Thesis Committee for review and if deemed acceptable, an oral examination, consisting principally of a defense of the thesis, will be scheduled. After the thesis has been read and approved by the Thesis Committee, it must be submitted to the Dean of CAST and finally to the Dean of Graduate, Adult and Extended Studies. The Thesis Committee is uniquely qualified to approve the thesis and its defense. If denied, the candidate will not be recommended for graduation. In this event, the student may be re-examined at a later period as determined by the Thesis Committee.

M.S. Non-Thesis Option:

Students selecting a non-thesis option are required to complete at least 30 credit hours of graduate-level coursework. Candidacy requirement requires successful completion of a directed project under PHYS 691.

Required Coursework:

PHYS-652: Classical Mechanics
PHYS-671 and PHYS 672: Advanced Electromagnetic Theory I & II
PHYS 665: Statistical Mechanics
PHYS 563 and PHYS 667: Mathematical Methods of Physics III and IV
PHYS 675 & PHYS 676: Quantum Mechanics I and II

Transfer Credits: A maximum of 9 graduate credits may be transferred into the program from another accredited institution of higher learning provided that the following conditions apply:

The course curriculum must have covered material equivalent to that of the substituted course within the program, the student must have earned a minimum grade of "B" for the course, the credit cannot have been used toward a prior degree, and the course must be approved by the Committee of the Graduate Program of the Department.

FACULTY

All faculty members in the graduate programs of physics and engineering have terminal degrees in physics or a related field, are dedicated to their respective fields of study and research, and have a diverse background. Specific areas of research interest include optical physics, spectroscopy, soft-matter physics and biophysics, space exploration, medical optics, photonics, imaging, and computational physics. Active research projects exist within these areas and offer graduate students many opportunities for active learning and discovery.

MASTER OF SCIENCE IN PHYSICS (Thesis Option)

COURSE NO.	CREDITS	COURSE TITLE
PHYS-563	3	Mathematical Methods of Physics III
PHYS-652	3	Classical Mechanics
PHYS-665	3	Statistical Mechanics
PHYS-667	3	Mathematical Methods of Physics IV
PHYS-671	3	Advanced Electromagnetic Theory I
PHYS-672	3	Advanced Electromagnetic Theory II
PHYS-675	3	Quantum Mechanics I
PHYS-676	3	Quantum Mechanics II
PHYS-695	6	Thesis Research
TOTAL CREDIT HOURS : 30		

MASTER OF SCIENCE IN PHYSICS (Non-Thesis Option)

COURSE NO.	CREDITS	COURSE TITLE
PHYS-563	3	Mathematical Methods of Physics III
PHYS-652	3	Classical Mechanics
PHYS-665	3	Statistical Mechanics
PHYS-667	3	Mathematical Methods of Physics IV
PHYS-671	3	Advanced Electromagnetic Theory I
PHYS-672	3	Advanced Electromagnetic Theory II
PHYS-675	3	Quantum Mechanics I
PHYS-676	3	Quantum Mechanics II
PHYS-691	3	Special Topics
PHYS-6XX	3	Elective
TOTAL CREDIT HOURS : 30		

COURSE DESCRIPTIONS

PHYSICS (PHYS)

PHYS-501. ELECTRICITY AND MAGNETISM I 3:3:0

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. Credit, three hours.

PHYS-502. ELECTRICITY AND MAGNETISM II 3:3:0

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. Credit, three hours.

PHYS-505. MATHEMATICAL METHODS OF PHYSICS I 3:3:0

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. Credit, three hours.

PHYS-506. MATHEMATICAL METHODS OF PHYSICS II 3:3:0

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. Credit, three hours.

PHYS-511. MECHANICS I 3:3:0

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. Credit, three hours.

PHYS-512. MECHANICS II 3:3:0

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. Credit, three hours.

PHYS-516. LASER OPTICS 3:3:0

A study of geometric and physical optics with particular application to optical instruments and an introduction to lasers and holography. Credit, three hours.

PHYS-523. MODERN PHYSICS 3:3:0

Important contributions to atomic and nuclear physics since 1900, including electrical discharges in gases, atomic spectra, Bohr's atom, Schrodinger's equation, natural radioactivity, and elementary relativity. Credit, three hours.

PHYS-525. THERMAL AND KINETIC THEORY 3:3:0

Study of first and second laws of thermodynamics, general thermodynamic formulas with application to matter, kinetic theory of gases and Maxwell-Boltzmann statistics. Credit, three hours.

PHYS-531. ENERGY SYSTEMS 3:3:0

Physical and chemical principles of energy conversion and their application to potential sources of power, fossil fuels, fission and fusion, fuel cells, photovoltaics, and photothermal systems. Credit, three hours.

PHYS-535. METHODS OF EXPERIMENTAL PHYSICS I 3:3:0

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. Credit, three hours.

PHYS-536. METHODS OF EXPERIMENTAL PHYSICS II 3:3:0

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. Credit, three hours.

PHYS-563. MATHEMATICAL METHODS OF PHYSICS III 3:3:0

An intermediate course in applied mathematics. Topics covered include the solution of differential equations, vector calculus, Fourier series and Laplace transforms. Credit, three hours.

PHYS-565. THERMAL PHYSICS 3:3:0

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. Credit, three hours.

PHYS-567. INTERMEDIATE ELECTRICITY AND MAGNETISM I 3:3:0

A treatment of electrostatics, Dielectric Theory, magnetic phenomena, magnetic media, ac circuits and Maxwell's equations. Vector calculus is used throughout. Credit, three hours.

PHYS-568. INTERMEDIATE ELECTRICITY AND MAGNETISM II 3:3:0

A treatment of electrostatics, Dielectric Theory, magnetic phenomena, magnetic media, ac circuits and Maxwell's equations. Vector calculus is used throughout. Credit, three hours.

PHYS-574. SELECTED TOPICS FOR MIDDLE SCHOOL TEACHERS 3:3:0

A course that allows middle school teachers to pursue physics concepts as they relate to middle school science. Credit, three hours.

PHYS-577. SELECTED TOPICS I 3:3:0

A course allowing practicing teachers to pursue independent study of a topic in physics and physical science at the graduate level. Credit, three hours.

PHYS-578. SELECTED TOPICS II 3:3:0

A course allowing practicing teachers to pursue additional independent study of a topic in physics and physical science at the graduate level. Credit, three hours.

PHYS-579. SELECTED TOPICS III 3:3:0

A course allowing practicing teachers to pursue additional independent study of a topic in physics and physical science at the graduate level. Credit, three hours.

PHYS-600. MODERN OPTICS 4:4:0

Electromagnetic description of light and its interaction with matter. Topics include interference, coherence, diffraction, holography, dispersion, polarization, scattering, and confinement. Credit, four hours.

PHYS-601. NONLINEAR OPTICS 4:4:0

Principles of nonlinear interaction of light and matter based on the semi-classical approximation. Definition of nonlinear induced polarization and nonlinear susceptibility. Basic model of the coherent interaction of light with a two-level system is included. Main nonlinear optical effects are studied: harmonic generation, optical parametric amplification, saturation effects, Kerr effect, coherent effects, stimulated light scattering including stimulated Raman scattering, self-focusing and self-defocusing effects, multi-photon ionization, multi-photon ionization, and other nonlinear optical effects. The course also discusses practical applications of the nonlinear optical phenomena and related technology. Prerequisites: PHYS-600. Credit, four hours.

PHYS-602. BIOPHOTONICS I: PRINCIPLES OF LUMINESCENCE 4:4:0

A study of the physics behind light emitting molecules and their applications in biology. Credit, four hours.

PHYS-603. BIOPHOTONICS II: INSTRUMENTATION 3:3:0

An overview of microscopes and other optical instruments used in the biomedical field. Credit, three hours.

PHYS-604. APPLIED OPTICS IN BIOMEDICINE**3:3:0**

A treatment of concepts of physics and optics applied to the medical field. Topics include DNA sequencing, in situ fluorescence, enzyme-based assays, glucose monitoring, HIV detection, and cancer diagnostics. Credit, three hours.

PHYS-605. PRINCIPLES OF LASERS AND OPTICAL DEVICES**4:4:0**

Treatment of basic principles of lasers and their applications. Topics to be covered include, fundamentals of quantum electronics, oscillator model, rate equations, stimulated transitions, population inversion, laser amplification, design of laser resonators, principles of q-switching, mode locking, injection locking and modern applications of lasers. Credit, four hours.

PHYS-606. LABORATORY TECHNIQUES IN OPTICS AND SPECTROSCOPY**3:3:0**

Modern spectroscopic methods. Human chromosomes, human leukocyte antigen (hla) haplotyping, enzyme-linked immune-assays (Elisa), diabetes testing and glucose monitoring, pregnancy testing, drug testing, HIV detection, and cancer diagnostics. Prerequisites: PHYS-602, PHYS-603. Credit, three hours.

PHYS-607. INTRODUCTION TO LABVIEW**3:3:0**

A hands-on approach to the national instruments labview programming language. Credit, three hours.

PHYS-608. SELECTED TOPICS IN OPTICS AND SPECTROSCOPY I**3:3:0**

Current research topics in optics and spectroscopy. Credit, three hours.

PHYS-609. SELECTED TOPICS IN OPTICS AND SPECTROSCOPY II**3:3:0**

Current research topics in optics and spectroscopy. Credit, three hours.

PHYS-621. OPTICAL SYSTEM DESIGN**3:2:2**

An advanced course in analysis and design of optical and photonic systems. The laboratory part of the course consists in learning and using optical design software for the assessment of optical system image quality. Credit, three hours. 2 hour lecture and 2 hour laboratory

PHYS-633. SELECTED TOPICS IN SCIENCE EDUCATION**3:3:0**

Current developments in physics education. Credit, three hours.

PHYS-652. CLASSICAL MECHANICS**3:3:0**

Lagrangian formulation, the Kepler problem, Rutherford scattering, rotating coordinate systems, rigid body motion, small oscillations, stability problems, and Hamiltonian formulation. Credit, three hours.

PHYS-655. COMPUTATIONAL METHODS**3:3:0**

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. Credit, three hours.

PHYS-661. SOLID STATE PHYSICS**3:3:0**

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. Credit, three hours.

PHYS-665. STATISTICAL MECHANICS**3:3:0**

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. Credit, three hours.

PHYS-667. MATHEMATICAL METHODS OF PHYSICS IV**3:3:0**

An advanced treatment of mathematical topics including operators, matrix mathematics, complex variables and eigenvalue problems. Credit, three hours.

- PHYS-671. ADVANCED ELECTROMAGNETIC THEORY I** 3:3:0
Treatment of boundary value problems of electrostatics and magnetostatics, electromagnetic radiation, radiating systems, wave guides, resonating systems and multipole fields. Credit, three hours.
- PHYS-672. ADVANCED ELECTROMAGNETIC THEORY II** 3:3:0
Treatment of boundary value problems of electrostatics and magnetostatics, electromagnetic radiation, radiating systems, wave guides, resonating systems and multipole fields. Credit, three hours.
- PHYS-675. QUANTUM MECHANICS I** 3:3:0
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. Credit, three hours.
- PHYS-676. QUANTUM MECHANICS II** 3:3:0
Quantum Mechanics of molecules and solid state. Relativistic quantum mechanics. Field quantization. Quantum theory of light. Basics of quantum electrodynamics. Credit, three hours.
- PHYS-691. RESEARCH I** 3:3:3
Independent student research or laboratory work in a specialized field of interest. Credit, three hours.
- PHYS-692. RESEARCH II** 3:3:3
Independent student research or laboratory work in a specialized field of interest. Credit, three hours.
- PHYS-695. MASTER'S THESIS** 6:6:6
A research problem in a selected physics topic resulting in a written thesis. Credit, one to six hours.
- PHYS-800. MODERN LASER SPECTROSCOPIC METHODS** 3:3:0
Basics of laser spectroscopic techniques and instrumentation. Topics include: ultra violet and visible (uv-vi) absorption spectroscopy; Fourier transform infrared spectroscopy; Raman, fluorescence, and saturation spectroscopy; polarization, correlation, and ultra-fast spectroscopy. Prerequisites: PHYS-600, PHYS-601, PHYS-605. Credit, three hours.
- PHYS-801. QUANTUM THEORY OF LIGHT** 3:3:0
Quantum mechanical description of light matter interaction. Presentation of basic quantum mechanics and quantum mechanical treatment of light and atoms. Prerequisites: Consent of the Instructor. Credit, three hours.
- PHYS-802. THEORY OF LIGHT SCATTERING** 3:3:0
An advanced electricity and magnetism course focused on light interactions with small particles. Topics include Raleigh and Mie scattering, optical properties of nanoparticles and surface plasmon resonance. Credit, three hours.
- PHYS-803. MODERN LASER SPECTROSCOPIC METHODS** 3:3:0
The laser revolution in spectroscopy. Absorption within the Doppler line, Doppler-free broadening spectroscopy, saturation spectroscopy, multiphoton spectroscopy, laser fluorescence, laser Raman, coherent stokes and antistokes Raman spectroscopy, photon echo and coherent spectroscopy. Ultrafast spectroscopy. Modern trends in spectroscopy. Credit, three hours.
- PHYS-804. PRINCIPLES OF PHOTOCHEMISTRY AND PHOTOBIOLOGY** 3:3:0
Review of the main phenomena related to the interaction of light with matter that results in chemical or biological activity. The study of inorganic and organic photochemistry, environmental aspects of photochemistry, atmospheric photochemistry, photosynthesis, visual processing, bio-luminescence, interaction of light with bio-organisms, photo- medicine, and phototherapy. Credit, three hours.
- PHYS-805. PHOTOACOUSTIC AND THERMAL SPECTROSCOPY** 3:3:0
Fundamentals of photo-acoustic and photo-thermal interaction of light with optical samples. Examination of basic instrumentations and their applications for characterization of complex samples including biological samples. Credit, three hours.

PHYS-806. MOLECULAR BIOPHYSICS	3:3:0
An overview of the physics of bio-molecular interactions. Topics will include physical models for DNA and protein systems. Credit, three hours.	
PHYS-807. OPTICAL SOLITONS	3:3:0
Basic concepts of the mathematical aspects of optical solitons. Presentation of optical waveguides, the nonlinear Schrodinger's equation, laws of nonlinearity, soliton perturbation, soliton-soliton interactions, Stochastic perturbation of optical solitons, optical couplers, optical switching, magneto-optic waveguides and optical bullets. Prerequisites: PHYS-601, MTSC-853, MTSC-845. Credit, three hours.	
PHYS-808. FIBER OPTICS AND FIBER OPTICS COMMUNICATION	3:3:0
Light propagation in fiber, its dispersion and nonlinear characteristics that play an important role in light communication. Types of fiber-optic devices and their applications to communication. Wavelength division multiplexing. Credit, three hours.	
PHYS-809. PHOTONICS AND INFORMATION PROCESSING	3:3:0
Wave propagation in linear optical systems and optical information processing. Topics include: fundamentals of optical propagation, diffraction, optical imaging, Fourier transform, wave-front modulation, signal processing, and basics of optical processing devices. Credit, three hours.	
PHYS-810. CURRENT TOPICS IN OPTICS I	3:3:0
Current topics in optics and spectroscopy. Credit, three hours.	
PHYS-811. CURRENT TOPICS IN OPTICS II	3:3:0
Current topics in optics and spectroscopy. Credit, three hours.	
PHYS-820. DISSERTATION RESEARCH	9:9:9
The course is for Ph.D. students in the optics program working on their dissertation research project. Credit, two to eight hours.	
PHYS-890. DISSERTATION	9:9:0
Written work that describes the main research results obtained during the completion of the Graduate Program. The format must comply with the requirements of the College for thesis and dissertations. Credit, three to nine hours.	
PHYS-999. DOCTORAL SUSTAINING	0:0:0
Public oral defense of the thesis that includes presentation of the main research results obtained during the completion of the Graduate Program. It takes place after evaluation of the written dissertation by the members of the corresponding academic committee. Credit, none	

PROGRAM: MS PHYSICS - THESIS OPTION

Year 1 / Semester 1			Year 1 / Semester 2		
Course	Course Name	Cr	Course	Course Name	Cr
PHYS-652*	Classical Mechanics	3	PHYS 672*	Advanced Electromagnetic Theory II	3
PHYS-671*	Advanced Electromagnetic Theory I	3	PHYS 667*	Mathematical Methods of Physics IV	3
PHYS-563*	Mathematical Methods in Physics III	3			
	Total Credits	9		Total Credits	6

Year 2 / Semester 3			Year 2 / Semester 4		
Course	Course Name	Cr	Course	Course Name	Cr
PHYS 665*	Statistical Mechanics	3	PHYS 695*	Thesis Research	6
PHYS 675*	Quantum Mechanics I	3	PHYS 676*	Quantum Mechanics II	3
	Total Credits	6		Total Credits	9
			Total Credits: 30		

*Denotes a Core Requirement

+Denotes an Elective

Total Core Credits = 30

Total Elective Credits = 0

Candidacy Requirement: Proposal Defense with Thesis Committee; submission with Candidacy Application to School of Graduate, Adult and Extended Studies

Capstone or Culminating Experience: Public Thesis presentation and oral defense of Research Thesis

PROGRAM: MS PHYSICS – NON-THESIS OPTION

Year 1 / Semester 1			Year 1 / Semester 2		
Course	Course Name	Cr	Course	Course Name	Cr
PHYS-652*	Classical Mechanics	3	PHYS 672*	Advanced Electromagnetic Theory II	3
PHYS-671*	Advanced Electromagnetic Theory I	3	PHYS 667*	Mathematical Methods of Physics IV	3
PHYS-563*	Mathematical Methods in Physics III	3	PHYS 6XX+	Technical Elective	3
	Total Credits	9		Total Credits	9

Year 2 / Semester 3			Year 2 / Semester 4		
Course	Course Name	Cr	Course	Course Name	Cr
PHYS 665*	Statistical Mechanics	3	PHYS 691*	Special Topics / Research (Directed project)	3
PHYS 675*	Quantum Mechanics I	3	PHYS 676*	Quantum Mechanics II	3
	Total Credits	6		Total Credits	6
			Total Credits: 30		

*Denotes a Core Requirement

+Denotes an Elective

Total Core Credits = 27

Total Elective Credits = 3

Candidacy Requirement: Complete 15 credits of coursework with GPA ≥ 3.0 Capstone or

Culminating Experience: Presentation in special topics class about research topic

Outcomes report and rubric submitted to School of Graduate, Adult and Extended Studies prior to graduation

COLLEGE OF BUSINESS



Department of Business Administration

Master of Business Administration (MBA)

Concentrations in Business Analytics, Finance, and Information Systems

Department of Sport Management

MS in Sport Administration

MASTER OF BUSINESS ADMINISTRATION (MBA)

PROGRAM DESCRIPTION

The Master of Business Administration (MBA) Degree Program is for working professionals and aspiring managers. Candidates integrate and apply business and organizational concepts and techniques in the functional areas of organizational management. Our AACSB-accredited program includes concentrations in Business Analytics, Finance, and Information Systems. The program is flexible enough to accommodate full-time and part-time (professional and accelerated) students. MBA candidates pursuing a full-time accelerated program can complete the degree in 12 months by taking two courses per term and two courses in the summer session.

Meanwhile, full-time students can complete the program over 18 months by taking one course per term. MBA classes are offered online and occasionally during the evening hours. Part-time study students can complete the degree requirements within two years by attending at least one summer session.

PROGRAM GOALS

The student learning goals for Delaware State University's MBA Program are consistent with the College mission to provide a student-centered learning environment and develop successful business professionals with a global perspective.

STUDENT LEARNING OUTCOMES

- **Program SLO 1** - Identifies and illustrates ethical issues, concepts or theories; student demonstrates organizational ethics within the limitations of corporate interests; student identifies stakeholder positions and interests; student demonstrates ethically based decision making.
- **Program SLO 2** - Demonstrates knowledge of the tools and techniques of data gathering; student applies critical thinking skills to create a varied array of data gathering and analysis methodologies; student demonstrates an understanding of data gathering and evaluates findings appropriately.
- **Program SLO 3** - Displays information technology skills; student uses networks i.e., Internet resources and library of databases, to obtain reliable information on assigned topics, download, and document necessary files. In detail, the outcome/objectives is to see if students effectively demonstrate how IT is applied in business and demonstrate knowledge of current and emerging technologies.
- **Program SLO 4** - Capacity to understand differences and interconnectedness between societies and organizations; student demonstrates awareness of global economic and political environment; student demonstrates awareness of different socio-cultural environments and its relationship to business; student demonstrates awareness of diversity in global business operations; student demonstrates the understanding of the organization of global business operations.
- **Program SLO 5** - Effectively formulates personal leadership philosophies; student identifies leadership problems and makes appropriate recommendations; student effectively expresses its leadership philosophy orally; student succinctly summarizes information in writing; student effectively presents complex information orally.

Delaware State University's Student Learning Goals

	GR SLO 1	GR SLO 2	GR SLO 3	GR SLO 4	GR SLO 5
Business Administration MBA Program Student Learning Outcomes	Understanding of the major ethical issues associated with their discipline and how these issues impact society at large	Clear and concise written and oral communication	The ability to think critically, analyze information and work collaboratively to address complex problems	The ability to integrate knowledge and technology to ensure their professional and personal success	Outreach and service
Program SLO 1 – Ethical Decision Making	X				
Program SLO 2 – Data Gathering, Analysis, and Interpretation			X		
Program SLO 3 – Information Technology				X	
Program SLO 4 – Global, Culture, and Diversity					X
Program SLO 5 – Leadership and Communication		X	X		

ADMISSION REQUIREMENTS AND DEGREE REQUIREMENTS

Application Deadlines:

Rolling Admission with priority dates below:

June 30	Fall Session I (August) enrollment
September 1	Fall Session II (October) enrollment
November 15	Spring Session I (January) enrollment
February 1	Spring Session II (March) enrollment
April 15	Summer (May) enrollment

International Application Deadlines:

May 1	Fall Session I (August) enrollment
August 1	Fall Session II (October) enrollment
November 1	Spring Session I (January) enrollment
January 15	Spring Session II (March) enrollment
April 1	Summer (May) enrollment

All applicants are required to submit evidence of the following for consideration of unconditional admission:

For admission to the MBA Program, applicants must have earned a baccalaureate degree from an accredited college or university with a GPA of 3.0 and possess the ability to do graduate work of high quality.

The MBA Program does not require GMAT or GRE scores.

- Must have earned a baccalaureate degree.
- Complete an online application for admission.
- Submit official transcript(s) of all academic work completed. All international transcripts must be verified through one of four organizations: World Education Service (WES), Educational Credential Evaluators (ECE), Global Credential Evaluations, Inc. (GCE) or the Association of Collegiate Registrars and Admissions Officers (AACRAO). This verification should include a course-by-course evaluation.
- Submit a resume.
- Submit two letters of recommendation completed by persons acquainted with the student's ability for graduate study.
- Submit a Personal Statement. Please prepare a brief statement explaining why you have chosen to apply to Delaware State University's MBA program, your philosophy, educational objectives, and career aspirations.

DEGREE REQUIREMENTS

The MBA degree requires completing 30 credit hours, consisting of 24 credit hours of core courses and 6 credit hours of electives for a general MBA degree. Students may also select a concentration in Business Analytics, Finance or Information Systems by taking 9 credit hours of electives in the respective areas.

Students deficient in the foundation courses will be required to complete selected foundation course deficiencies before they take core courses.

Foundation Courses are noted below:

- Accounting
- Finance
- Marketing
- Management Information Systems
- Quantitative Methods for Decision Making (Statistics and Math)
- Economics

Students required to complete the foundation courses must complete those offered by the program before enrolling in MBA core courses. Appropriately qualified students may petition for a waiver or test out of foundation courses up to 18 credits. Students can take the foundation courses through Delaware State University, any other accredited University, or Ivy Software, an approved AACSB provider. Students can also use CLEP. Ivy Software is available for those who want to take the courses online at a significant reduction in the cost of tuition (\$350). A link will be sent upon admittance.

Non-Degree Option:

This option provides an opportunity for professionals who are seeking graduate coursework for their professional growth.

Required Coursework:

Students enrolled in the MBA Program must complete at least 30 credit hours for the General MBA degree or 33 credit hours for the MBA degree with concentration.

Required Core Courses include:

MBA 600 – Information and Technology Management
 MBA 601 – Economics for Managerial Decision-Making
 MBA 602 – Marketing Management
 MBA 603 – Accounting for Decision Making
 MBA 604 – Financial Management
 MBA 605 – Organizational Leadership and Behavior
 MBA 620 – Operations Analysis Management
 MBA 616 – Applied Strategic Management (Capstone)
 MBA XXX – Two MBA Electives

Student registration in graduate-level coursework is subject to the approval of an assigned Advisor.

FACULTY

Courses are taught by qualified professors who want to see students succeed. Our faculty members have terminal degrees in their respective disciplines and have published several research articles in recognized journals. Many of our faculty are currently employed in the business field, providing our students with many networking opportunities. Additionally, the program benefits from accomplished interdisciplinary faculty from the College of Business.

MASTER OF BUSINESS ADMINISTRATION (MBA)

The total MBA Credit Hours: General MBA: 30 without Foundation Courses, 48 with Foundation Courses MBA with a Concentration: 33 without Foundation Courses, 51 with Foundation Courses	
Foundation Courses 18 Credit Hours	Accounting Foundations (MBA 501) Economics Foundations (MBA 502) Finance Foundations (MBA 503) MIS Foundations (MBA 504) Marketing Foundations (MBA 505) Quantitative Methods Foundations (MBA 506) *
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 and Behavior (MBA 605) Operations Analysis Management (MBA 620) Applied Strategic Management (MBA 616 - Capstone)
General MBA Electives 6 Credit Hours	Any Two Electives Required for General MBA

MBA with a Concentration 9 Credit Hours Three Electives from a Specific Area	Finance Financial Statement Analysis (MBA 617) Investments and Portfolio Management (MBA 641) Domestic and Global Financial Markets and Institutions (MBA 643) Economic and Financial Environment of Business (MBA 645)
	Information Systems Strategic Information Systems (MBA 631) Managing Electronic Commerce (MBA 632) Topics in Information Systems (MBA 633) Supply Chain Management (MBA 651)
	Business Analytics Database Management Systems (MBA 681) Data Analytics (MBA 682) Data Analytics and Visualization (MBA 683)

*Prerequisite for Business Analytics concentration

COURSE DESCRIPTIONS

MBA-501. ACCOUNTING FOUNDATIONS

The purpose of this course is to introduce students to basics of accounting, the language of business. It will help students understand some common accounting terms, what goes into presenting financial information into financial statements and how managers analyze performance from inside the firm. The course takes a user's perspective and will help students understand how to use accounting information rather than how financial testaments are prepared. Credit, three hours.

MBA-502. ECONOMICS FOUNDATIONS

This is a general introductory course on the fundamentals of Microeconomic and Macroeconomic theories, market models, and principles and their application to national and international economics systems. Credit, three hours.

MBA-503. FINANCIAL FOUNDATIONS

The purpose of this course is to introduce students to corporate finance. Since finance is the cornerstone of the free enterprise system, a good understanding of finance foundations is necessary to become good managers. The course takes a manager's perspective and will help students understand how to use accounting and economic information to make sound financial decisions. Credit, three hours.

MBA-504. MIS FOUNDATIONS

The role of Information Systems (IS) in business and management is getting more important than before because of the growth of information systems, the internet, electronic commerce, and globalization. Thus students will learn what the information systems are, how they affect organizations and their employees, and how they can make business more competitive and efficient to make firms competitive. Credit, three hours.

MBA-505. MARKETING FOUNDATIONS

This course is a general review course on the principles of marketing. This course addresses concepts and issues underlying the modern practice of marketing, including the following: the environmental forces affecting the marketing decision maker, organization, and planning of the market function; market segmentation; marketing mix; and other relevant topics. Credit, three hours.

MBA-506. QUANTITATIVE METHODS FOUNDATIONS

This is a general review course on the fundamentals of mathematical theories, concepts, and applications as they pertain to business. It facilitates students to learn a Value-Driven Approach which presents an overview of fundamentals of Operations Management, the challenges facing today's Operations Managers, the need for a change from a cost orientation to a focus on value, and the place of OM within the corporate and competitive world. It helps to understand values and attributes that are associated with a value such as speed, quality, cost, and flexibility. Credit, three hours.

MBA-565. MBA SELECTED TOPICS

The MBA Selected Topics tests the student's strategic thinking and analytic skills. Students must receive prior approval by the MBA Director for the topic. 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.

MBA-600. INFORMATION AND TECHNOLOGY MANAGEMENT

This is a practical course that prepares students to better understand IT-business relationships. The objective of this course is to provide the students an overview of organizational and managerial revolution caused by information systems, information technology infrastructure, redesigning the organization with information systems, various decision support systems, and managing knowledge and international IS. Students will assess business-related problems using information systems and knowledge established by information systems. Credit, three hours

MBA-601. ECONOMICS FOR MANAGERIAL DECISION-MAKING

The course is designed to teach managers the practical utility of basic economic tools such as present value analysis, supply and demand, regression, production cost, and the basic models of perfect competition, monopoly and monopolistic competition. Topics such as oligopoly, penetration pricing game theory, and bargaining predatory pricing are covered. Students will expand their knowledge of excel and other analytical platforms. Credit, three hours.

MBA-602. MARKETING MANAGEMENT

The course covers major trends in the managerial practice of marketing. Topics include the impact of a pandemic on supply chain and crisis management, influencer marketing, consumer marketing with attention to diversity equity and inclusion, gender-based segmentation, disruptive innovation and the marketing influence of GEN Z. The class will include marketing analytics and application-based assignments and projects.

MBA 603: ACCOUNTING FOR DECISION MAKING

This course is designed to help you think through how you would manage the strategy implementation dilemmas in which operating managers find themselves. The course is designed to allow you to gain knowledge, insights, and analytical skills related to how a corporation's senior executives design and implement formal systems used to plan and control the firm's performance.

MBA-604. FINANCIAL MANAGEMENT

This course describes the theory and practice of corporate finance. Students will discover the importance of how managers use financial theory to solve practical problems and what financial managers should do to increase company value. Topics covered are valuation risk and capital budgeting, financial analysis and corporate control, and governance.

MBA-605. ORGANIZATIONAL LEADERSHIP AND BEHAVIOR

The course concentrates on the behavior of individuals in small, informal groups, and formal organizations. The course examines the following topics: leadership, in the context of group behavior, job satisfaction, supervision, planning, and conflict resolution. Prerequisites: Common Body of Knowledge (CBK) requirements in Management. Credit, three hours.

MBA-616. APPLIED STRATEGIC MANAGEMENT

The course is a study of policy formulation and implementation by middle- and senior-level management. The course integrates previous coursework in the other core courses. The 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 the 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, manage a budget, align culture and strategy; and structure the organization to implement the organization's strategic vision in a dynamic global marketplace. Prerequisites: Completion of all other core course requirements. Credit, three hours.

MBA-617. FINANCIAL STATEMENT ANALYSIS

The 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.) inter-corporate investments; 4.) financial statement data issues, including "other financial data" and information economics; and 5.) financial statement audit opinions. Prerequisites: MBA-603. Credit, three hours.

MBA-620. OPERATIONS ANALYSIS AND MANAGEMENT

The course focuses on the key strategic decisions of operations managers. Students will combine their quantitative and qualitative skills in the areas of operations, and sustainability in the supply chain. Students will evaluate and manage operations utilizing business analytics such as decision-making tools, learning curves, simulation, and applying analytics to Big Data in operations management.

MBA-621. PROJECT RISK MANAGEMENT

The exciting, challenging course focuses on how the Project and Program risks are managed in real life and based on the Standards for PMI (Project Management Institutes') PMBOK methodology. The course focuses on identifying and assessing various risks and developing response plans. Prerequisites: MBA-622. Credit, three hours.

MBA-622. PROJECT MANAGEMENT METHODOLOGY

The exciting, challenging course focuses on how the Projects and Programs planned and executed in real life based on the Standards for PMI (Project Management Institutes') PMBOK methodology. The course focuses on the five (5) phases of the Project management and nine (9) knowledge areas of the Project management discipline. Prerequisites: MBA-605. Credit, three hours.

MBA-623. PROGRAM AND PORTFOLIO MANAGEMENT

The exciting, challenging course focuses on how Organizations manage multiple projects and allocate resources through Portfolio Management discipline. The course covers the strategy, tactics, and processes needed for successful project portfolio management. Prerequisites: MBA-622. Credit, three hours.

MBA-631. STRATEGIC INFORMATION SYSTEMS

The 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. Prerequisites: MBA-600. Credit, three hours.

MBA-632. MANAGING ELECTRONIC COMMERCE

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

MBA-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. The course will deal with various topics in many current information technologies that are emerging or adopted well in the industry for the competitive advantages. The course examines topics on latest information technology through professional articles, research papers, and/or case studies. Prerequisites: MBA- 600. Credit, three hours.

MBA-641. INVESTMENTS AND PORTFOLIO MANAGEMENT

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

MBA-642. DERIVATIVE SECURITIES AND RISK MANAGEMENT

The 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. Prerequisites: MBA-641. Credit, three hours.

MBA-645. ECONOMIC AND FINANCIAL ENVIRONMENT OF THE ORGANIZATION

The 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: MBA-604. Credit, three hours.

MBA-651. SUPPLY CHAIN MANAGEMENT

The 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. Prerequisites: MBA-600, MBA-602. Credit, three hours.

MBA 653: ADVANCED TOPICS IN FINANCIAL ACCOUNTING

The course covers the process of how domestic and international bodies influence the setting of accounting and reporting standards. This course also addresses accounting theory and practice underlying the preparation and presentation of financial statements, measurement, and valuation of assets and liabilities, and selected balance sheet and related income statement items for corporations, governmental agencies, and nonprofits.

MBA 681: DATABASE MANAGEMENT

The course provides an extended survey of database technology designed to develop database management systems. Technology. (Students may substitute CSCI 500 for MBA 680 with consent of MBA Director), (Cross-listed with MIS 470)

MBA 682: DATA ANALYTICS

This course will introduce students to data-driven decision making and decision models within business settings. Along with

an overview of operations research (OR) techniques (linear programming, decision making under uncertainty, Monte Carlo simulation), and analytical techniques and tools, with heavy emphasis, will be given to understanding and using data in businesses through current articles and cases.

MBA 683: DATA VISUALIZATION AND ANALYSIS

Study of techniques for analysis and visualization of massive amounts of data. Includes hands-on experience in developing and using data mining software. Three credits: Three lectures per week. Prerequisite: MBA 506 Quantitative Methods and Analysis

MBA-690. 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.

MBA-699. SPECIAL TOPICS: MBA

The MBA Special Topics tests the student's strategic thinking and analytic skills. Students must receive prior approval by the MBA Director for the topic. 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.

MBA-699A. SPECIAL TOPICS: MBA

The MBA Special Topics tests the student's strategic thinking and analytic skills. Students must receive prior approval by the MBA Director for the topic. 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.

MBA-699B. SPECIAL TOPICS: MBA

The MBA Special Topics tests the student's strategic thinking and analytic skills. Students must receive prior approval by the MBA Director for the topic. 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.

GENERAL MBA DEGREE PROGRAM:
MASTER OF BUSINESS ADMINISTRATION



WILMINGTON CAMPUS

Fall Term1			Fall Term2		
Course	Course Name	Cr	Course	Course Name	Cr
MBA-601	Economics for Managerial Decision-Making	3	MBA-604	Financial Management	3
MBA-603	Accounting for Decision Making	3	MBA-600	Information and Technology Management	3
	Total Credits	6		Total Credits	6
Spring Term1			Spring Term2		
Course	Course Name	Cr	Course	Course Name	Cr
MBA-602	Marketing Management	3	MBA-605	Organizational Leadership and Behavior	3
MBA-6XX	Elective	3	MBA-6XX	Elective	3
	Total Credits	6		Total Credits	6
Summer Term 1			Summer Term 2		
Course	Course Name	Cr	Course	Course Name	Cr
MBA-620	Operations Analysis Management	3	MBA-616	Applied Strategic Management	3
	Total Credits	3		Total Credits	3
			Total Credits: 30		

* An MBA degree with a concentration requires 9 credit hours of elective courses from a specific area.

* Denotes a Core Requirement | +Denotes an elective

Total Core Credits = 24 | Total Elective Credits =6

Candidacy Requirement: Core Course Completion | Capstone or Culminating Experience: Case Study Analysis (MBA 616)

Outcomes report and rubric submission to School of Graduate, Adult and Extended Studies prior to graduation

MASTER OF SCIENCE IN SPORT ADMINISTRATION

PROGRAM OBJECTIVES

The Master of Science Degree in Sport Administration at Delaware State University was approved by the Board of Trustees and has been offered since 2005. The purpose of the MS in Sport Administration is to professionally prepare ethical leaders for advanced responsibilities within sport organizations and/or to design and implement new sport or sport-related enterprises. It is a 30-credit-hour, 12-month program designed to develop the student's ability to lead and manage sport and/or sport-related organizations while adapting to changing economic, legal, political, and social influences.

PROGRAM GOALS

The broad-based program learning goals for Sport Administration are as follows:

Knowledge of Functional Areas: Students will have a working knowledge of the Sport Administration functional areas of leadership, administration and management, marketing, and finance.

Resourcefulness: Students will have research and technology capabilities to conduct an audit of the external environment that impacts decision making in sport and sport-related organizations.

Personal and Professional Growth: Students will utilize the knowledge and skills gained throughout the program at a sport-related organization.

STUDENT LEARNING OUTCOMES

Upon completion of the program, graduate students should be able to:

- Apply leadership, financial, marketing, and managerial principles and practices to a specific sport segment and/or organization.
- Conduct an effective inquiry and analysis of sport from an ethical, economical, legal, political, and/or social perspective and formulate strategies for change as needed.
- Utilize technology to conduct research and evaluate, analyze, and communicate information related to current trends and issues within the sport industry.
- Demonstrate professional competencies and dispositions in a sport organization. Use self-reflection as a means for personal and professional growth.

ADMISSION DEADLINES AND DEGREE REQUIREMENTS

Application Deadlines:

Rolling Admission

International Application Deadlines:

Fall – May 1; Fall Session II – July 1

Spring – November 3; Spring Session II – February 1

Summer – April 1

All applicants are required to submit evidence of the following for consideration of unconditional admission:

- Completed Graduate Application and payment of application fee.
- Official undergraduate/graduate transcript(s) from each college attended.
- Undergraduate 2.50 or higher GPA from an accredited college or university.
- Two Letters of Recommendation from professionals in the field, **one from an academic professional.**

DEGREE REQUIREMENTS

Completion of 30 credit hours with a GPA of 3.0 or higher, with no more than two courses with a grade of "C."

Capstone Requirement - Submission and successful defense of a comprehensive project. The comprehensive project must receive at minimum 80% approval from at least three of the program's faculty members. This project must entail every aspect of sport administration, including but not limited to a mission statement, goals and objectives, strategic planning, organizational structure, financial considerations, marketing plans, public relations, preventive law plan, methods of assessment and evaluation, and administrative/managerial considerations for adjusting to the current trends and issues in sport.

FACULTY

The faculty members in the Sport Administration Program are full-time employees at Delaware State University, possess doctoral degrees in Sport Management/Administration, are actively engaged in national and /or international scholarly research and /or service, and have related work experience

PROGRAM DELIVERY

The Sport Management program is offered fully online or hybrid with half the courses online and the other half in the classroom.

MATRICULATION LENGTH AND COURSE SCHEDULE

The program can be completed in 9 months up to 3 years. The traditional 12-month program requires students to take 9 credits in the fall and spring semesters each and 12 credit hours in the summer, whereas the 9-month program requires students to take 15 credit hours in the fall and spring semesters each for a total of 30 credit hours. Students must receive approval of their Comprehensive Project in order to complete the program.

Course Sequence

Course#		Credit Hours	Term offered
SPSC-671	Sport Finance	3	Fall
SPSC-672	Sport Administration	3	Fall
SPSC-676	Sport Ethics and Social Issues	3	Fall
SPSC-625	Introduction to Research Methods and Statistics in Sport	3	Spring
SPSC-674	Sport Marketing	3	Spring
SPSC-681	Sport Law	3	Fall & Spring
SPSC-673	Sport Facilities Design and Management	3	Fall & Summer I
SPSC-675	Current Trends and Issues in Sport	3	Spring & Summer I
SPSC-616	Internship	6	Every Term
Total Credits:		30	

COURSE DESCRIPTIONS

SPSC 616. INTERNSHIP

The Sport Administration Internship is an experience in which a sport administration major enrolls in after all requirements, including coursework, in the sport administration curriculum has been completed successfully. The Sport Administration Internship comprises a minimum of 270 field-based hours at the agency, or at events sponsored by the agency if the responsibilities are carried out at another site.

Credit, six hours.

SPSC 625. INTRODUCTION TO RESEARCH METHODS AND STATISTIC

The course is designed to introduce students to research methods and statistics used to assess, evaluate, and critically examine principle and practices of sport organizations. Credit, three hours.

SPSC 671. SPORT FINANCE

The course examines the financial and accounting principles and their application in for-profit and non-profit sport organizations. Topics include revenue and expenses, budgeting methods, economic principles, methods of financing sport and sport venues, and fundraising methods. Credit, three hours.

SPSC 672. SPORT MANAGEMENT

The course is designed to provide students with an understanding of organizational theory and its application in the sport industry. Students will examine the organizational structure, leadership styles, and culture of different sport organizations. Credit, three hours.

SPSC-673. SPORT FACILITIES DESIGN AND MANAGEMENT

The course is designed to introduce students to the fundamentals of conducting needs assessments, planning, constructing, equipping, staffing, programming, and managing facilities in sport and physical activities. Credit, three hours.

SPSC-674. SPORT MARKETING

The course provides an overview of the principles and practices of promotions and marketing in the sport industry. Topics include sport marketing planning, market segmentation and identification of target market, sport marketing mix, and sponsorship. Credit, three hours.

SPSC-675. CURRENT TRENDS AND ISSUES IN SPORT

The course examines the current trends and issues in the sport industry. Extensive research of current texts and journal articles is required. Credit, three hours.

SPSC-676. SPORT ETHICS AND SOCIAL ISSUES

The course is an examination of sport as a social institution and of the interactive impact of sport and society. Credit, three hours.

SPSC-681. SPORT LAW

The course is designed to provide an overview of legislation and legal actions in sport. Credit, three hours.

**PROGRAM: MASTER OF SCIENCE
IN SPORT ADMINISTRATION**
Traditional 12-Month Program Curriculum

Fall			Spring		
Course	Course Name	Cr	Course	Course Name	Cr
SPSC 671	Sport Finance	3	SPSC 625	Intro to Research Methods & Statistics	3
SPSC 672	Sport Management	3	SPSC 674	Sport Marketing	3
SPSC 676	Sport Ethics and Social Issues	3	SPSC 681	Sport Law	3
	Total Credits	9		Total Credits	9
Summer I			Summer II		
Course	Course Name	Cr	Course	Course Name	Cr
SPSC 673	Sport Facilities Design & Management	3	SPSC 616	Internship	6
SPSC 675	Current Trends & Issues in Sport	3			
	Total Credits	6		Total Credits	6
			Total Credits: 30		

*Denotes a Core Requirement

+Denotes an Elective

Total Core Credits = 30

Total Elective Credits = 0

Capstone or Culminating Experience: Submission and successful defense of a comprehensive project

Outcomes report and rubric to School of Graduate, Adult and Extended Studies prior to graduation

WESLEY COLLEGE OF HEALTH AND BEHAVIORAL SCIENCES



Department of Nursing

MS in Nursing (MSN)

Concentration in Global Leadership

Concentration in Nursing Education

Concentration in Psychiatric Mental Health Nurse Practitioner (PMHNP)

Department of Social Work

Master of Social Work (MSW)

Doctor of Social Work (DSW)

Department of Psychology

MS in Clinical Psychology

Department of Public and Allied Health Sciences

Master of Occupational Therapy (MOT)

Master of Public Health (MPH)

DEPARTMENT OF NURSING

MASTER OF SCIENCE IN NURSING (MSN)

PROGRAM OBJECTIVES

The major purpose of the Master of Science in Nursing program at Delaware State University in the Department of Nursing is to provide qualified students from diverse backgrounds opportunities to learn theoretical knowledge to develop role competencies and clinical expertise to perform at advanced practice levels in professional nursing practice. Currently, the program offers educational experiences in three areas of expertise: Psychiatric Mental Health Nurse Practitioner (PMHNP), Nursing Education, and Global Leadership. The PMHNP program emphasizes the provision of holistic, evidence-based care to clients with mental illness and substance abuse issues across the lifespan. The Nursing Education students learn how to develop curriculum and explore instructional technology as they prepare to educate the next generation of nurses. The Global Leadership program is designed for nursing professionals seeking to elevate their leadership skills and expertise at their local institution or on the global stage.

The program also prepares advanced practice nurses to continue to develop their human potential through preparation for higher-level nursing practice, including clinical experts, educators, nurse leaders, researchers, leaders, and agents of change to improve healthcare outcomes. Graduates of the program will have the educational prerequisites to pursue doctoral study.

In addition, the Graduate Program's purposes include meeting its stakeholders' needs in Delaware and surrounding areas for highly skilled clinicians, educators, and/or nursing faculty. Students will benefit from the academic environment that facilitates scholarly pursuits such as engaging in research, identifying best practices, and evidence-based practice that seeks to identify and add to the scientific basis of nursing practice.

STUDENT LEARNING OUTCOMES

Courses within the curriculum are designed for the achievement of the six student learning outcomes, which facilitate the achievement of the role-specific nursing competencies.

- Propose solutions for the achievement of safe, high-quality outcomes in one's specialty area as a leader and change agent.
- Formulate communications effectively that support safe healthcare practices.
- Synthesize leadership concepts, principles, and ethical reasoning in one's specialty to influence decision-making for quality outcomes in healthcare.
- Maximize professional standards in the practice of healthcare with integrity, caring, accountability, respect, and excellence in nursing practice.
- Influence healthcare professionals as a leader and change agent in one's specialty area to create safe, effective, and culturally competent healthcare.
- Combine knowledge and skills in one's specialty area of practice, identifying gaps in theory and practice, and utilize clinical reasoning to formulate research questions.

ROLE-SPECIFIC NURSING COMPETENCIES FOR THE PSYCHIATRIC MENTAL HEALTH NURSE PRACTITIONER OPTION

The Psychiatric Mental Health Nurse Practitioner (PMHNP) program aligns with AACN, The Essentials: Core Competencies for Professional Advanced-level Nursing Education and Nurse Practitioner Role Core Competencies and uses the PMHNP Standards of Practice and Competencies.

ROLE-SPECIFIC NURSING COMPETENCIES FOR NURSING EDUCATION OPTION

1. Implement various assessment and evaluation techniques to facilitate learning and progression through didactic, laboratory, and clinical settings using various learning modalities.
2. Promote scholarship and intellectual learning by fostering expected values and behaviors that reflect those of the nurse educator and contribute to the profession.
3. Formulate program outcomes and curricula design while pursuing quality improvements using evidence-based trends that prepare graduates to function effectively in the faculty role.
4. Function as a leader and change agent with appropriate knowledge in political, institutional, social and economic areas of practice to create systems while maintaining competence in nursing education and nursing practice.

ROLE-SPECIFIC NURSING COMPETENCIES FOR GLOBAL LEADERSHIP OPTION

1. Function as a leader demonstrating flexibility and adaptability when problem-solving to implement organizational change.
2. Implement effective strategies, leveraging differences to facilitate organizational change initiatives, and overcome resistance to change.
3. Pursue business acumen and initiative to formulate a strategic plan.
4. Employ systems thinking while using project management methods while addressing a global issue.

ADMISSION DEADLINES AND DEGREE REQUIREMENTS

Cohorts are admitted during the Fall and Spring semesters. Applications may be submitted no later than fourteen (14) days prior to the start of the academic semester.

All applicants are required to submit evidence of the following for consideration of unconditional admission:

1. Apply to the Delaware State University School of Graduate, Adult, and Extended Studies and pay the \$50 nonrefundable application fee -- <https://sgaes.desu.edu/admissions>. All correspondence regarding the application can be sent to gradstudieswilm@desu.edu.
2. Submit a copy of the student's current U.S. unencumbered RN license. Graduate nursing students participating in clinical experiences must hold and maintain a valid nursing license to practice as a registered nurse in the state or jurisdiction in which they will participate in clinical experiences.
3. Submit official transcripts that reflect graduation from a nationally accredited (ACEN or CCNE) baccalaureate program in nursing (BSN) with at least a 2.5 on a 4.0 scale.
4. Submit a current resume.
5. Provide one (1) letter of professional reference. References should be from faculty members, professional colleagues, or work supervisors who can evaluate the student's potential for success in the Graduate Program. Recommendations from family, friends, and other students are NOT appropriate. Letters should be on professional letterhead and address the nature of the professional's knowledge of the applicant.

International Graduate Applicants

Please refer to the Admissions website at <https://sgaes.desu.edu/admissions> for information regarding international student University admission requirements. In addition to meeting general application requirements, non-English speaking international students applying for admission to graduate study at Delaware State University must demonstrate a satisfactory level of proficiency in the English language.

Students seeking admission into the Master of Science degree in the Nursing Program are subject to the rules and regulations applied by the School of Graduate, Adult, and Extended Studies and are considered individually. Admission to the MSN Program at Delaware State University is open to all qualified applicants who meet the requirements as stated in the Delaware State University Graduate Catalog. Prospective students are encouraged to consult <https://sgaes.desu.edu/admissions> prior to applying for admission.

All applicants must apply to the University per University requirements and fulfill all University application fee(s). For specific information regarding University requirements, please click on the link: <https://sgaes.desu.edu/admissions>. In addition, admission to the master's program requires:

1. A completed application at <https://www.applyweb.com/desug/index.ftl>
2. Submission of a copy of your current RN license (copy of computer verification acceptable).
* This degree will not allow the graduate to practice in the U.S. without a U.S. RN license.
3. Submission of all official transcripts to gradstudieswilm@desu.edu. Students admitted to the Department of Nursing must have earned an undergraduate grade point average of at least a 2.5 on a 4.0 scale.
4. Submit a current resume.
5. A nonrefundable University application fee of \$50.00. Please refer to <https://sgaes.desu.edu/admissions> for additional information on graduate eligibility and application policies and procedures.

MSN DEGREE REQUIREMENTS

Psychiatric Mental Health Nurse Practitioner Program Option:

Students enrolled in the Psychiatric Mental Health Nurse Practitioner (PMHNP) Program Option of the Master of Science in Nursing Program will meet with the Graduate Coordinator to complete the PMHNP Plan of Study. The PMHNP Plan of Study will be submitted to the School of Graduate, Adult and Extended Studies by the end of the first course. The PMHNP program of study requires successful completion of 47 credits with a 3.0 GPA minimum, successful completion of 765 practicum hours, and successful completion of the capstone project, demonstrating achievement of the six End-of-Program Student Learning Outcomes and Role Specific Nursing Competencies for the PMHNP.

Nursing Education and Global Leadership Program Option:

Students enrolled in the Master of Science in Nursing Program, after completing their third core course, will meet with the Program Director to determine what program option they want to pursue. The Plan of Study will be submitted to School of Graduate, Adult and Extended Studies by the end of the fourth core course. The Master of Science in Nursing Program requires successful completion of 33 credits with a 3.0 GPA minimum, successful completion of 90 practicum hours, and successful completion of the capstone project, demonstrating achievement of the six End of Program Student Learning Outcomes and four option-specific Role-Specific Professional Competencies.

COURSE DESCRIPTIONS – PSYCHIATRIC MENTAL HEALTH NURSE PRACTITIONER

NURS 509- ETHICAL AND LEGAL PERSPECTIVES

The course is designed to develop responsible healthcare leaders and socially engaged citizens. Students explore various ethical theories and healthcare law. Students analyze how nursing integrity, values, and beliefs influence policy agendas.

Prerequisites: None

3 credits

NURS 530*- RESEARCH AND APPLIED STATISTICS IN NURSING

This course prepares students to utilize evidence-based practice when providing high-quality healthcare, initiating change, and improving outcomes. Proficiency in the utilization of research and statistical procedures to evaluate research findings, problem identification within clinical practice settings, and awareness of clinical practice and outcomes are developed. Clinical research findings specific to addressing healthcare disparities are emphasized.

Prerequisites: None

3 credits

NURS 653*- COMPREHENSIVE ADVANCED HEALTH ASSESSMENT FOR THE APRN

This course focuses on the development and use of advanced nursing practice skills. Using comprehensive health history, interviewing, physical assessment skills, and clinical reasoning, the student will formulate a differential diagnosis to determine the client's health status. Emphasis will focus on the student's ability to use health assessment skills to promote, maintain, and restore high-level wellness and prevent disease across the life span in diverse populations. Students are provided with a residency opportunity.

Prerequisites: None

3 credits

NURS 611*- ADVANCED PATHOPHYSIOLOGY

This course emphasizes the pathophysiological principles of disease processes in diverse client populations across the lifespan. Students will formulate differential diagnoses of acute and chronic physical and mental illnesses based on general physiological and pathophysiological principles.

Prerequisites: None

3 credits

NURS 612*- ADVANCED PHARMACOLOGY

This course is designed to expand the advanced practice student's knowledge of pharmacotherapeutics, pharmacodynamics, pharmacokinetics, and pharmacogenetics, for the management of health and illness of diverse populations across the lifespan. The development of client-centered prescriptive decisions within the context of outcomes, safety, quality, and costs will be examined.

Prerequisites: None

3 credits

NURS 628*- ADVANCED PSYCHOPHARMACOLOGY FOR THE PSYCHIATRIC MENTAL HEALTH NURSE PRACTITIONER (PMHNP)

This course is designed to expand the PMHNP students' competence in knowledge of pharmacological agents used in the management of psychiatric mental health disorders across the lifespan. Emphasis will be placed on the effect of psychopharmacological agents on neurobiological function. Client-centered prescriptive decisions within the context of outcomes, safety, quality, and costs will be addressed.

Prerequisites: None

3 credits

NURS 654*- EXAMINING THE LEADERSHIP ROLE OF THE APRN

Through exploration of the advanced practice nursing leadership role (APRN), this course will facilitate the student's ability to influence practice decisions within the global healthcare arena. A framework for implementing the APRN role based on organizational data-driven decision-making will be examined. Emphasized will be the role of the advanced practice nurse as a leader, expert clinician, educator, consultant, researcher, and interdisciplinary team member.

Prerequisites: None

2 credits

NURS 631*- PSYCHIATRIC MENTAL HEALTH DISORDERS AND THERAPEUTIC MODALITIES I

This course is designed to introduce Psychiatric Mental Health Nurse Practitioner (PMHNP) students to provide holistic, evidence-based care related to mental illness across the lifespan. Students will examine primary prevention, health promotion, disease management, and therapeutic interventions. The course integrates health assessment and differential diagnostic reasoning for managing psychiatric mental health disorders. This course will also address the role of the PMHNP as it relates to ethical and legal responsibilities, including scope of practice concerns in multiple settings. Students will explore concepts of diversity, equity, inclusion, and social determinants of health.

Prerequisites: NURS 653, 611, 612, and 628

2 credits

NURS 621*- PSYCHIATRIC MENTAL HEALTH DISORDERS AND THERAPEUTIC MODALITIES (PRACTICUM I)

This course is designed to provide a foundation for Psychiatric Mental Health Nurse Practitioner (PMHNP) students to incorporate therapeutic modalities in the practice setting while providing holistic, evidence-based care as it relates to clients with mental illness across the lifespan. Primary prevention, health promotion, disease management, and therapeutic interventions will be examined. The course integrates health assessment and differential diagnostic reasoning for managing psychiatric mental health disorders. This course will also address the role of the PMHNP as it relates to ethical and legal responsibilities, including scope of practice concerns in multiple settings. Concepts of diversity, equity, inclusion, and social determinants of health will be explored.

Prerequisites: NURS 653 Comprehensive Advanced Health Assessment for the APRN, NURS 611 Advanced Pathophysiology, NURS 612 Advanced Pharmacology, and NURS 628 Advanced Psychopharmacology for the PMHNP

4 credits (180 practicum hours)

NURS 632*- PSYCHIATRIC MENTAL HEALTH DISORDERS AND THERAPEUTIC MODALITIES II

This course is designed to build on previously learned theoretical knowledge for the Psychiatric Mental Health Nurse Practitioner (PMHNP) student. Holistic, evidence-based care as it relates to mental illness across the lifespan will be explored. The course will also focus on primary prevention, health promotion, disease management, and therapeutic interventions. The course integrates health assessment and differential diagnostic reasoning for managing psychiatric mental health disorders. This course will also address the role of the PMHNP as it relates to ethical and legal responsibilities, including scope of practice concerns in multiple settings. Concepts of diversity, equity, inclusion, and social determinants of health will be explored.

Prerequisites: NURS 631 Psychiatric Mental Health Disorders and Therapeutic Modalities I

2 credits

NURS 622*- PSYCHIATRIC MENTAL HEALTH DISORDERS AND THERAPEUTIC MODALITIES (PRACTICUM II)

This course is designed to build on the content in NURS 621 and provide Psychiatric Mental Health Nurse Practitioner (PMHNP) students opportunities to incorporate therapeutic modalities in the practice setting while providing holistic, evidence-based care as it relates to clients with mental illness across the lifespan. Primary prevention, health promotion, disease management, and therapeutic interventions will be examined. The course integrates health assessment and differential diagnostic reasoning for managing psychiatric mental health disorders. This course will also address the role of the PMHNP as it relates to ethical and legal responsibilities, including scope of practice concerns in multiple settings. Concepts of diversity, equity, inclusion, and social determinants of health will be explored.

Prerequisites: NURS 621 Psychiatric Mental Health Disorders and Therapeutic Modalities I Practicum

4 credits (180 practicum hours)

NURS 633*- PSYCHIATRIC MENTAL HEALTH DISORDERS AND THERAPEUTIC MODALITIES III

This course expounds upon content covered in Psychiatric Mental Health Disorders & Therapeutic Modalities I and II. The course will explore atypical psychiatric disorders and integrates theoretical and practical knowledge to provide holistic, evidence-based care related to mental illness across the lifespan. Primary prevention, health promotion, disease management, and therapeutic interventions will be examined as they relate to clients with atypical behavioral health disorders. Concepts of diversity, equity, inclusion, and social determinants of health will be explored.

Prerequisites: NURS 632 Psychiatric Mental Health Disorders and Therapeutic Modalities II

2 credits

NURS 623*- PSYCHIATRIC MENTAL HEALTH DISORDERS & THERAPEUTIC MODALITIES PRACTICUM III

This is the third practicum course for the Psychiatric Mental Health Nurse Practitioner (PMHNP) students and is designed to build on the content from NURS 622. The course provided opportunities to incorporate therapeutic modalities in the practice setting while providing holistic, evidence-based care as it relates to clients with mental illness across the lifespan. Primary prevention, health promotion, disease management, and therapeutic interventions will be examined. The course integrates health assessment and differential diagnostic reasoning for managing psychiatric mental health disorders. This course will also address the role of the PMHNP as it relates to ethical and legal

responsibilities, including scope of practice concerns in multiple settings. Concepts of diversity, equity, inclusion, and social determinants of health will be explored.

Prerequisites: NURS 622 Psychiatric Mental Health Disorders and Therapeutic Modalities II Practicum

4 credits (180 practicum hours)

NURS 619*- SPECIAL POPULATION FOR THE PSYCHIATRIC MENTAL HEALTH NURSE PRACTITIONER

This course is designed to prepare Psychiatric Mental Health Nurse Practitioner students to provide holistic evidence-based care of special populations. A focused analysis that is geared toward special populations related to primary prevention, health promotion, and acute/chronic disease management will be examined. The course integrates health assessment and diagnostic reasoning of acute/chronic primary care health problems. Health disparities, Social Determinants of Health (SDOH), Healthy People 2030, diversity, and equity of the client will be emphasized.

Prerequisites: NURS 633 Psychiatric Mental Health Disorders and Therapeutic Modalities III

2 credits

NURS 624*- SPECIAL POPULATION FOR THE PSYCHIATRIC MENTAL HEALTH NURSE PRACTITIONER PRACTICUM IV

This is the fourth clinical course in the Psychiatric Mental Health Nurse Practitioner (PMHNP) program. This course is designed to provide PMHNP students opportunities to incorporate therapeutic modalities in the practice setting while providing holistic, evidence-based care as it relates to special populations with mental illness across the lifespan. Primary prevention, health promotion, disease management, and therapeutic interventions will be examined. The course integrates health assessment and differential diagnostic reasoning for managing special populations experiencing psychiatric mental health disorders. Concepts of diversity, equity, inclusion, and social determinants of health will be explored.

Prerequisites: NURS 623 Psychiatric Mental Health Disorders and Therapeutic Modalities III Practicum

4 credits (180 practicum hours)

NURS 651*- CAPSTONE FOR THE PSYCHIATRIC MENTAL HEALTH NURSE PRACTITIONER

This capstone course is designed to provide the Psychiatric Mental Health Nurse Practitioner (PMHNP) student with the opportunity to integrate the knowledge and skills learned throughout the program. The learner must complete a portfolio that synthesizes advanced knowledge to address the Role Specific Nursing Competencies for the PMHNP. Students will also begin preparation for the PMHNP certification exam.

Prerequisites: All NURS courses in the program of study for PMHNP option

3 credits (45 practicum hours, 30 theory hours)

COURSE DESCRIPTIONS – NURSING EDUCATION AND GLOBAL LEADERSHIP

NURS 512*- GLOBAL HEALTHCARE

This course explores healthcare disparities and the influence that policy development and leadership has on outcomes. Students will gain a perspective on the overall health of the individual, family, community, and the world as influenced by environmental factors, ethnic and sociocultural influences, and human and economic resources. Human, fiscal, and physical healthcare resources in relation to global healthcare disparities are also analyzed.

Prerequisites: None

3 credits

NURS 509*- ETHICAL AND LEGAL PERSPECTIVES

The course is designed to develop responsible healthcare leaders and socially engaged citizens. Students explore various ethical theories and healthcare law. Students analyze how nursing integrity, values, and beliefs influence policy agendas.

Prerequisites: None

3 credits

NURS 530*- RESEARCH AND APPLIED STATISTICS IN NURSING

This course prepares students to utilize evidence-based practice when providing high quality healthcare, initiating change, and improving outcomes. Proficiency in the utilization of research and statistical procedures to evaluate research findings, problem identification within clinical practice settings, and awareness of clinical practice and outcomes are developed. Clinical research findings specific to addressing healthcare disparities are emphasized.

Prerequisites: None

3 credits

NURS 508- ADV. HEALTH ASSESSMENT

Students will continue to develop in assessment, communication and observational skills to identify alteration in health and physical deviations in individuals, families and communities. The course will use a critical thinking, systems and case study approach to assist students to determine fulfillment of human needs and physiological, spiritual, cultural and psychosocial functioning and integrity. Ability to use health assessment to promote, maintain and restore high-level wellness and prevent disease across the life span will be emphasized.

Prerequisites: NURS 530 Research and Applied Statistics in Nursing

3 credits

NURS 521*- ORGANIZATIONAL CHANGE

This course explores the use of data-driven decisions to effect organizational change. As change agents students assess organizational readiness, strategies to transform an organization, and ways to effectively address resistance to change. Students examine healthcare systems on local, national, and global levels.

Prerequisites: None

3 credits

NURS 570-ADVANCED PHARMACOLOGY & PATHOPHYSIOLOGY

This course integrates two related therapeutic sciences, pathophysiology and pharmacology. This course integrates physiological principles, clinical manifestations, and is designed to review, expand, and update the students' knowledge of pharmacology and pathophysiology and advanced nursing practice implications within the clinical decision-making process.

Prerequisites: NURS 508 Advanced Health Assessment

3 credits

NURS 640-THEORIES AND PRINCIPLES OF TEACHING AND LEARNING

The role of the nurse educator and theories and principles of teaching and learning are analyzed. Students will explore various teaching-learning strategies and modalities for both the clinical, face to face and online classroom settings. Key design features when developing courses for the various settings will be examined along with best practices and evidence-based standards. The use of clinical simulations in the classroom, laboratory and clinical practical will be explored.

Prerequisites: NURS 530 Research and Applied Statistics in Nursing

3 credits

NURS 641- CURRICULUM DEVELOPMENT AND EVALUATION IN NURSING

Theories and principles of curriculum development and evaluation are covered as they apply to academic curriculum design, nursing practice, and student and community populations. This course explores organizational, community and governmental contexts related to nursing education. Evaluation methods, techniques and strategies are included. Students develop components of an education program including goals, objectives, teaching-learning strategies, and evaluation methods. Correlation of selected national standards for nursing education with appropriate program evaluation measures is analyzed.

Prerequisites: NURS 640 Theories and Principles of Teaching and Learning

3 credits

NURS 650-INSTRUCTIONAL TECHNOLOGY

This course explores the impact of instructional technology on healthcare education. Students consider the domains of instructional technology such as design, development, utilization, management, evaluation, and learning resources. Examination of each domain in detail and outlining best practices while focusing on an educational topic will be the emphasis.

Prerequisites: NURS 640 Theories and Principles of Teaching and Learning

3 credits

NURS 680- TEACHING PRACTICUM

Students will work with a preceptor to practice in faculty or staff educator roles with guidance from experienced nurse educators. Students will develop lesson plans and prepare classroom and clinical learning activities. Participation in classroom or clinical teaching with evaluation of student learning is emphasized.

Prerequisites: All NURS courses through the 5th semester in Program of Study

3 credits (1 theory 2 clinical)

NURS 689 - CAPSTONE

Students produce a written scholarly work that focuses on implementation of evidence-based practice change, quality improvement initiative, or an innovation project addressing an identified problem in their specialty focus area. Students collaborate with nursing faculty who advise them throughout the Capstone project. All six student learning outcomes must be addressed in detail throughout the scholarly work.

Prerequisites: All NURS courses in Program of Study

3 credits

NURS 540- LEADERSHIP STYLES AND PRINCIPLES

This course examines various leadership styles and principles and the art of collaboration, negotiation, delegation and coordination within inter-professional teams in the healthcare environment. Students examine evidence-based practices that reinforce ethical and critical decision making as they pertain to leadership and positive healthcare outcomes.

Prerequisites: NURS 530 Research and Applied Statistics in Nursing

3 credits

NURS 545- INFORMATICS

This course provides the framework to enhance students' knowledge and skills in electronic medical records, nursing informatics, and healthcare technology. Students focus on the role of the nurse in electronic information handling and how it applies to strategic planning. As future leaders, students develop decision-making competencies to facilitate evidence-based clinical practice and administrative approaches to support positive healthcare outcomes.

Prerequisites: NURS 530 Research and Applied Statistics in Nursing, NURS 509- Ethical and Legal Perspectives

3 credits

NURS 550- BUILDING EFFECTIVE COMMUNICATION AND RELATIONSHIPS

This course examines strategies for creating positive work environments through communication and collaboration. As future leaders, students analyze organizational culture, shared governance, and the complexities of interpersonal communication. Issues with human resource management will be explored.

Prerequisites: NURS 530 Research and Applied Statistics in Nursing, NURS 509- Ethical and Legal Perspectives

3 credits

NURS 610- TRENDS IN GLOBAL HEALTH

This course provides an overview of healthcare policies, and the role nurses play as advocates for marginalized populations. Students analyze the cultural, legal, political, economic, and social influences that shape global healthcare policies. Students examine health and social policies, influencing factors, and supporting data for the purpose of formulating policy revisions.

Prerequisites: NURS512 Global Healthcare

3 credits

NURS 630- FINANCIAL MANAGEMENT

This course provides an overview of the budgeting process and how to plan a fiscally responsible budget. Students consider how healthcare systems, resources, and budget appropriations are influenced by a variety of third-party providers and self-pay options. Students analyze information technology and financial data for the purpose of enhancing today's healthcare systems.

Prerequisites: NURS 530 Research and Applied Statistics in Nursing

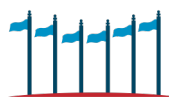
3 credits

NURS 620- LEADERSHIP PRACTICUM

In the practicum, students participate in leadership responsibilities with a mentor in the practice setting. At the macro-system level students analyze trends in healthcare systems, nursing management, and leadership. The influence of national policy on global health is examined. Students are expected to work with an advisor to plan for the Capstone project.

Prerequisites: All NURS courses through the 5th semester in the Program of Study

3 credits (1 theory 2 clinical hours)



**PROGRAM: MASTER OF SCIENCE IN NURSING
PSYCHIATRIC MENTAL HEALTH NURSE PRACTITIONER (PMHNP) OPTION**

1 st Semester -- CORE					2 nd Semester -- CORE				
Course	Course Name	Sem	Cr	Gr	Course	Course Name	Sem	Cr	Gr
NURS-509	Ethical and Legal Perspectives		3		NURS-653	Comprehensive Advanced Health Assessment for the APRN		3	
NURS-530	Research and Applied Statistics in Nursing		3		NURS-611	Advanced Pathophysiology		3	
	Total Credits		6			Total Credits		6	
3 rd Semester					4 th Semester				
Course	Course Name	Sem	Cr	Gr	Course	Course Name	Sem	Cr	Gr
NURS-612	Advanced Pharmacology		3		NURS-631	Psychiatric Mental Health Disorders and Therapeutic Modalities I *Block I		2	
NURS-628	Advanced Psychopharmacology for the PMHNP		3		NURS-621	Psychiatric Mental Health Disorders and Therapeutic Modalities I (Practicum-180 practicum hours) * 16 weeks		4	
	Total Credits		6			Total Credits		6	
5 th Semester					6 th Semester				
Course	Course Name	Sem	Cr	Gr	Course	Course Name	Sem	Cr	Gr
NURS-632	Psychiatric Mental Health Disorders and Therapeutic Modalities II *Block I		2		NURS-633	Psychiatric Mental Health Disorders and Therapeutic Modalities III *Block I		2	
NURS-622	Psychiatric Mental Health Disorders and Therapeutic Modalities II (Practicum-180 practicum hours) *16 weeks		4		NURS-623	Psychiatric Mental Health Disorders and Therapeutic Modalities III (Practicum-180 practicum hours) * 16 weeks		4	
NURS-654	Examining the Leadership Role of the APRN * Block II		2						
	Total Credits		8			Total Credits		6	
7 th Semester					8 th Semester				
Course	Course Name	Sem	Cr	Gr	Course	Course Name	Sem	Cr	Gr
NURS-619	Special Populations for the PMHNP *Block I		2		NURS-651	Capstone for the PMHNP (45 practicum hours, 30 theory hours) *Block I		3	
NURS-624	Special Populations for the PMHNP (Practicum IV- 180 practicum hours) *16 weeks		4						
	Total Credits		6			Total Credits		3	

All practicum courses and associated lecture courses must be taken in sequence as printed on the Plan of Study.

Total Number of Courses: 16

Total Program Credits: 47

Total Practicum Hours: 765

**PROGRAM: MASTER OF SCIENCE IN NURSING
NURSING EDUCATION OPTION**

1 st Semester					2 nd Semester				
Course	Course Name	Sem	Cr	Gr	Course	Course Name	Sem	Cr	Gr
*NURS-509	Ethical and Legal Perspectives		3		*NURS-521	Organizational Change		3	
*NURS-512	Global Healthcare		3		*NURS-530	Research and Applied Statistics in Nursing		3	
	Total Credits		6			Total Credits		6	
3 rd Semester					4 th Semester				
Course	Course Name	Sem	Cr	Gr	Course	Course Name	Sem	Cr	Gr
NURS-508	Adv. Health Assessment		3		NURS-570	Advanced Pharmacology and Pathophysiology		3	
NURS-640	Theories and Principles of Teaching and Learning		3		NURS-641	Curriculum Development and Evaluation in Nursing		3	
	Total Credits		6			Total Credits		6	
5 th Semester					6 th Semester				
Course	Course Name	Sem	Cr	Gr	Course	Course Name	Sem	Cr	Gr
NURS-650	Instructional Technology		3		NURS-689	Capstone		3	
NURS-680	Teaching Practicum (1 Theory Credit, 2 Clinical Credits) (90)		3						
	Total Credits		6			Total Credits		3	
	Total Credits					Total Credits		33	

All courses run in 8-week blocks.

*Denotes a Core Requirement

+Denotes an Elective

Total Core Credits = 33 credits

Total Elective Credits = 0

Completion of 33 credit hours with 3.0 GPA

Completion of 90 practicum hours

Capstone or Culminating Experience: Successful completion of the capstone project, demonstrating achievement of the six End of Program Student Learning Outcomes and four option specific Role-Specific Nursing Competencies

**PROGRAM: MASTER OF SCIENCE IN NURSING
GLOBAL LEADERSHIP OPTION**

1 st Semester					2 nd Semester				
Course	Course Name	Sem	Cr	Gr	Course	Course Name	Sem	Cr	Gr
*NURS-509	Ethical and Legal Perspectives		3		*NURS-521	Organizational Change		3	
*NURS-512	Global Healthcare		3		*NURS-530	Research and Applied Statistics in Nursing		3	
	Total Credits		6			Total Credits		6	
3 rd Semester					4 th Semester				
Course	Course Name	Sem	Cr	Gr	Course	Course Name	Sem	Cr	Gr
NURS-540	Leadership Styles and Principles		3		NURS-630	Financial Management		3	
NURS-545	Informatics		3		NURS-550	Building Effective Communication and Relationships		3	
	Total Credits		6			Total Credits		6	
5 th Semester					6 th Semester				
Course	Course Name	Sem	Cr	Gr	Course	Course Name	Sem	Cr	Gr
NURS-610	Trends in Global Health		3		NURS-689	Capstone		3	
NURS-620	Leadership Practicum (1 Theory Credit, 2 Clinical Credits) (90)		3						
	Total Credits		6			Total		3	
						Credits			
	Total Credits					Total Credits		33	

*Denotes a Core Requirement

+Denotes an Elective

Total Core Credits = 33 credits

Total Elective Credits = 0

Completion of 33 credit hours with 3.0 GPA

Completion of 90 practicum hours

Capstone or Culminating Experience: Successful completion of the capstone project, demonstrating achievement of the six

End of Program Student Learning Outcomes and four option specific Role-Specific Nursing Competencies

RN TO MSN PROGRAM OPTION DESIGN

The RN to MSN Program option design combines elements of the BSN for RN Program with Master's-level nursing studies, streamlining progression toward completion of the MSN without compromising educational integrity. Developed with an understanding of the individual's unique needs and interests and the adult learners' attributes of self-accountability and high motivation, the program seeks to provide maximum flexibility and individualization of learner goals and to build upon personal and professional life experiences without repetition of current knowledge and skills. This curriculum provides learning activities based on prior knowledge and experience. All students must complete key elements found within the general education courses. In addition, the nursing bridge courses are designed to prepare the student for the Master's-level nursing experience. Each course is organized to focus on the major nursing concepts usually not completed in the student's basic RN program. These concepts include major nursing theories, evidence-based practice, community nursing, health policy, and professional issues. Upon completion of the general education courses and nursing bridge courses, students will matriculate into graduate study courses. These courses are designed to implement the nursing process at the advanced level of nursing practice in the areas of Global Leadership, Nursing Education, or Psychiatric Mental Health Nurse Practitioner practice.

RN TO MSN BRIDGE LEVEL COURSE DESCRIPTIONS

NURS 470 THEORY AND EVIDENCE-BASED PRACTICE IN NURSING (3 CREDITS THEORY)

This course examines theories of nursing and other theories relevant to nursing practice. The relationship among theory, research, and evidence-based practice is explored and applied to real-life practice situations. The role of the nurse in support of this theory, research, and evidence-based practice is addressed through a theoretical paper, research critiques, and a poster presentation.

NURS 472 POPULATION FOCUSED CARE – 5 CREDITS (3 THEORY; 2 PRACTICUM HOURS)

This clinical course is designed to provide students with the opportunity to apply the nursing process to the community as the health client. Students will use principles of public health nursing to investigate a community health problem. The health needs of populations at risk within the community are identified, and plans are formulated to meet those needs. Practical experiences utilize a variety of community settings.

NURS 474 SEMINAR IN PROFESSIONAL NURSING – 3 CREDITS (THEORY)

This is a seminar course focusing on issues pertinent to professional nursing practice and providing an opportunity for graduate students to design and lead a seminar presentation.

NURS 476 HEALTH POLICY & NURSING – 4 CREDITS (3 THEORY; 1 PRACTICUM HOUR)

This course examines healthcare policy and politics as it relates to nursing practice. Historical, ethical, political, and economic factors are discussed, and the nurse's responsibility and role in healthcare policy is explored. A practicum facilitates the application of principles addressed in the course.

**PROGRAM: RN TO MASTER OF SCIENCE IN NURSING
NURSING EDUCATION OPTION**

General Education Courses (Note: These courses must be taken at Delaware State University)									
CRN	Course Number and Course Title				Semester or Session to be Completed			Credit Hours	
	MTSC 241 Statistics (*Pre-requisite (PR) MTCS 121 waived) *								
	Arts/Humanities+								
	Arts/Humanities+								
	African American Studies+								
					Total Credit Hours: 12 credits				
Master of Science in Nursing (Dual Degree Option)									
CRN	NURS Bridge Course Number(s) and Course Title(s)				Credit Hours				
	NURS 472 Population Focused Care*				5				
	NURS 474 Seminar in Professional Nursing*				3				
	NURS 470 Theory & Evidenced Based Practice*				3				
	NURS 476 Health Policy*				4				
					Total Credit hours: 15 credits				
Nursing Education Master's Level Courses									
1 st Semester					2 nd Semester				
Course	Course Name	Sem	Cr	Gr	Course	Course Name	Sem	Cr	Gr
*NURS-509	Ethical and Legal Perspectives		3		*NURS-521	Organizational Change		3	
*NURS-512	Global Healthcare		3		*NURS-530	Research and Applied Statistics in Nursing		3	
	Total Credits		6			Total Credits		6	
3 rd Semester					4 th Semester				
Course	Course Name	Sem	Cr	Gr	Course	Course Name	Sem	Cr	Gr
NURS-508	Adv. Health Assessment		3		NURS-570	Advanced Pharmacology and Pathophysiology		3	
NURS-640	Theories and Principles of Teaching and Learning		3		NURS-641	Curriculum Development and Evaluation in Nursing		3	
	Total Credits		6			Total Credits		6	
5 th Semester					6 th Semester				
Course	Course Name	Sem	Cr	Gr	Course	Course Name	Sem	Cr	Gr
NURS-650	Instructional Technology		3		NURS-689	Capstone		3	
NURS-680	Teaching Practicum (1 Theory Credit, 2 Clinical Credits) (90)		3						
	Total Credits		6			Total Credits		3	
	Total Credits					Total Credits		33	

All courses run in 8-week blocks.

*Denotes a Core Requirement

+Denotes an Elective

Total Elective Credits = 0

Undergraduate General Education Core Credit Hours = 12; Nursing Bridge Credit Hours = 15

Completion of 33 Graduate-level nursing courses with a 3.0 GPA

Completion of 90 practicum hours

Capstone or Culminating Experience: Successful completion of the capstone project, demonstrating achievement of the six

End of Program Student Learning Outcomes and four option specific Role-Specific Nursing Competencies

**PROGRAM: RN TO MASTER OF SCIENCE IN NURSING
GLOBAL LEADERSHIP OPTION**

General Education Courses (Note: These courses must be taken at Delaware State University)									
CRN	Course Number and Course Title				Semester or Session to be Completed			Credit Hours	
	MTSC 241 Statistics (*Pre-requisite (PR) MTCS 121 waived) *								
	Arts/Humanities+								
	Arts/Humanities+								
	African American Studies+								
					Total Credit Hours: 12 credits				
Master of Science in Nursing (Dual Degree Option)									
CRN	NURS Bridge Course Number(s) and Course Title(s)				Credit Hours				
	NURS 472 Population Focused Care*				5				
	NURS 474 Seminar in Professional Nursing*				3				
	NURS 470 Theory & Evidenced Based Practice*				3				
	NURS 476 Health Policy*				4				
					Total Credit hours: 15 credits				
Nursing Education Master's Level Courses									
1 st Semester					2 nd Semester				
Course	Course Name	Sem	Cr	Gr	Course	Course Name	Sem	Cr	Gr
*NURS-509	Ethical and Legal Perspectives		3		*NURS-521	Organizational Change		3	
*NURS-512	Global Healthcare		3		*NURS-530	Research and Applied Statistics in Nursing		3	
Total Credits			6		Total Credits			6	
3 rd Semester					4 th Semester				
Course	Course Name	Sem	Cr	Gr	Course	Course Name	Sem	Cr	Gr
NURS-540	Leadership Styles and Principles		3		NURS-630	Financial Management		3	
NURS-545	Informatics		3		NURS-550	Building Effective Communication and Relationships		3	
	Total Credits		6			Total Credits		6	
5 th Semester					6 th Semester				
Course	Course Name	Sem	Cr	Gr	Course	Course Name	Sem	Cr	Gr
NURS-610	Trends in Global Health		3		NURS-689	Capstone		3	
NURS-620	Leadership Practicum (1 Theory Credit, 2 Clinical Credits) (90)		3						
	Total Credits		6			Total		3	
	Total Credits					Total Credits		33	

*Denotes a Core Requirement

+Denotes an Elective

Total Elective Credits = 0

Undergraduate General Education Core Credit Hours = 12; Nursing Bridge Credit Hours = 15

Completion of 33 Graduate-level nursing courses with a 3.0 GPA

Completion of 90 practicum hours

Capstone or Culminating Experience: Successful completion of the capstone project, demonstrating achievement of the six

End of Program Student Learning Outcomes and four option specific Role-Specific Nursing Competencies



**PROGRAM: RN TO MASTER OF SCIENCE IN NURSING
PSYCHIATRIC MENTAL HEALTH NURSE PRACTITIONER (PMHNP) OPTION**

General Education Courses (Note: These courses must be taken at Delaware State University)			
CRN	Course Number and Course Title	Semester or Session to be Completed	Credit Hours
	MTSC 241 Statistics (*Pre-requisite (PR) MTCS 121 waived) *		
	Arts/Humanities+		
	Arts/Humanities+		
	African American Studies+		
			Total Credit Hours: 12 credits
Master of Science in Nursing (Dual Degree Option)			
CRN	NURS Bridge Course Number(s) and Course Title(s)	Credit Hours	
	NURS 472 Population Focused Care*	5	
	NURS 474 Seminar in Professional Nursing*	3	
	NURS 470 Theory & Evidenced Based Practice*	3	
	NURS 476 Health Policy*	4	
			Total Credit hours: 15 credits
PMHNP Master's Level Courses			

1 st Semester -- CORE					2 nd Semester -- CORE				
Course	Course Name	Sem	Cr	Gr	Course	Course Name	Sem	Cr	Gr
NURS-509	Ethical and Legal Perspectives		3		NURS-653	Comprehensive Advanced Health Assessment for the APRN		3	
NURS-530	Research and Applied Statistics in Nursing		3		NURS-611	Advanced Pathophysiology		3	
	Total Credits		6			Total Credits		6	
3 rd Semester					4 th Semester				
Course	Course Name	Sem	Cr	Gr	Course	Course Name	Sem	Cr	Gr
NURS-612	Advanced Pharmacology		3		NURS-631	Psychiatric Mental Health Disorders and Therapeutic Modalities I *Block I		2	
NURS-628	Advanced Psychopharmacology for the PMHNP		3		NURS-621	Psychiatric Mental Health Disorders and Therapeutic Modalities I (Practicum-180 practicum hours) * 16 weeks		4	
	Total Credits		6			Total Credits		6	
5 th Semester					6 th Semester				
Course	Course Name	Sem	Cr	Gr	Course	Course Name	Sem	Cr	Gr
NURS-632	Psychiatric Mental Health Disorders and Therapeutic Modalities II *Block I		2		NURS-633	Psychiatric Mental Health Disorders and Therapeutic Modalities III *Block I		2	
NURS-622	Psychiatric Mental Health Disorders and Therapeutic Modalities II (Practicum-180 practicum hours) *16 weeks		4		NURS-623	Psychiatric Mental Health Disorders and Therapeutic Modalities III (Practicum-180 practicum hours) * 16 weeks		4	
NURS-654	Examining the Leadership Role of the APRN * Block II		2						
	Total Credits		8			Total Credits		6	
7 th Semester					8 th Semester				
NURS-619	Special Populations for the PMHNP *Block I		2		NURS-651	Capstone for the PMHNP (45 practicum hours, 30 theory hours) *Block I		3	
NURS-624	Special Populations for the PMHNP (Practicum IV- 180 practicum hours) *16 weeks		4						
	Total Credits		6			Total Credits		3	

****All practicum courses and associated lecture courses must be taken in sequence as printed on the Plan of Study.****

Capstone or Culminating Experience: Successful completion of the capstone project, demonstrating achievement of the six End of Program Student Learning Outcomes and Role-Specific Competencies for the PMHNP option.

Undergraduate Core Credit Hours = 12; Nursing Bridge Credit Hours = 15

PMHNP Master Level: 47 program credits; 16 courses; 765 practicum hours

RN to MSN (PMHNP option) = 74 Total Credit Hours

DEPARTMENT OF SOCIAL WORK

DOCTOR OF SOCIAL WORK (DSW)

The mission statement of the Doctor of Social Work (DSW) Program at Delaware State University is to prepare experienced, advanced practice social workers for career advancement in areas of leadership, teaching, and research. We prepare graduates that use their knowledge and expertise as agents of change to seek justice in an imperfect world.

The DSW Program supports advanced level social workers (with a minimum of 2 years of post-MSW practice experience) in advancing their career in the areas of leadership, research, and social work education. The program integrates the Department of Social Work's underpinnings throughout the curriculum. These underpinnings include:

1. A Black Perspective for Social Work Practice
2. Strengths Perspective
3. Empowerment Perspective
4. Rural Perspective
5. Global Perspective

PROGRAM GOALS

The goals, derived from the DSW Program mission, reflect a commitment to advancing the profession and scholar-practitioners, supporting core social work values and ethics, and building upon areas of practice expertise through the integration of leadership, teaching, and research skills to further career advancement.

1. To graduate doctoral level scholar-practitioners committed to empowerment oriented and strengths perspective frameworks to support marginalized and oppressed populations within the context of a Black perspective in the areas of social work education, leadership, and research.
2. To advance the social work profession with doctoral level scholar-practitioners skilled in critical thinking and scholarly inquiry methods to identify micro and macro level injustices, propose change interventions, and evaluate outcomes.
3. To advance practice-relevant scholarly social work knowledge through the support of doctoral student dissemination through teaching, professional presentations, publications, and curriculum development.
4. To graduate doctoral level scholar-practitioners with an advanced commitment to social work values and ethics in practice across system levels, leadership, teaching, and research.
5. To graduate doctoral level scholar-practitioners with advanced skills in policy evaluation and formulation towards macro level systemic change with sensitivity to diverse client groups, particularly those from rural communities, in a global society.

STUDENT LEARNING OUTCOMES

1. Engage in systematic inquiry that adheres to scholarly conventions.
2. Use and evaluate research-informed practice critically and at an advanced level.
3. Develop and disseminate practice-relevant knowledge through a variety of channels, such as teaching, scholarship, professional presentations, mentoring, and administration.
4. Demonstrate leadership in social work practice and education.
5. Develop and maintain substantive expertise in one or more areas of social work practice.

These student learning outcomes prepare Delaware State University's Doctor of Social Work (DSW) graduates for advanced practice and career advancement in the areas of social work education, research, and leadership.

ADMISSION DEADLINES AND DEGREE REQUIREMENTS

Application Deadlines:

Fall – June 15

All applicants are required to submit evidence of the following for consideration of unconditional admission:

1. An earned Masters in Social Work (MSW) degree from a Council on Social Work Education (CSWE)-accredited program with a minimum cumulative grade point average of 3.00.
2. DSU Graduate Studies admission application.
3. Official transcript(s) of all academic work completed.
4. Sample of Scholarly Work. Either submission of a previously submitted first authored published manuscript, and unsubmitted/unpublished manuscript, OR an APA formatted 3-page topic paper relevant to social work with cited scholarly sources (examples: books, journal articles, government websites) sources. A paper (utilizing cited sources) from the applicant's completed MSW or other most recent academic program is acceptable to fulfill this application requirement.
5. Career Essay. The candidate must specifically explain how a DSW degree will support their future career goals. Specifications: 1-2 pages, APA style, free of grammatical errors.
6. Resume/CV. A current professional resume or CV demonstrating a minimum of 2 years of full-time, post-MSW practice experience.
7. Three (3) letters of recommendation (professional with one academic if available) via the online application process.

DEGREE REQUIREMENTS

Students must complete 54 credits in the DSW Program, and successfully complete and defend an original capstone project to meet requirements for the Doctor of Social Work degree.

Required Coursework:

The DSW curriculum consists of 18 required courses. Of those, one is an elective in the specialization area of the student's choice, one specialization practicum, and three capstone courses, which provide support and structure throughout the capstone project completion process.

Required courses include:

SCWK 808 History of the Social Work Profession
SCWK 809 Knowledge in a Post-Modern World
SCWK 810 Theories and Theorizing in Social Work
SCWK 816 Human Development and Spirituality
SCWK 811 Advanced Policy Practice
SCWK 812 Social Work Research: Qualitative Methods
SCWK 813 Theories of Leadership
SCWK 815 Social Work Research: Quantitative Methods
SCWK 817 Evidence Based Practice
SCWK 818 Change in a Racialized Society
SCWK 819 Theories of Change: Communities
SCWK 820 Organizational Change: Practical Application
SCWK 821 Designing a Social Work Specialization Course
SCWK 822 Specialization Practicum
(_____) Elective/Independent Study
SCWK 830 Capstone I: Proposal Development
SCSW 831 Capstone II: Writing for Publication
SCWK 832 Capstone III: Project Defense

FACULTY

Social Work Department faculty members have a wide variety of both practice and research interests. They are dedicated to their respective fields of study and have a diverse background. Areas of faculty research interest of the social work faculty include behavioral health, child welfare, violence, community health/wellness, prevention, workforce development, school social work, community needs assessments, and interprofessional practice. As faculty engage in research in these areas, they offer Doctoral students many opportunities for active learning and discovery.

COURSE DESCRIPTIONS

SCWK-808. HISTORY OF THE SOCIAL WORK PROFESSION

This course is designed to prepare doctoral students to examine the history and knowledge of social work through a social justice lens. The primary goal of the course is to facilitate students' intellectual curiosity and critical thinking about the history of social work and the professionalization of the field. Critical theories will guide the exploration of social work's mission, history, ethics, values, and prominent debates within the context of national and global trends. The course will also explore the role of government, economics, and culture in shaping the profession, as we know it today, in addition to an exploration of the history of social work profession from an African American perspective which will further facilitate discussion on the innovative frameworks used with people of color, the social problems of black communities as well as child welfare policy and systems. This course will examine the history, knowledge, and experiences of topics such as poverty and inequality, social welfare, and contemporary social policy as it affects marginalized and oppressed people.

SCWK 809. KNOWLEDGE IN A POST-MODERN WORLD

Can we believe on grounds that exclude error given the human susceptibility to making mistakes? This has been a fundamental question for epistemologists. The question now more than ever has found new currency in our own time. This course is designed to introduce students to the politics of knowledge and values associated with what is considered knowledge or justified belief. The course takes students through issues of epistemology, power, justice, and power history. Increasingly, the powerful determines what is important and the social construction of knowledge becomes the focus of this course. The course further examines issues of sociocultural influences on thinking and the historical use of knowledge as an instrument of oppression. The course surveys the history of western epistemology from the scientific revolution and enlightenment to the Postmodern period.

SCWK-810. THEORIES AND THEORIZING IN SOCIAL WORK

At the root of theories is the need to make sense of the social world. In order to do this effectively, interconnected abstraction or ideas must be condensed and organized to serve as objective guidance for strategies and work style. Such condensation and organization carry a set of assumptions that the interconnected ideas and what are proposed are true about the world. Built on this assumption, theories often generalized from a single experience to the whole. This course is designed to prepare doctoral students to review relevant social work theories and to prepare them to critically examine issues of culture and context in the creation of theories. The course allows students to analyze concepts, relationships, assumptions, and generalizations of popular social work theories. The course further examines principles of parsimony, and the use of professional jargon and power differentials.

SCWK-816. HUMAN DEVELOPMENT AND SPIRITUALITY

This course is designed to prepare doctoral students to examine spirituality in human development. We will explore the spiritual journey of 5 faiths in correlation to human development and growth and discuss implications for Islamic, Judaism, Christianity, and Buddhism faiths as well as being Atheist. This course takes a research approach to becoming a culturally competent practitioner of human development and spirituality. Lastly, the course examines biases toward both the majority and minority religions and spiritual practices.

SCWK-811. ADVANCED POLICY PRACTICE

This course presents frameworks and methods through which to analyze contemporary social welfare policies and programs and form advocacy plans. Theoretical and methodological approaches will be utilized to analyze policy development, implementation,

management, and impact on historically oppressed populations. Theoretical and methodological approaches will be utilized to formulate policy solutions and shape advocacy plans. The course follows an intersectional approach to examine current trends, debates, and research developments in US social welfare policy. Students will apply critical thinking skills to analyze the political strategies, organizational tools, systemic oppression, and social work values affecting social change. Throughout the course, special attention is given to policy implications for diverse population groups, including, but not limited to, groups distinguished by race, ethnicity, culture, gender, sexual orientation, religion, physical or mental ability, age, and national origin.

SCWK-812. SOCIAL WORK RESEARCH: QUALITATIVE METHODS

This course is designed to prepare doctoral students to understand, interpret, evaluate, and design qualitative research projects and to develop the ability to select and use appropriate research methods. This course integrates the major concepts and practices of qualitative research methodology. This course focuses on the development and application of research for the purpose of writing for publication. Topics addressed in this course include choice of research methods, developing a problem statement and proposal, preparing interview guides, conducting research, and reaching conclusions from qualitative data.

SCWK-813. THEORIES OF LEADERSHIP

This course is designed to prepare doctoral students to provide effective leadership within organizations and communities. Theories, methods, and practices which influence individuals as change agents will be critically examined. Key leadership theories and cultural relevance will be explored as students identify their own leadership styles and apply theory to practice through qualitative interview analysis.

SCWK-815. SOCIAL WORK RESEARCH: QUANTITATIVE METHODS

This course is designed to prepare doctoral students in quantitative methods to understand multivariate analysis, interpret results, critically evaluate research informed practice, and use suitable research designs for advanced quantitative studies. To that end, this course gives an overview of descriptive statistics, and focuses on analysis of variance, linear regression analysis, assumptions of linear regression, model specification and measurement errors, and issues of multicollinearity. The course also covers analysis of binary outcome variables using logistic regression. Students will utilize software for quantitative data analysis.

SCWK-817. EVIDENCE BASED PRACTICE

This course is designed to prepare doctoral students with knowledge of how to critically appraise and translate social work research. The course explores the history of evidence-based practice, the steps in the evidence-informed process, and prepares students to effectively assess experimental, quasi-experimental, nonexperimental, and qualitative research designs. The course emphasizes the evaluation of research and practice interventions across multiple levels of social work practice including individuals, families, and communities. Special attention is given to the theoretical basis of the intervention and whether the intervention has been effectively studied among racially and ethnically diverse populations and communities. The course provides students with the opportunity to appraise current research based on their practice interests, which will support students in developing improved practice guidelines and design processes to further develop their personal research.

SCWK-818. CHANGE IN A RACIALIZED SOCIETY

This course is designed to prepare doctoral students to assess the social significance of race by examining the reality of racial stratification, the reality of the experience of race, and the nationality of those who study racial dynamics and processes. Students will review the origins of the concept of race and the historical science used to justify racial thinking. We will investigate the ways in which race has been socially and historically constructed. We will think critically about the sociological dimensions of race, ethnicity and their influence on identity, racial categorization, and interlocking systems of oppression. The course engages historical and contemporary theories of race and racism with a primary focus on the United States; however, we also incorporate international perspectives and experiences. Furthermore, we will focus on identifying the factors that influence the development of an individual's, group's, and society's cultural perspectives on sexuality. The class will take an experiential approach to training students to be critical consumers of research and theory, and to become culturally competent practitioners of, spirituality, sexuality education, counseling/therapy, and/or research.

SCWK-819. THEORIES OF CHANGE: COMMUNITIES

How do we create an equitable and just society? The answers are not easy but, in this course, we examine several theories of change as well as histories of change. Student will critically examine the Civil Rights Movement and the Student Non-Violence Movement of the 1960s. Such Theories as Program Theory, Theory X and Theory Y will be critically examined for their relevance to issues of our time. Students will learn about logic modeling, and other research-based concepts of change including empowerment, network, and diffusion theories. The aim is to guide students toward a justified belief that change is possible when a solution is planned, and the problem is targeted. The important problems of the past like segregation seemed impossible, daunting, and scary but were overcome by individuals who saw the possibilities of the future and planned for change.

SCWK-820. ORGANIZATIONAL CHANGE: PRACTICAL APPLICATION

This course is designed to prepare doctoral students to utilize evidence-based protocols to plan, implement and pivot change in the organizational setting. While this course is not a leadership course per se, it will nonetheless enhance leadership skills for those in positions as well as prepare those in line for leadership promotion. Students will think from an organizational macro-practice framework with an emphasis on results and process from a values-laden, ethical, trauma-informed perspective. This is accomplished by understanding the diverse workforce in a manner consistent with a strength, empowerment, and the Black perspective. Students will review organizational dynamics from an African centered perspective realizing that a Eurocentric point of view, while ubiquitous, may not serve and recognize the strengths of the organization.

() ELECTIVE/INDEPENDENT STUDY

Students may select a social work elective, elective from another discipline in graduate studies, or complete faculty-supervised independent study to further the student's identified area of specialization.

SCWK-821. DESIGNING A SOCIAL WORK SPECIALIZATION COURSE

This course is designed to prepare doctoral students to design an elective social work course. By the end of this course, students will be able to explain a variety of teaching theories and articulate their teaching philosophy. They will be able to create course learning outcomes and design a course structure, activities, and policies that facilitate students learning. The learning products from this course include a written teaching philosophy, lecture and course activity sample, course assessment plan, and a course syllabus informed by current CSWE competencies.

SCWK-822. SPECIALIZATION PRACTICUM

Students will identify or develop an independent practicum project for completion. Practicum projects should be developed in the student's area of social work practice expertise or another area of interest for future career advancement. Students will engage in reflective activities throughout the course, and complete a final professional presentation summarizing their project, learning outcomes, and relevance to their Capstone Project and/or career goals.

SCWK-830. CAPSTONE I: PROPOSAL DEVELOPMENT

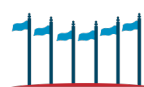
This seminar course supports the development of the DSW Capstone Project Proposal. Students will engage in a collaborative learning experience in which they build and shape their social work expertise as they develop the capstone project proposal. Students will utilize all DSW curricular areas in the construction of their proposal and will select their DSW Capstone Committee. Course activities and discussions will support the relationship between the DSW education, capstone projects, and future professional roles as leaders and educators.

SCWK-831. CAPSTONE II: WRITING FOR PUBLICATION

This course supports crafting and implementing a well-designed research project that can be used for publication. The course prepares doctoral students to effectively transform course papers, research projects, and conference papers into articles that can be submitted to peer-reviewed journals. Students will be required to read and critique the writing of others as well as revise their own work.

SCWK-832. CAPSTONE III: PROJECT DEFENSE

This independent study course supports the process of completion the DSW Capstone Project paper and oral defense of the Project. Students will collaborate with their DSW Capstone Committee through submission, feedback, and revisions of submitted drafts. With Committee recommendation, a formal defense of the DSW Capstone Project will be scheduled.



PROGRAM: DOCTOR OF SOCIAL WORK (DSW)

YEAR 1					
Fall			Spring		
Course #	Course Name	Cr.	Course #	Course Name	Cr.
SCWK 808	History of the Social Work Profession	3	SCWK 810	Theories and Theorizing	3
SCWK 809	Knowledge in a Post-Modern World	3	SCWK 816	Human Development and Spirituality	3
Summer					
SCWK 811	Advanced Policy Practice	3			
SCWK 812	Social Work Research: Qualitative Methods	3			
YEAR 2					
Fall			Spring		
SCWK 813	Theories of Leadership	3	SCWK 817	Evidence Based Practice	3
SCWK 815	Social Work Research: Quantitative Methods	3	SCWK 818	Change in a Racialized Society	3
Summer					
SCWK 819	Theories of Change: Communities	3			
SCWK 820	Organizational Change: Practical Application	3			
YEAR 3					
Fall			Spring		
SCWK 821	Designing a Social Work Specialization Course	3		+ Elective/ Independent Study	3
SCWK 822	Specialization Practicum	3	SCWK 830	Capstone I: Proposal Development	3
Summer					
SCWK 831	Capstone II: Writing for Publication	3			
SCWK 832	Capstone III: Project Defense	3			

TOTAL CREDITS = 54

+ denotes elective

Total elective credits = 3

*Capstone: Submission and successful defense of a comprehensive project; completed rubric to be submitted to School of Graduate, Adult and Extended Studies by committee advisor prior to graduation.

MASTER OF SOCIAL WORK (MSW)

The mission statement of the MSW Program is to educate students in advanced generalist practice to become leaders in the social work profession who practice cultural humility and possess advanced skills to meet social needs at all systems levels. The MSW graduate will integrate interdisciplinary knowledge, evidenced-based practice, theory, values and ethics to perform in a professional environment. The MSW Program will enhance the profession by educating graduate students who not only meet social needs locally, but address systemic issues for a more equitable state, nation and world.

Accordingly, the program prepares students for advanced practice with individuals, families, groups, organizations, and communities. Having satisfied all of the program's academic requirements, students leave the program with competencies allowing them to practice with and on behalf of Delawareans, and with clients throughout the region, across the nation and globally. Course offerings provide students an understanding of social, economic, political and interpersonal problems from a global perspective. Consequently, students comprehend the effects of problems such as poverty, health disparities, racism and oppression on populations who live in parts of the world outside the United States.

PROGRAM GOALS

The goals, derived from that mission, reflect a commitment to the profession's values, purpose, and philosophy and are consistent with Council of Social Work Education (CSWE) 2015 Educational Policy and Accreditation Standards that endeavor to develop advanced level practitioners with core competencies that are necessary for social work practice in the 21st century. The MSW Program has developed five goals that derive from its mission and reflect the social work profession's purpose and core values and the program's context. The goals are as follows:

1. To graduate advanced level practitioners who can independently employ empowerment oriented and strengths perspective frameworks to work with marginalized and oppressed populations within the context of a Black perspective for social work practice.
2. To provide the social work profession with advanced generalist practitioners who are able to think critically and possess the requisite knowledge and skills to work independently with diverse client systems, particularly those from rural communities, in a global society.
3. To graduate advanced level social workers whose orientation for service intervention begins with prevention, and who are able to identify and incorporate protective factors and utilize the professional relationship when assessing and intervening with diverse client systems, particularly those that are experiencing difficult and complex challenges.
4. To graduate advanced level social workers who demonstrate the ability to formulate and reformulate policies and advocate macro level systemic change, while exhibiting knowledge and sensitivity to trends, practices, and concepts that shape and inform social work practice with diverse client systems.
5. To graduate advanced level practitioners who can competently utilize scientific inquiry to inform and evaluate the effectiveness of their practice and use program evaluation results to improve service outcomes for clients.

Graduates of the MSW Program possess the competencies needed to engage, assess, intervene and evaluate individuals, families, treatment groups, organizations and communities. It is understood that these unique elements of the curriculum are congruent with the concepts and intervention principles that define the framework for all professional social work practice, that is generalist practice. Therefore, students graduate able to generalize the knowledge, values and skills that underlie all social work practice in different settings with diverse populations experiencing multiple, complex problems. The MSW curriculum is grounded on the Department of Social Work's underpinnings. The foundation courses present a generalist perspective to social work practice and consist of

fundamental content in human behavior and the social environment, social policies, research, practice and field practicum. The advanced courses build upon the core foundation year competencies of acquired knowledge, values and skills and demonstrate the integration and application of both the core and advanced competencies in practice with individuals, families, groups, organizations, and communities.

STUDENT LEARNING OUTCOMES

Graduates of the MSW Program possess the competencies needed to engage, assess, intervene and evaluate individuals, families, treatment groups, organizations and communities. These competencies are mandated by the Council on Social Work Education (CSWE):

1. Demonstrate ethical and professional behavior
2. Engage diversity and difference in practice
3. Advance human rights and social, economic and environmental justice
4. Engage in practice-informed research and research-informed practice
5. Engage in policy practice
6. Engage with individuals, families, groups, organizations, and communities
7. Assess with individuals, families, groups, organizations and communities
8. Intervene with individuals, families, groups, organizations and communities
9. Evaluate with individuals, families, groups, organizations and communities.

In addition, students will be able to:

- Evaluate the efficacy of interventions and programs;
- Integrate theories of personality and psychopathology;
- Address health and mental health disparities from a public health perspective and understand and assimilate theories and practice principles that guide human service administration;
- Practice with systems of all sizes in a wide array of settings—from traditional public social welfare and governmental agencies to small and medium size nonprofit organizations to private and for-profit entities.

ADMISSION DEADLINES AND DEGREE REQUIREMENTS

Application Deadlines:

Priority Deadline -- Fall: March 15 | **Spring:** September 15

Fall

May 31 for Advanced Standing Applications

July 15 for Regular Admit Full Time 60 credits

August 10 for Part time Regular Admissions 60 credits

Spring

September 15 for Advanced Standing Applications

October 30 for Regular Admit Full Time 60 credits

November 15 for Part time Regular Admissions 60 credits

All applicants are required to submit evidence of the following for consideration of unconditional admission:

- The earning of a baccalaureate degree at an accredited college or university (or its equivalent for foreign students) and the ability to engage in high-quality graduate work. Applicants must have an undergraduate Liberal Arts foundation as defined by the program faculty. A background in the social and behavioral sciences is preferred. No academic credit is given for life and/or professional experience.
- A completed online graduate application package by the established deadline. The entire application can be completed and submitted online.

May 31 is the deadline for Advanced Standing admission, July 15 is the deadline for fall admission, and October 30 is the deadline for January admission.

An application must be submitted for the fall and spring semesters in which applicant wishes to enroll.

- Official transcripts of all previous undergraduate and graduate work. The applicant's undergraduate transcript must reflect a cumulative grade point average 2.75 on a 4.00 scale (4.0=A). A "B" average in the major field of study is required. Higher scholastic achievement is preferred.
- Personal Statement - A personal statement explaining why the student wants to 1) obtain a MSW degree, and 2) how the student plans to use the knowledge and skills obtained to impact social and economic justice and improve services for populations at risk. Statement must be no more than two (2) typed pages, double spaced, 11 point Calibri
- Three letters of recommendation. These letters should be from individuals who can provide information about the student's scholarly ability, moral character and characteristics to succeed in a graduate program. Individuals like present or past teachers, advisors, supervisors, and colleagues are in positions to provide credible recommendations.

Personal Attributes:

- Motivation toward, interest in, and preparation for social work education;
- A capacity to function as a creative, responsible independent, and accountable practitioner;
- Ability to deal with sexual, racial, ethnic, physical, social, and cultural diversity;
- A capacity and willingness for self-introspection and change;
- A capacity to deal with individual differences;
- A desire to work for social change in order to enhance leadership skills and create greater equity in society;
- The ability to develop a scientific stance toward social welfare and social work practice, and
- Identification with and a desire to apply social work knowledge, values and skills.

Type of Admission:

- Advanced standing status—one summer course as a pre-requisite plus academic year. The Advanced Standing Seminar course is offered during the second summer session, usually from the end of June through the end of July and in the second eight week block of the fall session. The course may be offered online and face-to-face.
- Full-time status—two years
- Part-time status—three or four years
- Transfer and individual advanced standing credits are given on a case-by-case basis.

Non-Degree Option:

This option provides an opportunity for candidates and other professionals who are seeking graduate coursework for their professional growth (who have not been accepted into the MSW Program) to register for and take three MSW courses.

Required Coursework:

Students enrolled in the Master of Social Work Program are required to complete a minimum of 30 (Advanced Standing) or 60 credit hours (regular two-year program) for graduation candidacy.

Required courses include:

SCWK 601	Social Welfare Policies & Services Policy I	SCWK 602	Social Welfare Policies & Services Policy II
SCWK 603	Human Behavior & the Social Environment I	SCWK 604	Human Behavior & the Social Environment II
SCWK 605	Generalist Practice I	SCWK 606	Generalist Practice II
SCWK 607	Research & Evaluation I	SCWK 608	Research & Evaluation II
SCWK 633	Field Practicum I	SCWK 634	Field Practicum II
SCWK 646	Advanced Generalist Practice I	SCWK 668	Advanced Generalist Practice III
SCWK 647	Advanced Generalist Practice II	SCWK 669	Advanced Generalist Practice IV
SCWK 643	Theories of Personality & Adult Psychopathology	SCWK 610	Administration, Management & Supervision
SCWK 651	Practice & Program Evaluation for the Advanced	SCWK 660	Advanced Generalist Practice in a Public Health Context
SCWK 635	Field Practicum III	SCWK 636	Field Practicum IV
SCWK 632	Learning without Borders		

Registration in graduate-level coursework is subject to the approval of an assigned Advisor.

FACULTY

The faculty members in the Social Work Program are dedicated to their respective fields of study and have a diverse background. Specific areas of research interest of the social work faculty include health, mental health, child welfare, violence, community health/wellness, etc. As faculty engage in research in these areas, they offer graduate students many opportunities for active learning and discovery.

COURSE DESCRIPTIONS

ADVANCED STANDING SEMINAR 559 (FOR ADVANCED STANDING STUDENTS ONLY)

The Advanced Standing Seminar is designed to prepare students for the advanced curriculum (second year) of the Master of Social Work Program at Delaware State University. Accordingly, the seminar familiarizes students with the program's curriculum and theoretical underpinnings. These include a Black perspective for social work practice, empowerment, the strengths perspective, the rural perspective and the global perspective at the micro, macro and mezzo levels. Upon successful completion of the course, students are eligible to enroll in the second year of the MSW program as a full-time student. Advanced standing students are not permitted to enter the program on a part-time basis. *PREREQUISITE:* BSW degree awarded by a social work program accredited by the Council on Social Work Education. The degree must have been earned within five years of admission to MSW program at Delaware State University. 3.000 Credit hours

SCWK 601. SOCIAL WELFARE AND POLICY I

Explores 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 services intervention, are also examined. Introduces models of policy analysis and reviews the development of the social work profession. 3.0 Credit hours

SCWK 602. SOCIAL WELFARE AND POLICY 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 process necessary to deliver services are considered. Emphasizes social policies related to special groups such as African Americans women, the elderly, and disabled. Prerequisites: SCWK 601. 3.000 Credit hours

SCWK 603. HUMAN BEHAVIOR AND THE SOCIAL ENVIRONMENT I

The course introduces various influences on human behavior within a social context and identifies cognitive, psychological, and developmental theories pertaining to human growth and development. The course examines the interplay of psychosocial, biological, and institutional factors from conception through adolescence so that students have a basis for understanding and assessing behavior. The course considers the relevance of such factors as ethnicity, gender, race, sexual preference, and mental and physical challenges on human functioning in society. 3.000 Credit hours

SCWK 604. HUMAN BEHAVIOR AND THE SOCIAL ENVIRONMENT II

This course is the second in a two-course foundation Human Behavior and Social Environment sequence. HBSE I and II study the various components of human behavior and social environment and provide a framework for studying the person-in-environment from an ecological approach. The courses, designed for the generalist practitioner, explore multiple factors that shape the development of individual growth and social interaction, and they explore a range of theories, both intra-personal and interpersonal. In addition, these two courses provide a conceptual model for viewing human behavior from a holistic perspective with particular emphasis on a Black perspective, a strength, and empowerment.

An ecological approach stresses: 1) the significant biological, psychological, social, and spiritual developmental milestones, 2) life span stages and their associated life events, 3) socio-structural (e.g., health, economic) factors, and 4) human diversity (e.g., race, ethnicity, gender, age), and its effect on human and societal behavior. Credits, three hours.

SCWK 605. GENERALIST PRACTICE I

This course is the first of two that comprise the foundation practice sequence. The course presents the generalist foundation for micro and mezzo social work practice centering on the interactive and dynamic processes of assessment, intervention, and evaluation with individuals, families and groups. The course presents knowledge and skills for generalist practice according to eco-systems and person and social environment perspectives for understanding people and responding their needs and problems. Students are introduced to a Black perspective for social work practice, empowerment, the strengths perspective, the rural perspective and the global perspective as core concepts for not only assessing clients' problems but, most importantly, assessing their strengths, gifts and talents for resolving and overcoming obstacles to their well-being. By the end of the course, students learn to view clients as central resources in the problem-solving process.

The course emphasizes that social work values and ethics, promotion of social and economic justice, and service to diverse groups, exemplified by cultural competence, overlie all social work practice in all settings with all clients. 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.

SCWK 606. GENERALIST PRACTICE II

This is the second of two courses that comprise the foundation practice sequence. The course builds on the knowledge, values and skills for generalist practice that were imparted in Generalist Practice I by teaching students how to apply dynamic and interactive processes of assessment, intervention, and evaluation at the macro level in communities and organizations. The course teaches communities and organizations as settings where the social worker and the client work together in an attempt to reduce or ameliorate problems that adversely impact client well-being. Guided by a Black perspective for social work practice, empowerment, the strengths perspective, the rural perspective, and the global perspective, students learn to focus on clients' strengths as a potential solution to the problem(s) for which the client is receiving assistance. The course directs students to look to evidence based practices and related research when considering effective ways to assist clients. Consequently, the course familiarizes students with resources for evidence based interventions and promotes evaluation of practice using reliable research methods. Guided by a prevention orientation to generalist practice at the macro level, students learn to examine risk and protective factors that should be taken into account when developing interventions to prevent problems before they emerge. The course emphasizes that social work values and ethics, promotion of social and economic justice, and service to diverse groups, exemplified by cultural competence, overlie all social work practice in all settings with all clients. 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. Credits, three hours.

SCWK 607. RESEARCH EVALUATION I

Methods of Research in Social Work Practice is the first of a three (3) course sequential offering in the research foundation curriculum. It is designed to introduce students to the scientific method of inquiry within the context of advanced generalist practice and research problems germane to social work. Issues relating to research, theory, goals and methodological procedures are examined. Students are introduced to the various ways in which these underpinnings are designed to aid in the development of the appropriate language, knowledge and skills for the application of research methods associated with advanced generalist social work practice. Substantive topics include: framing hypotheses and delineating the components of the hypotheses; stages involved in conducting social scientific research projects; the logic of such procedures; values and ethics; conceptualization and operationalization; research design; and sampling. Ethnology and ecological fallacies provide the conceptual frame of reference for issues relating to cultural diversity, working with at-risk populations, and achieving social justice. Credits, three hours.

SCWK 608. RESEARCH & EVALUATION METHODS FOR SOCIAL WORK PRACTICE II

This is the second course in a three course research sequence that introduces students to concepts in data analyses. Content includes analyses and interpretation of univariate, bivariate, and multivariate statistics appropriate for various kinds of data and levels of measurement used in social work practice. Students will learn data collection, data entry, data processing, and data analysis using the SPSS software package and will use the knowledge to complete their own research projects. Thus, at this level, students become active participants in conducting self-directed social work research. Additionally, students continue to deepen and extend their knowledge and skills as they relate to social work research and evaluation at the generalist practice level. Substantive topics include: frequency distributions, measures of central tendency and variability, hypothesis testing, inferential statistics, including correlation and regression. Focus will also be on the application of research methods to the evaluation of interventions at various levels. In follow up to Research and Evaluation Methods I, this course continues to explore social research as a means for promoting a Black perspective, strengths perspective, empowerment, rural, and global perspective, and for attending to cultural diversity and social and economic justice for all, especially populations-at-risk. Credits, three hours.

SCWK 610. ADMINISTRATION, MANAGEMENT & SUPERVISION

This course is designed to increase students' knowledge and skills for social work macro practice in organizations. The course aims to prepare students for leadership positions as administrator, manager and supervisor. Accordingly, students will be encouraged to think from an organizational point of view; specifically, looking at systems dynamics and the functioning of the organization as an entity and to critically think and behave like managers and leaders, with a broad, visionary perspective and an emphasis on both results and process. The course is taught with the point of view that organizations provide services in a manner reflecting its orientation to service delivery. Hence, students are challenged to consider how an organization should organize and deliver services and manage its diverse human resources in a manner consistent with strengths, empowerment, and global perspectives. Credits, three hours.

SCWK 633. FIELD PRACTICUM I

To be taken by first year students in the field. This course provides students with opportunities to employ the knowledge, values, skills and conceptual frameworks that are related to 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 a Black Perspective in the helping process are applied with all client systems. Credits, three hours.

SCWK 634. FIELD PRACTICUM II

To be taken by first year students in the field. This course provides students with opportunities to employ the knowledge, values, skills and conceptual frameworks that are related to 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 a Black Perspective in the helping process are applied with all client systems. Credits, three hours.

SCWK 635. FIELD PRACTICUM III

To be taken by second year students in the field. This course provides Advanced Generalist Practice students with opportunities to employ the knowledge, values, skills and conceptual frameworks that are related to 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 a Black Perspective in the helping process with all client systems. Credits, three hours.

SCWK 636. FIELD PRACTICUM IV

This course provides students with opportunities to employ the knowledge, values, skills and conceptual frameworks that are related to the advanced 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 a Black Perspective in the helping process with all client systems. Credits, three hours.

SCWK 643. THEORIES OF PERSONALITY & ADULT PSYCHOPATHOLOGY

This is a required second year course that builds on Human Behavior and Social Environment I & II by expanding students' understanding of mental disorders over the life span that social workers are likely to encounter in their practice with individuals, families, communities, groups and organizations. The critical influence of culture, class, ethnicity, social values and other distinguishing characteristics of the individual, family, and communities is emphasized. Disparities in mental health delivery systems and their implications for advanced generalist practitioners as advocates for equal access to mental health services by all persons is a major focus of the course. The course expands students' knowledge and skills in assessing, developing intervention plans and intervening with clients experiencing mental disorders. Personality and behavioral symptoms in children, adolescents and adults, including development disorders, learning disorders, developmental delays and mental retardation through class discussion and case presentations. The Diagnostic and Statistical Manual of Mental Disorders is used as a framework for identification of key elements of mental disorders. Alternative models for assessing mental disorders from a bio-psycho-social perspective are examined. Several child and adult diagnostic categories are addressed from a person and environment perspective. Current research pertaining to the biological, psychological and environmental explanations for mental disorders is reviewed. Credits, three hours.

SCWK 646. ADVANCED GENERALIST PRACTICE I

This is a required second year course that builds on the vertical integration of Generalist Practice I & II and the other across the curriculum foundation content areas that include human behavior and social environment, policy, research, and field across the foundation curriculum. The course focuses on engagement and assessment phases of the planned change process with individuals, families and treatment groups, and is designed to develop advanced knowledge and skills for advanced generalist practice at the micro and mezzo levels. In addition, the course enables students to independently integrate social work values and ethics with clients experiencing serious, complex problems. Problem solving processes of engagement and assessment are taught according to an ecological and holistic social work perspective. Core organizing frameworks for assisting clients are a Black perspective for social work practice, empowerment, the strengths perspective, the rural perspective, and the global perspective. These underpinnings mean that the course necessarily provides students with advanced level skills that support clients' capacities to recover from serious problems and, in addition, addresses the ways social injustices, e.g., health disparities, institutionalized racism, etc., negatively impact the well-being of individuals and families. This course also explores the implications of such injustices on advanced practice with treatment groups. The grade "B" must be earned in this course. Credits, three hours.

SCWK 647. ADVANCED GENERALIST PRACTICE II

This is the second of a four-part advanced generalist practice sequence. It is a required second year course that builds on the vertical integration of Generalist Practice I & II and the other across the curriculum foundation content areas that include human behavior and social environment, policy, research, and field. The course focuses on the engagement and assessment phases of the planned change process in and with communities and organizations, and is designed to develop advanced knowledge and skills for advanced generalist practice at the micro and mezzo levels. The course focuses on effective models for engaging communities and organizations as a necessary step for assessing needs and problems that are impediments to community well-being and the effective administration and management of human service organizations. Reflecting the program's underpinnings — a Black perspective for

social work practice, empowerment, the strengths perspective, the rural perspective and the global perspective — the course gives special attention to the significance of such factors as ethnicity, culture, class, and community values when assisting communities and organizations that are experiencing complex, difficulty needs and problems. The grade “B” must be earned in this course. Students enrolled in this course must also enroll in the appropriate second year field instruction course. Credits, three hours.

SCWK 651. PRACTICE PROGRAM EVALUATION FOR THE ADVANCED PRACTITIONER

This is the third course in a three course research sequence that introduces students to concepts in program evaluation. It 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 and group designs. The course 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. Content includes needs assessment, formative evaluation, program monitoring, outcome evaluation, and cost-benefit analysis. Students will also learn about qualitative research, focus group interviews, action research and participatory research. Additionally, students continue to deepen and extend their knowledge and skills as they relate to social work research and evaluation at the generalist practice level. This course continues to explore social research as a means for promoting strengths perspective, empowerment, and rural perspectives, and for attending to cultural diversity and social and economic justice for all, especially populations-at-risk. Credits, three hours.

SCWK 660. ADVANCED GENERALIST PRACTICE

This course examines the activities that entail public health as essential approaches social workers should undertake and/or be involved in to address health issues that adversely impact the well-being of individuals, families, communities, and vulnerable populations. The course will define public health, and examine its mission, foci, and functions. In addition, the course will focus on how an individual and population-level approach are merged to include a partnership between social work and public health to prevent and solve health and related problems that threatened the well-being of individuals and communities, especially populations that are vulnerable to phenomenon such as health disparities due to class status, gender, sexual orientation, and mental health status. The course will emphasize prevention of health problems before they emerge. The course will examine concepts such as risk, resilience and protection factors as variables to be taken into account when developing and implementing programs to ensure that all people have essential healthcare services and programs. The course will also review the history of public health social work, the roles and functions of public health social workers in a variety of arenas, and interventions and strategies public health social workers utilize to assure the delivery of public health services to all populations, particularly at-risk groups. The course will also present an introduction to the cross-cutting areas of public health including communication and informatics, diversity and culture, leadership, public health biology, professionalism, program planning, and systems thinking. Credits, three hours.

SCWK 668. ADVANCED GENERALIST PRACTICE III

This is the third course in the four-part advanced generalist practice sequence. It is a required second year course that builds on the vertical integration of Generalist Practice I & II and the other across the curriculum foundation content areas that include human behavior and social environment, policy, research, and field. The course prepares students for advanced generalist social work practice with an emphasis on intervention and evaluation with individuals, families, and treatment groups. Building on the advanced skills for engagement and assessment derived from Advanced Generalist Practice I, this course provides concepts, and principles that enable students to assist clients experiencing serious, complex problems. A Black perspective for social work practice, empowerment, the strengths perspective, the rural perspective and the global perspective are utilized to increase students' proficiency in tapping clients' internal and external resources to face and overcome problems that could prevent productive relations and functioning in society. Major attention is given cultural competence for effective practice with populations, e.g., African American, Latinos, gays, lesbians, the poor and elderly, who have long histories as targets of racism, discrimination and prejudice. Credits, three hours.

SCWK 669. ADVANCED GENERALIST PRACTICE IV

This is the final course of the four-part advanced generalist practice sequence. It is a required second year course that builds on the vertical integration of Generalist Practice I & II and the other across the curriculum foundation content areas that include human behavior and social environment, policy, research, and field. It focuses on the intervention and evaluation of the planned change process. The course considers models for problem solving inside organizations and for understanding communities, intervening with them and evaluating the effectiveness of practice with communities. Strategies for initiating and pursuing change in communities and organizations are identified, including different points of intervention. Throughout the course, special attention is given to factors affecting diverse population groups, including, but not limited to, groups distinguished by race, ethnicity, culture, class, gender, sexual orientation, religion, physical or mental ability, age, and national origin. Strategies for mobilizing communities to address problems before they emerge are explored. The grade “B” must be earned in this course. Students enrolled in this course must be also enrolled in the appropriate second year field instruction course. Credits, three hours.

MASTER OF SOCIAL WORK FULL TIME

**Wesley College of Health and Behavioral
Sciences Department of Social Work**



PROGRAM: MASTER OF SOCIAL WORK (MSW)

Required Courses = 20			Total Hours Required = 60		
1 st Semester			2 nd Semester		
Course Number and Course Title	Credit Hours	Semester or Session to be completed	Course Number and Course Title	Credit Hours	Semester or Session to be completed
SCWK 601 P&S in SW I	3	Session II	SCWK 604 HBSE II	3	Session I
SCWK 603 HBSE I	3	Session I	SCWK 606 GP II	3	Session I
SCWK 605 GP I	3	Session I	SCWK 608 R&E II	3	Session II
SCWK 607 R&E I	3	Session II	SCWK 661 Diversity, Equity & Inclusion	3	Session II
SCWK 633 Field I	3	Session I & II	SCWK 634 Field II	3	Session I & II
3 rd Semester			4 th Semester		
Course Number and Course Title	Credit Hours	Semester or Session to be completed	Course Number and Course Title	Credit Hours	Semester or Session to be completed
SCWK 673 AGP in Trauma	3	Session I	SCWK 674 AGP with Families	3	Session I
SCWK 672 AGP with Individuals, Personality & Psychopathology	3	Session I	Elective Course [SCWK 610, 660, 675, 676, 677, 678, 679, 680, 681]	3	Session I
SCWK 671 AGP with Groups	3	Session II	Elective Course [SCWK 610, 660, 675, 676, 677, 678, 679, 680, 681]	3	Session II
SCWK 651 Practice & Program Evaluation for Advanced Generalist Practitioner	3	Session II	SCWK 669 Policy, Communities & Organizations	3	Session II
SCWK 635 Field III	3	Session I & II	SCWK 636 Field IV	3	Session I & II

*Denotes a Core Requirement

+Denotes an Elective

Total Core Credits = 60 credits

Total Elective Credits = 0

Candidacy Requirement: Completion of 30 credit hours with 3.0 GPA or equivalent

Capstone or Culminating Experience: Successful completion of required courses and Field Practicum, and submission of the last year's Field evaluation, and a Practice paper or presentation and grading rubric.

Outcomes report to School of Graduate, Adult and Extended Studies prior to graduation

Required Courses = 20 Total Hours Required = 60

MASTER OF SOCIAL WORK ADVANCED STANDING

**Wesley College of Health and Behavioral
Sciences
Department of Social Work**



PROGRAM: MASTER OF SOCIAL WORK (MSW)

First Semester			Second Semester		
SCWK 673 AGP in Trauma	3		SCWK 674 AGP with Families	3	
SCWK 672 AGP with Individuals, Personality & Psychopathology	3		Elective Course [SCWK 610, 660, 675, 676, 677, 678, 679, 680, 681]	3	
SCWK 671 AGP with Groups	3		Elective Course [SCWK 610, 660, 675, 676, 677, 678, 679, 680, 681]	3	
SCWK 651 Practice & Program Evaluation for Advanced Generalist Practitioner	3		SCWK 669 Policy, Communities & Organizations	3	
SCWK 635 Field III	3		SCWK 636 Field IV	3	

*Denotes a Core Requirement

+Denotes an Elective

Total Core Credits = 30 credits Total Elective Credits = 0

Candidacy Requirement: Completion of 15 credit hours and Advanced Standing Seminar with a 3.0 GPA or equivalent

Capstone or Culminating Experience: Successful completion of required courses and Field Practicum, and submission of the last year's Field evaluation, and a Practice paper or presentation and grading rubric.

Outcomes report and rubric to School of Graduate, Adult and Extended Studies prior to graduation

Candidacy Requirements

Candidacy is reached when you have earned 15 credits for Advanced Standing.

MASTER OF SOCIAL WORK PART TIME

Wesley College of Health and Behavioral Sciences
Department of Social Work



PROGRAM: MASTER OF SOCIAL WORK (MSW)

Required Courses Total Hours Required = 60					
Course Number and Course Title	Credit Hours	Semester or Session to be completed	Course Number and Course Title	Credit Hours	Semester or Session to be completed
SCWK 601 P&S in SW I	3		SCWK 604 HBSE II	3	
SCWK 603 HBSE I	3		SCWK 608 R&E II	3	
SCWK 607 R&E I	3		SCWK 661 Diversity, Equity & Inclusion	3	
SCWK 605 GP I	3		SCWK 606 GP II	3	
SCWK 633 Field I	3		SCWK 634 Field II	3	
SCWK 651 P&P Eval for AP	3		Elective Course [SCWK 610, 660, 675, 676, 677, 678, 679, 680, 681]	3	
SCWK 671 AGP with Groups	3		SCWK 674 AGP with Families	3	
SCWK 672 AGP with Individuals, Personality & Psychopathology	3		SCWK 669 AGP with Policy, Communities & Organizations	3	
SCWK 673 AGP in Trauma	3		Elective Course [SCWK 610, 660, 675, 676, 677, 678, 679, 680, 681]	3	
SCWK 635 Field III	3		SCWK 636 Field IV	3	
Candidacy Requirements		Candidacy at successful completion of 30 credit hours with a 3.0 GPA or equivalent. Graduation at 60 credits.			
Capstone Requirements		Successful completion of CSWE requirements.			
Additional Proficiencies/Comments		Submission of all require documentation, exit interview, and any other stated requirements of Graduate Studies and the Department.			

*Denotes a Core Requirement | +Denotes an Elective

Total Core Credits = 60 | Total Elective Credits = 0

Candidacy Requirement: Completion of 30 credit hours with 3.0 GPA or equivalent

Capstone or Culminating Experience: Successful completion of required courses and Field Practicum, and submission of the last year's Field evaluation, and a Practice paper or presentation and grading rubric

Outcomes report and rubric to School of Graduate, Adult and Extended Studies prior to graduation

Spanish for Social Work Certificate

The Spanish for Social Work certificate program is designed to provide dual-language students with the knowledge, skills, and values needed to apply social work techniques with Spanish speaking populations and in Spanish-speaking settings. Students will take classes within both the Languages and Literature program and the Master of Social Work program to obtain a broad understanding of the application of social work practice skills with these populations and in these settings. The certificate program culminates in a two-semester field placement at an agency serving Spanish speaking populations which allows students to demonstrate competency related to language, culture, and core social work practice skills. The certificate program prepares students to become competent in communicating both in written and speaking communication when interacting with populations from diverse backgrounds. The program will be offered each year, starting in the fall semester. The program aims to make students more competitive in the workplace and aid in helping diverse communities receive culturally competent services. Students interested in enhancing their dual language skills and working to provide effective communication and translation skills should consider applying.

[Read the full entry about the certificate](#)

DEPARTMENT OF PSYCHOLOGY

Master of Science, Clinical Psychology

The master's program at Delaware State University has two tracks. The first track will lead you toward licensure as a Counselor in the State of Delaware (check with your state for reciprocity). The second track has a research focus, and centers on the study of Neuropsychology. Each of these programs is entirely online, with the exception of occasional visits to campus to discuss your internships. Each program has an option that will allow you to graduate in two years and another option that will allow you to graduate in three years.

PROGRAM OBJECTIVES AND GOALS

1. Human Growth and Development Theories in Counseling

Studies in this area provide an understanding of the needs of individuals at all developmental levels. These include the following: a. Theories of individual and family development and transitions across the life span; b. Theories of learning and personality development; c. Human behavior, including an understanding of developmental crises, disability, addictive behavior, psychopathology and environmental factors as they affect both normal and abnormal behavior; d. Counseling strategies for facilitating development over the life span; and e. Ethical considerations.

2. Social and Cultural Foundations in Counseling

Studies in this area provide an understanding of issues and trends in a diverse society including the following: a. Multicultural and pluralistic trends, including characteristics and concerns of counseling individuals from diverse groups; b. Attitudes and behavior based on factors such as age, race, religious preferences, physical disability, sexual orientation, ethnicity and culture, family patterns, gender, socioeconomic status, and intellectual ability; c. Individual, family and group counseling strategies with diverse populations; and d. Ethical considerations.

3. Helping Relationships in Counseling

Studies in this area provide an understanding of counseling and consultation processes, including the following: a. Counseling and consultation theories, including both individual and systems perspectives as well as coverage of relevant research and factors considered in applications; b. Basic interviewing, assessment and counseling skills; c. Counselor or consultant characteristics and behaviors that influence professional counseling relationships, including age, gender and ethnic differences; verbal and nonverbal behaviors; and personal characteristics, orientations and skills; d. Client or consultee characteristics and behaviors that influence professional counseling relationships, including age, gender and ethnic differences; verbal and nonverbal behaviors; and personal characteristics, orientations and skills; and e. Ethical considerations.

4. Group Counseling Theories and Processes

Studies in this area provide an understanding of group development, dynamics and counseling theories; group counseling methods and skills; and other group work approaches, including the following: a. Principles of group dynamics, including group counseling components, developmental stage theories, and group members' roles and behaviors; b. Group leadership styles and approaches, including characteristics of various types of group leaders and leadership styles; c. Theories of group counseling, including commonalities, distinguishing characteristics, and pertinent research and literature; d. Group counseling methods, including group counselor orientations and behaviors, ethical standards, appropriate selection criteria and methods of evaluation of effectiveness; e. Approaches used for other types of group work in counseling, including task groups, prevention groups, support groups and therapy groups; and f. Ethical considerations.

5. Career Counseling and Lifestyle Development

Studies in this area provide an understanding of career counseling, development and related life factors, including the following: a. Career-counseling theories and decision-making models; b. Career, avocational, educational and labor market information resources; visual and print media; and computer-based career information systems; c. Career-counseling program planning, organization, implementation, administration and evaluation; d. Interrelationships among work, family, and other life roles and factors, including multicultural and gender issues as related to career counseling; e. Career and educational placement counseling, follow-up and evaluation; f. Assessment instruments and techniques relevant to career

counseling; g. Computer-based career-development applications and strategies, including computer-assisted career-counseling systems; h. Career-counseling processes, techniques and resources, including those applicable to specific populations; and i. Ethical considerations.

6. Assessment in Counseling

Studies in this area provide an understanding of individual and group approaches to assessment and evaluation in counseling practice, including the following: a. Theoretical and historical bases for assessment techniques in counseling; b. Validity, including evidence for establishing content, construct and empirical validity; c. Reliability, including methods of establishing stability, internal and equivalence reliability; d. Appraisal methods, including environmental assessment, performance assessment, individual and group test and inventory methods, behavioral observations, and computer-managed and computer-assisted methods; e. Psychometric statistics, including types of assessment scores, measures of central tendency, indices of variability, standard errors, and correlations; f. Age, gender, ethnicity, language, disability and cultural factors related to the use of assessment and evaluation in counseling services; g. Strategies for selecting, administering, interpreting and using assessment and evaluation instruments and techniques in counseling; and h. Ethical considerations.

7. Research and Program Evaluation

Studies in this area provide an understanding of types of research methods, basic statistics, and ethical and legal considerations in research, including the following: a. Basic types of research methods, including qualitative and quantitative research designs; b. Basic parametric and nonparametric statistics; c. Principles, practices and applications of needs assessment and program evaluation; d. Uses of computers for data management and analysis; and e. Ethical and legal considerations.

8. Professional Orientation to Counseling

Studies in this area provide an understanding of all aspects of professional functioning, including the following: a. History of the counseling profession, including significant factors and events; b. Professional roles and functions of counselors, including similarities to and differences from other types of professionals; c. Professional organizations (primarily ACA, its divisions, branches and affiliates), including membership benefits, activities, services to members and current emphases; d. Ethical standards of NBCC or ACA and related ethical and legal issues, and their applications to various professional activities (e.g., appraisal, group work); e. Professional counselor preparation standards, their evolution and current applications; f. Professional counselor credentialing, including counselor certification, licensure, and accreditation practices and standards, and the effects of public policy on these issues; and g. Public policy processes, including the role of the professional counselor in advocating on behalf of the profession and its clientele.

9. Counseling Field Experience (minimum six semester/10 quarter hours)

Studies in this area provide supervised counseling experience in an appropriate work setting.

STUDENT LEARNING OUTCOMES

- Demonstrate advanced knowledge in clinical psychology, including psychopathology, psychological assessment, and psychotherapy theories and techniques.
- Integrate subject knowledge with understanding of scientific methodology to innovatively solve problems, evaluate behavior, and make clinical decisions using critical thinking and evidence-based practice.
- Behave and make decisions in accordance with the ethical standards of the discipline, and exercise values that reflect sensitivity and commitment to diversity.
- Express ideas and interact with others effectively by speaking and writing in a professional, context-appropriate manner.
- Engage in ongoing self-reflection and self-regulation in the context of professional work; identify appropriate professional opportunities based on accurate assessment of knowledge, skills, and abilities; and recognize the importance of continuous learning throughout one's career.

ADMISSION DEADLINES AND DEGREE REQUIREMENTS

Application Deadlines:

Fall – July 31; Spring – Nov. 30

All applicants are required to submit evidence of the following for consideration of unconditional admission:

- Bachelor's degree from an accredited university
- An overall GPA of 2.5
- If you were a Psychology major, a GPA in Psychology courses of 3.0.
- If you were not a Psychology major, completion of three courses with a final grade of B or better - Introduction to Psychology, Abnormal Psychology, and Personality.

DEGREE REQUIREMENTS

See the curriculum sheets that follow. Both concentrations are comprised of 60 credits, which can be taken across four or six semesters. The Counseling program includes 16 credits that guide you through a Practicum and Internship. The Neuro program includes 6 credits over two semesters, that work you through a thesis proposal and defense.

Required Coursework: The curriculum sheets describe the required courses, most of which are defined. The Neuro concentration has one elective, and the Counseling concentration has two electives.

COURSE DESCRIPTIONS

601: ADVANCED PSYCHOPATHOLOGY

This course is designed to provide an intensive study of the field of adult psychopathology. This course will include critical analysis of the major adult psychological disorders, their symptomatology, diagnosis, and casual explanations, and application of current knowledge of recent literature, research, and evidence base to real clinical settings. This course will cover the following primary content areas of the discipline: (1) advanced psychopathology: general issues and ethical considerations; (2) neuropsychological syndromes; (3) psychiatric disorders and behavioral syndromes; (4) current evidenced-based interventions. Additional topics may be covered at the discretion of the instructor.

602: ETHICS IN PROFESSIONAL PSYCHOLOGY

This course provides an orientation to the counseling profession. Students will learn about ethical and legal dilemmas that professional counselors face, and how to handle them. The course is intended to stimulate thought and discussion about some of the major issues faced by counselors today. Students will learn how to interpret and use the professional codes of ethics of the American Counseling Association and the American Psychological Association.

603: PSYCHOTHERAPY: THEORIES OF COUNSELING

This course is an overview of major theories of counseling and psychotherapy with a special focus on cultural differences, counseling theories, counselor preparation, and common theory-based assessment and case formulation strategies. Because the purpose of counseling and psychotherapy is to help individuals make personally meaningful changes in their lives, we will consistently examine the means through which traditional theories attempt to produce such changes. Students will read about historical and intellectual foundations of major counseling theories, while at the same time, observing skills and techniques employed by practitioners using those theoretical perspectives. There will be opportunities, through assignments and online discussion, for students to analyze client case studies as well as themselves through the various lenses of psychological theories. Overall, students are encouraged not only to explore all the major theoretical orientations, but also to explore their personal beliefs and values in an effort to develop and deepen their understanding of counseling and psychotherapy process and outcome.

604: CULTURAL DIVERSITY

In seeking to prepare students to be effective clinical psychologists in a diverse world, this course begins by examining the scope and complexity of cultural diversity in general and, in particular, those internal processes and external influences that may affect and shape psychological and social experiences and outcomes on a number of levels for various client populations as well as for therapists themselves. The role of culturally-informed and practice-based approaches and skills in meeting the varying needs over the life span of

individuals with intersecting identities across the gender spectrum, belonging to majority and minority groups in relation to race, ethnicity, disability, and other forms of diversity are also explored. Students are expected to complete the course with a heightened awareness of these realities and their implications for understanding and addressing the needs/problems of the diverse populations that they will serve as trained clinicians and practitioners. Critical thinking will be honed through the process of analyzing existing knowledge, identifying gaps in the knowledge, and employing research in order to discover, deepen, and disseminate knowledge and insights within the field.

605: SEMINAR FOR CLINICAL PRACTICUM

This course is designed to introduce clinical practicum and internship. This course will provide a clinical forum for peer discussion of theoretical and clinical issues related to the management of patients seen in clinic. Additionally, this seminar serves as a forum for refining knowledge and skills related to the clinical practicum, and to develop independence in planning and implementing clinical plans for individuals treated in human service settings. Emphasis on evidence-based practice, clinical writing, and ethical/professional issues will be discussed. Additional topics may be covered at the discretion of the instructor.

606: RESEARCH METHODS

Research is an essential component of psychology, as it yields critical data that strengthen our understanding of human thinking, behavior, and psychopathology. In this course, students will learn about the philosophy of science, the various methods psychologists use in their research, and how to think critically about existing psychological research. While parts of this course will review material covered in students' undergraduate curriculum, this graduate level course will take students beyond the basics. Topics include a comprehensive and rigorous overview of the variety of methods used in research, how to control for confounding variables, how to create new instruments for research (surveys, questionnaires, scales, etc.), sampling procedures and statistical power, how to write about research in APA format and get it published, etc.

607: ADVANCED STATISTICS, PART I

Advanced Statistics Part I provides graduate-level students the tools necessary for summarizing, analyzing, interpreting, and visualizing data from psychological studies. The course covers ANOVA, prediction models, non-parametric tests, tests for categorical data, cluster analysis, and factor analysis. Students will use statistical software (e.g., SPSS, R) to gain hands-on experience with analyzing data sets. Those who take the course should have previous knowledge of basic summary statistics and hypothesis testing methods (e.g., z tests and t tests).

608: PSYCHOTHERAPY: COGNITIVE BEHAVIORAL TECHNIQUES

This course will allow students to develop knowledge of various cognitive-behavioral models of common psychological disorders. Students will learn to develop a comprehensive cognitive-behavioral case conceptualization, which will inform treatment monitoring and planning. Additionally, students will review evidence and efficacy data available for implementation of various cognitive-behavioral psychotherapies for specific disorders. Students will have the opportunity to implement specific individual and group cognitive-behavioral interventions within the context of the course. This course will emphasize the integration of clinical expertise, knowledge of patient preferences, and evidence-based strategies to facilitate development of an evidence-based and client-centered approach to psychotherapy.

609: CLINICAL PRACTICUM

This course is designed to provide an integrated and coordinated series of learning experiences in professional psychology for clinical practicum students. This course will allow opportunities for students to gain practical experience in the discipline, enhance skills, and integrate knowledge. The emphasis is on practical work experience to include evidence-based practice, clinical writing, and ethical/professional standards. Supervision is provided by the site supervisor. This course will cover the following primary content areas: (1) foundational skills (i.e., basic skills, thinking skills, personal qualities); (2) scans competencies (i.e., information, interpersonal, systems, technology). Additional topics may be covered at the discretion of the instructor.

610: PSYCHOTHERAPY: GROUP THERAPY

This course will examine current theories of group therapy (Bowenian, Strategic, Structural, Cognitive-Behavioral, Conflict Resolution, Impact and Psychoanalysis) along with appropriate intervention methods related to each theoretical orientation. The various therapeutic models are examined in terms of their history, philosophy, theoretical tenets, functional and dysfunctional effects on families, assessment, goals, treatment process, techniques, role of the therapist, and evaluation.

611: DEVELOPMENTAL PSYCHOLOGY

Developmental Psychology focuses on the physical, cognitive, social and emotional growth and change of humans throughout the lifespan from prenatal development through death and dying. As a required course for the Clinical Master's program, this course will highlight the importance of developmental theory and empirical research for informing practitioners' work with clients. Specifically, through an understanding of developmental milestones and normative developmental changes and outcomes, practitioners will be better able to recognize maladaptive behavior, risk and protective factors and engage in critical decision-making regarding intervention, prevention and therapeutic techniques. In order to accomplish this goal, the foundational components of this course will

focus on an understanding of different yet often complementary developmental theories, key terms and concepts, and expert views in the field. This course will also focus on current developmental issues/debates within the field, seminal research studies and research methodology/practices in developmental science. Students will acquire this knowledge through textbook readings, empirical research articles, expert knowledge shared through videos, and instructor lectures. As students learn about the development of an individual over time, they will come to understand the micro and macro influences on development. That is, students will understand how the individual's biology and behavior can influence their own development via interactions with the immediate environment as well as how larger societal influences such as cultural, political, economic, educational, technological, and generational changes can influence the individual's growth over time. Understanding the continual interplay between human growth and the environment is critical for informing practitioners in their work with individuals of all ages who suffer from mental health and behavioral challenges.

612: PSYCHOLOGICAL ASSESSMENT I

This is the first semester of a two-semester sequence on psychological assessment. This course is designed to give students a foundation in theories, strategies, and techniques in psychological assessment, focusing on empirical support and clinical utility. The content areas in this course will include: (1) the science of psychological measurement; (2) assessment of intelligence; (3) assessment of personality; (4) testing and assessment in action. Specifically, this course will include: (1) an introduction to empirically-based assessments; (2) an overview of the basics of interviewing and report writing; and (3) reliable administration of achievement and personality tests including the WASI-II, WIATIII, WISC-5, and MMPI-3. Additional topics in psychological assessment may be covered at the discretion of the instructor.

613: INTERNSHIP, PART I

This is the first semester of a two-semester sequence on Internship. The course is designed for professional psychology graduate students to provide work-based instruction. This course will provide basic career explorations and will help interns to gain practical experience in the discipline to enhance skills and integrate knowledge. The emphasis is on practical work experience. Clinical supervision is provided by the site supervisor. This course will cover the following primary content areas: (1) foundational skills (i.e., basic skills, thinking skills, personal qualities); (2) scans competencies (i.e., information, interpersonal, systems, technology). Additional topics may be covered at the discretion of the instructor.

614: RESEARCH SEMINAR

Research Seminar is an eight week accelerated course that entails focusing on a topic of research interest in clinical psychology. Over the course of the semester, students will locate and read peer-reviewed, empirical research and theoretical articles on their topic of interest. Students will summarize these articles in both written format and through oral presentations. In doing so, students will also critique research, considering strengths and limitations of past studies. Summarized articles will provide the foundation for an annotated bibliography and eventually the formulation of a hypothesis and rationale as well as a research design. Ultimately, coursework will lead to a well-written and focused thesis proposal that students will defend before their peers. Students will also prepare an IRB application and proposal to be submitted for data collection.

615: PSYCHOLOGICAL ASSESSMENT II

This is the second semester of a two-semester sequence on psychological assessment. This course is designed to give students a foundation in theories, strategies, and techniques in psychological assessment, focusing on empirical support and clinical utility. The topics in this course will include (1) a review of the basics of clinical interviewing and report writing; (2) how to select, critically evaluate, and use empirically based assessments; (3) utility of the multi-method assessment approach for research and practice; (4) cognitive-behavioral case formulation; and (5) reliable administration of diagnostic semi-structured interviews including the BDI-II, BAI, SCID-5 and M.I.N.I. Additional topics in psychological assessment may be covered at the discretion of the instructor.

616: INTERNSHIP, PART II

This is the second semester of a two-semester sequence on Internship. The course is designed for professional psychology graduate students to provide work-based instruction. This course will provide basic career explorations and will help interns to gain practical experience in the discipline to enhance skills and integrate knowledge. The emphasis is on practical work experience. Clinical supervision is provided by the site supervisor. This course will cover the following primary content areas: (1) foundational skills (i.e., basic skills, thinking skills, personal qualities); (2) scans competencies (i.e., information, interpersonal, systems, technology). Additional topics may be covered at the discretion of the instructor.

617: APPLIED SOCIAL PSYCHOLOGY

Applied Social Psychology is a graduate-level, three credit course which introduces students to theories, research, and applications of social psychology. Emphasis will be placed on how social psychology can be utilized in real-world contexts such as clinical/counseling settings, sports settings, health promotion, the criminal justice system, educational settings, organizational settings, and community settings. The application of social psychological principles to understanding diversity, happiness, relationships, media, and the environment will be explored. Students will also be exposed to program evaluation and intervention design and assessment.

618: HEALTH PSYCHOLOGY

The subfield of Health Psychology integrates aspects of psychological practice and research with the needs of healthcare. It focuses on the relationships between physical health, mental health, behavior, and cognition. This course will help students understand, integrate, and apply theoretical and empirical foundations of physical and mental illness and health from a biopsychosocial perspective.

619: PSYCHOPHARMACOLOGY

This course is designed to provide a general understanding of the neurochemical, physiological, and behavioral effects of the major classes of psychoactive drugs, both therapeutic agents and drugs of abuse. This course will include discussions of drugs' mechanism of action, therapeutic indications, and physiological and behavioral side-effects. This course will be divided into four units and will cover the following content: (1) how drugs work: an overview of basic principles of pharmacology with an emphasis on psychoactive drugs; (2) drugs and brain chemistry: overview of key neurotransmitters and their receptors, including drugs that alter neurotransmitter function; (3) drug addiction: overview of the main classes of abused drugs, including neural systems involved, addiction processes, and possible treatment paths, and (4) drugs and brain disorders: overview of the symptomatology of major psychiatric disorders and current pharmacotherapies. Additional topics within psychopharmacology may be covered at the discretion of the instructor.

620: CLINICAL NEUROPSYCHOLOGY

This course is designed to provide a general understanding of brain and behavior relationships to the science and practice of clinical neuropsychology, including the anatomic, functional, and cognitive substrates underlying human behavior and neuropsychological disorders. This course will cover the following primary content areas of the discipline: (1) clinical neuropsychology: general issues and ethical considerations; (2) neurological disorders; (3) neuropsychological syndromes; (4) psychiatric disorders and behavioral syndromes. Additional topics within clinical neuropsychology may be covered at the discretion of the instructor.

621: NEUROANATOMY

This course is designed to introduce the anatomical organization and basic functional principles of the major systems that work together in the human brain. Additionally, this course will prepare students with the medical terminology and neurological concepts for a general understanding of the human brain and its functions in relation to disease and behavior. This course will cover the following primary content areas of the discipline: (1) central nervous system; (2) sensory systems; (3) motor systems; (4) integrative systems. Additional topics within neuropsychology and neuroanatomy may be covered at the discretion of the instructor.

622: NEUROPSYCHOLOGICAL ASSESSMENT

This course is designed to provide an overview of basic concepts and methods in neuropsychological assessment. Students will learn the most important conceptual models of neuropsychological assessment and will learn to recognize quantitative and qualitative aspects of test performance and behaviors. Basic principles of neuroanatomy and brain organization will be briefly reviewed as they pertain to specific neurological and neurocognitive domains. However, emphasis is on broader conceptual and pragmatic issues, with a major focus on case conceptualization based on neurocognitive profiles and neuropsychological disorders. This course will cover the following primary content areas of the discipline: (1) theory and practice of neuropsychological assessment; (2) neuropsychological tests and assessment techniques, (3) neurological disorders; and (4) neuropsychological syndromes. Additional topics within neuropsychology and neuropsychological assessment may be covered at the discretion of the instructor.

623: BEHAVIORAL NEUROSCIENCE

Behavioral Neuroscience is the study of the relationship between brain and behavior. This course covers (1) general anatomy and function of the nervous system; (2) methods in behavioral neuroscience; (3) how systems of the brain cooperate to produce behavior, emotions, and other cognitive processes [motivation, learning, sensation & perception, etc.]; and (4) neuroanatomical and physiological mechanisms of psychological disorders. As part of the curriculum of the course, students will read peer-reviewed scientific articles describing neuroscience research involving human and nonhuman animals. The clinical implications of behavioral neuroscience research will be a primary focus. Please note that this online course will be conducted asynchronously. Students will complete assignments and exams in an exclusively virtual format on Canvas.

624: NEUROBIOLOGY OF LEARNING AND MEMORY

This course provides an overview of how and where memories are stored in the mammalian brain. Topics include theoretical perspectives and controversies in learning theory, synaptic plasticity, memory systems, dissociation methodologies, neurobiology of memory disorders (e.g., amnesia, Alzheimer's disease, etc.), and the role of maladaptive memory in various psychological disorders (e.g., OCD, PTSD, addiction, etc.). As part of the curriculum, students will read peer-reviewed scientific articles about the neurobiology of memory and write a final paper on a memory topic of their choosing (see 'Final Paper' section below). The clinical implications of memory research will be a primary focus of the course. Please note that this online course will be conducted asynchronously. Students will complete assignments and exams in an exclusively virtual format on Canvas.

625: ADVANCED STATISTICS, PART II

Statistics for Neuroscience & School Psychology provides graduate-level students the tools necessary for summarizing, analyzing, interpreting, and visualizing data from psychological studies involving neuroscience and school psychology. The course builds on the methods covered in Advanced Statistics (PSYC 607), covering statistics for more complex designs (ANCOVA, MANOVA, MANCOVA), and more elaborate prediction models (non-linear, multinomial, and ordinal regression), time-series analyses, and higher-order models (path analysis, hierarchical linear models, structural equation modeling). Students will use statistical software (e.g., SPSS, R) to gain hands-on experience with analyzing data sets. Those who take the course should have passed the Advanced Statistics course (PSYC 607).

626: THESIS, PART I

This course is designed for Master's level students to develop a Master's Thesis project and see it through to the first draft proposal. In this semester, students will work directly with their thesis advisor and thesis committee to make any necessary revisions to the thesis proposal and produce the initial draft of the thesis proposal. Students will work one-on-one with their thesis advisor to identify times that they will meet and create a plan for communication throughout the process of completing the Master's Thesis.

627: THESIS, PART II

This course is designed for Master's level students to develop a Master's Thesis project. In this semester, students will work directly with their thesis advisor and thesis committee to make any necessary revisions to the thesis first draft to produce a defense draft, defend their thesis before their committee, and make any required revisions before submitting their final draft. Students will work one-on-one with their thesis advisor and committee members to identify times that they will meet and create a plan for communication throughout the process of completing the Master's Thesis.

PROGRAM: MASTER OF SCIENCE IN CLINICAL PSYCHOLOGY
TWO YEAR, FULL-TIME VERSION
OF CLINICAL DEGREE *(Effective Fall 2022)*

First Year Fall Semester				First Year Spring Semester			
Course	Course Name	Cr	Gr	Course	Course Name	Cr	Gr
Accelerated I				Accelerated I			
Psyc 601	Advanced Psychopathology	3		Psyc 606	Research Methods	3	
Psyc 602	Ethics in Professional Psychology	3		Psyc 607	Advanced Statistics	3	
Accelerated II				Accelerated II			
Psyc 603	Psychotherapy I: Theories	3		Psyc 608	Psychotherapy II: Techniques	3	
Psyc 604	Cultural Diversity in Psychology	3			Elective	3	
Psyc 605	Seminar for Clinical Practicum	1		Psyc 609	Clinical Practicum I (8-hours each week)	3	
Total Credit Hours		13		Total Credit Hours		15	
Second Year Fall Semester				Second Year Spring Semester			
Course	Course Name	Cr	Gr	Course	Course Name	Cr	Gr
Accelerated I				Accelerated I			
Psyc 610	Group Therapy	3			Elective	3	
Psyc 611	Developmental	3		Psyc 614	Clinical Research Project	3	
Accelerated II				Accelerated II			
Psyc 612	Psychological Assessment I	4		Psyc 615	Psychological Assessment II	4	
Accelerated I & II				Accelerated I & II			
Psyc 613	Internship I	6		Psyc 616	Internship II	6	
Total Credit Hours		16		Total Credit Hours		16	

Must earn a grade of "B" or better or repeat the course.

TOTAL CREDIT HOURS REQUIRED FOR THE MASTER OF SCIENCE DEGREE IN CLINICAL PSYCHOLOGY IS 60

Clinical Research Project requirement

SUGGESTED ELECTIVES

- Applied Social Psychology
- Health Psychology
- Psychopharmacology
- Clinical Neuropsychology
- Neuroanatomy
- Neuropsychological Assessment
- Behavioral Neuroscience
- Topics in Neuropsychology
- Advanced statistics, Part II

PROGRAM: MASTER OF SCIENCE IN CLINICAL PSYCHOLOGY
THREE YEAR, PART-TIME VERSION
OF CLINICAL DEGREE *(Effective Fall 2022)*

First Year Fall Semester				First Year Spring Semester			
Course	Course Name	Cr	Gr	Course	Course Name	Cr	Gr
Accelerated I				Accelerated I			
Psyc 601	Advanced Psychopathology	3		Psyc 606	Research Methods	3	
Psyc 602	Ethics in Professional Psychology	3		Psyc 607	Advanced Statistics	3	
Accelerated II				Accelerated II			
Psyc 603	Psychotherapy I: Theories	3		Psyc 608	Psychotherapy II: Techniques	3	
Psyc 605	Seminar for Clinical Practicum	1		Psyc 604	Cultural Diversity in Psychology	3	
Total Credit Hours		10		Total Credit Hours		12	
Second Year Fall Semester				Second Year Spring Semester			
Course	Course Name	Cr	Gr	Course	Course Name	Cr	Gr
Accelerated I				Accelerated I			
Psyc 610	Group Therapy	3		Psyc 609	Clinical Practicum I (8-hours each week)	3	
Psyc 611	Developmental	3		Accelerated II			
Accelerated II				Elective		3	
Psyc 612	Psychological Assessment I	4		Psyc 615	Psychological Assessment II	4	
Total Credit Hours		10		Total Credit Hours		10	
Third Year Fall Semester				Third Year Spring Semester			
Accelerated I				Accelerated I			
	Elective	3		Psyc 614	Clinical Research Project	3	
Accelerated I & II				Accelerated I & II			
Psyc 613	Internship I	6		Psyc 616	Internship II	6	
Total Credit Hours		9		Total Credit Hours		9	

Must earn a grade of "B" or better or repeat the course.

TOTAL CREDIT HOURS REQUIRED FOR THE MASTER OF SCIENCE DEGREE IN CLINICAL PSYCHOLOGY IS 60

Clinical Research Project requirement

SUGGESTED ELECTIVES

- Applied Social Psychology
- Health Psychology
- Clinical Neuropsychology
- Neuroanatomy
- Neuropsychological Assessment
- Behavioral Neuroscience
- Topics in Neuropsychology
- Psychopharmacology
- Advanced statistics, Part II

PROGRAM: MASTER OF SCIENCE IN CLINICAL PSYCHOLOGY
TWO YEAR, FULL-TIME VERSION OF CLINICAL DEGREE
WITH A CONCENTRATION IN NEUROPSYCHOLOGY *(Effective Fall 2022)*

First Year Fall Semester				First Year Spring Semester			
Course	Course Name	Cr	Gr	Course	Course Name	Cr	Gr
Accelerated I				Accelerated I			
Psyc 601	Advanced Psychopathology	3		Psyc 606	Research Methods	3	
Psyc 602	Ethics in Professional Psychology	3		Psyc 611	Developmental	3	
Accelerated II				Psyc 607	Advanced Statistics	3	
Psyc 603	Psychotherapy I: Theories	3		Accelerated II			
Psyc 621	Neuroanatomy	3			Elective	3	
Psyc 619	Psychopharmacology	3		Psyc 623	Behavioral Neuroscience	3	
Total Credit Hours		15		Total Credit Hours		15	
Second Year Fall Semester				Second Year Spring Semester			
Course	Course Name	Cr	Gr	Course	Course Name	Cr	Gr
Accelerated I				Accelerated I			
Psyc 620	Clinical Neuropsychology	3		Psyc 624	Topics in Neuropsychology	3	
Psyc 618	Health Psychology	3		Psyc 622	Neuropsychological Assessment	3	
Accelerated II				Accelerated II			
Psyc 612	Psychological Assessment I	3		Psyc 615	Psychological Assessment II	3	
Psyc 604	Cultural Diversity in Psychology	3		Psyc 609	Clinical Practicum	3	
Accelerated I & II				Accelerated I & II			
Psyc 626	Thesis/Clinical Research (Proposal)	3		Psyc 627	Thesis/Clinical Research (Defense)	3	
Total Credit Hours		15		Total Credit Hours		15	

Must earn a grade of "B" or better or repeat the course.

TOTAL CREDIT HOURS REQUIRED FOR THE MASTER OF SCIENCE DEGREE IN NEUROPSYCHOLOGY IS 60

Master's Thesis, to be proposed and defended in second year.

SUGGESTED ELECTIVES

- Applied Social Psychology
- Psychotherapy II: Techniques
- Advanced statistics, Part II
- Group Therapy

PROGRAM: MASTER OF SCIENCE IN CLINICAL PSYCHOLOGY
THREE YEAR, PART-TIME VERSION OF CLINICAL DEGREE
WITH A CONCENTRATION IN NEUROPSYCHOLOGY (Effective Fall 2022)

First Year Fall Semester				First Year Spring Semester			
Course	Course Name	Cr	Gr	Course	Course Name	Cr	Gr
Accelerated I				Accelerated I			
Psyc 601	Advanced Psychopathology	3		Psyc 606	Research Methods	3	
Psyc 602	Ethics in Professional Psychology	3		Psyc 607	Advanced Statistics	3	
Accelerated II				Accelerated II			
Psyc 603	Psychotherapy I: Theories	3		Psyc 604	Cultural Diversity in Psychology	3	
Total Credit Hours		9		Total Credit Hours		9	
Second Year Fall Semester				Second Year Spring Semester			
Course	Course Name	Cr	Gr	Course	Course Name	Cr	Gr
Accelerated I				Accelerated I			
	Elective	3		Psyc 611	Developmental	3	
Accelerated II				Accelerated II			
Psyc 612	Psychological Assessment I	3		Psyc 615	Psychological Assessment II	3	
Psyc 621	Neuroanatomy	3		Psyc 623	Behavioral Neuroscience	3	
Total Credit Hours		9		Total Credit Hours		9	
Third Year Fall Semester				Third Year Spring Semester			
Accelerated I				Accelerated I			
Psyc 620	Clinical Neuropsychology	3		Psyc 622	Neuropsychological Assessment	3	
Psyc 618	Health Psychology	3		Psyc 624	Topics in Neuropsychology	3	
Accelerated II				Accelerated II			
Psyc 619	Psychopharmacology	3		Psyc 609	Clinical Practicum	3	
Accelerated I & II				Accelerated I & II			
Psyc 626	Thesis/Clinical Research (Proposal)	3		Psyc 627	Thesis/Clinical Research (Defense)	3	
Total Credit Hours		12		Total Credit Hours		12	

Must earn a grade of "B" or better or repeat the course.

TOTAL CREDIT HOURS REQUIRED FOR THE MASTER OF SCIENCE DEGREE IN NEUROPSYCHOLOGY IS 60

Master's Thesis, to be proposed and defended in third year.

SUGGESTED ELECTIVES

- Applied Social Psychology
- Psychotherapy II: Techniques
- Advanced statistics, Part II
- Group Therapy

DEPARTMENT OF PUBLIC AND ALLIED HEALTH SCIENCES

MASTER OF OCCUPATIONAL THERAPY (MOT)

PROGRAM OBJECTIVES

The Master of Occupational Therapy Program seeks to provide a learner-centered community, aiming to preserve the foundations of the field of occupational therapy by developing learners with strong generalizable skills. In addition, the program desires to develop leaders in the field and local community by empowering them to become agents of change. This OT program aims to teach learners to advocate for purposeful and meaningful life through occupation, justice, compassion, inclusion, and social participation of those with and without health impairments or limitations.

PROGRAM GOALS

Through occupation, the program exists to liberate and empower its learners with the knowledge, skills, ethical attitudes, and capacity to transform the lives of consumers they encounter. Learners will be prepared to enter into the changing healthcare industry through training in interprofessional education, scholarship, leadership, professional and ethical behavior, and clinical reasoning. The program has a strong focus on emerging and innovative practice. Hence, learners will be equipped with needed abilities to achieve professional goals and to contribute to health and wellness of the local and global society.

STUDENT LEARNING OUTCOMES

In addition to coursework, learner outcomes are assessed as follows. Poor performance in any area will require review from the faculty. A remediation process may be recommended:

Learner Outcome (Correlated with Curricular Threads)

- **Professional and Ethical Behavior**
 - Presents with appropriate verbal and non-verbal communication with peers, faculty, staff, clients/patients
 - Demonstrates the standards outlined in the OT Code of Ethics
 - Demonstrates appropriate physical appearance during classroom and field experiences
 - Displays appropriate interaction and engagement with peers, faculty, staff, clients/patients
- **Interprofessionalism**
 - Exhibits knowledge of Occupational Therapy's scope of practice
 - Demonstrates knowledge and a general understanding of the scope of practice of related fields
 - Explores collaboration to enhance patient/client goal attainment
- **Clinical Reasoning**
 - Demonstrates appropriate use of resources and tools during clinical application of concepts
 - Displays appropriate problem solving, clinical skills, and safety awareness under various circumstances
 - Exhibits professional behavior and appropriate mentor/mentee relationship
- **Health and Wellness**
 - Displays acceptance of differences with others and is open to change and complex situations
 - Demonstrates positive attitude and sense of community with peers, faculty, and staff
 - Exhibits personal demonstration of health through appearance, verbal communication, and non-verbal communication
- **Leadership**
 - Identifies own leadership style and goals
 - Displays advocacy for oneself and others physical, emotional, and social health and wellbeing

- Interacts through cultural awareness and competence relating to beliefs, origin, economy, and values
- Fosters a sense of teamwork through engagement and motivation of peers
- Displays initiative and proactive behavior

ADMISSION DEADLINE

Fall Admission Only -- April 15

ADMISSION REQUIREMENTS

- Human Anatomy and Physiology (2 semesters with a laboratory component)
- English (1 semester)
- Statistics (1 semester)
- Physics or Human Movement (i.e. Biomechanics and Kinesiology; Exercise Science courses approved at the discretion of the admissions committee) (1 semester)
- Sociology or Cultural Anthropology (1 semester)
- General Psychology (1 semester)
- Abnormal Psychology (1 semester)
- Developmental Psychology or Life Span Development or Human Development (1 semester)

Additional Admissions Requirements

- Documented observation hours with an OTR. Observation of two or more client populations is recommended.
- Three letters of recommendation, one from an OTR
- Applicant interview if determined by the occupational therapy admissions committee
- For International applicants: Test of English as a Foreign Language (TOEFL) scores may be requested at the discretion of the occupational therapy admissions committee. Students requiring an F-1 Student Visa should contact the Office of International Affairs before applying.
- Personal statement

DEGREE REQUIREMENTS

52 credits hours of professional courses and 12 credit hours of clinical fieldwork

Each student who completes the requirements of the program with a cumulative average of "B" (minimum GPA of 3.0 on a 4.0 scale) will be awarded the master's degree in Occupational Therapy

COURSE DESCRIPTIONS

OT500 FUNDAMENTALS OF OT I: HISTORY AND THEORY

This course introduces learners to the field of occupational therapy's history, theory development, and official documents of the American Occupational Therapy Association (AOTA). The content emphasizes the importance of the historical and philosophical foundation of the profession. Upon completion of the course, learners will demonstrate knowledge of policies and procedures, as well as international, national, state, and local occupational therapy associations and related professional associations, and have a basic understanding of history and theory in the profession. 1 credit

OT501 FUNDAMENTALS OF OT II: EMERGING PRACTICE AND ADVOCACY

This course educates the learner on the various roles occupational therapists play in promoting the profession, and being agents of change, as practitioners, educators, researchers, consultants, and entrepreneurs. There is a focus on emerging practice areas and advocacy of the profession to consumers, potential employers, colleagues, third-party payers, regulatory boards, policymakers, other audiences, and the general public. Through active learning, learners leave the course with skills for program development. Course content includes, yet not limited to, analyze of the trends in models of service delivery, electronic document systems, and telehealth technology. Learners develop strategies to assist the consumer in gaining access to occupational therapy services particularly addressing social injustice, occupational deprivation, and disparity in the receipt of services. Learners gain knowledge of the various reimbursement systems (e.g., federal, state, third party, private payer), appeals mechanisms, and documentation requirements that affect the practice of occupational therapy. The course also addresses ongoing professional responsibility, including fieldwork education, and participation in organizations or agencies promoting the profession. 1 credit

OT505 HUMAN STRUCTURE AND FUNCTION I: ANATOMY AND PHYSIOLOGY LECTURE AND LAB

This course provides an in-depth examination of anatomy and physiology as it applies to human function. Learners will obtain an understanding of gross anatomy/surface anatomy, joint and muscle structure and function, neural structure and function and soft tissue influences and how this translates into functional motion. Learning will occur through lecture and laboratory as well as through technological applications and human subjects to further apply the knowledge. Laboratory experiences and new generation SynDaver® examinations complement the course material. 4 credits

OT506 HUMAN STRUCTURE AND FUNCTION II: NEUROSCIENCE AND BEHAVIOR LECTURE AND LAB

This course builds on previous courses examining anatomy and physiology and human development. Learners will obtain an understanding of neurological structure, function, dysfunction, and how this translates in to function and participation in occupation. The course examines various neurological diagnoses, and cognitive conditions, typically benefiting from the provision of occupational therapy services. Learning will occur through lecture and laboratory as well as through technological applications and human subjects to further apply the knowledge. Laboratory experiences and new generation SynDaver®, cortical examinations complement the course material. 4 credits

OT507 HEALTH AND WELLNESS I: CONDITIONS IN ADULTS AND GERONTOLOGY

The Health and Wellness course provides learners with an overview of normal human growth and development post adolescence through older adulthood. In this course, current literature on issues and trends in biomedical and social research will be emphasized. Learners will also learn about variables affecting an individual's quality of life, well-being, and occupational behaviors. There is a focus on the role of occupation in the promotion of health and the prevention of disease and disability, heritable diseases, genetic conditions, disability, trauma, and injury to the physical and mental health, and occupational performance of the individual. 3 credits

OT508 HEALTH AND WELLNESS II: CONDITIONS IN PEDIATRICS AND ADOLESCENT

The Health and Wellness course provides learners with an overview of normal human growth and development from birth through adolescence. In this course current literature on issues and trends in biomedical and social research will be emphasized. Learners will also learn about variables affecting the quality of life, well-being, and occupational behaviors of children and their families. There is a focus on the role of occupation in the promotion of health and the prevention of disease and disability, heritable diseases, genetic conditions, disability, trauma, and injury to the physical and mental health and occupational performance of children and families. 3 credits

OT509 OCCUPATIONAL PERFORMANCE (INCLUDES COMPONENTS OF GROUPS AND ACTIVITIES)

Occupation Performance will introduce learners to occupational performance, the relationship between occupation and occupational therapy practice, and an examination of the Occupational Therapy Practice Framework. Learners will be introduced to numerous occupation-based practice models and theories used in occupational therapy, and will begin to reflect on their occupational selves in this course. Learners will also discuss global social issues, learn the meaning and dynamics of occupation and activity, the importance of group process and dynamics in various contexts, and representing diverse cultures. 3 credits

OT510 BIOMECHANICS AND PHYSICAL DYSFUNCTION

This course provides learners with a solid foundation in the evaluation and treatment of physical dysfunction and how this relates to occupational performance. The learners will demonstrate knowledge and understanding of biomechanical analysis and the components of physical dysfunction using rehabilitative frames of reference. Emphasis will be placed on competence in dynamic systems principles in human movement, orthotic fabrication, prosthetic training and functional mobility. Additionally, the safe use of thermal and superficial modalities will be reviewed. The applied learning will be translated to disorders both acute and chronic with a progressive learning plan from simple to complicated conditions using advanced techniques. The Principles covered in lecture are applied through practical hands-on experiences and discussions during the application sessions. The course will require the learners to reflect on the Occupational Therapy Practice Framework as it applies to physical dysfunction. 3 credits

OT511 OT IN MENTAL HEALTH AND PSYCHOSOCIAL PRACTICE

This course builds on content from the previous courses relating to mental health and psychosocial practice in occupational therapy. Course content reviews and analyzes developmental psychology, concepts of human behavior, abnormal psychology, and sociology. Learners gain an appreciation of the role of sociocultural, socioeconomic, diversity factors, and lifestyle in contemporary society and related theories of practice. Upon completion of the courses learners will have skills to analyze the effects of heritable diseases, genetic conditions, disability, trauma, and injury to the physical and mental health and occupational performance of the individual. Active learning approaches include designing and implementing individual, group and population-based interventions as related to mental health and psychosocial practice. 3 credits

OT512 ASSESSMENT AND INTERVENTIONS IN OT I: ADULTS AND GERONTOLOGY ASSESSMENT AND INTERVENTIONS

This course emphasizes the specific application of the previously acquired knowledge to more complex activities and issues of participation in adults and seniors. Learners develop theoretically sound, evidence- and occupation-based interventions grounded upon the analysis and application of screening and evaluation results and the use of relevant therapeutic skills. Learners are engaged in dynamic learning activities that build clinical competencies in the core knowledge of OT, critical reasoning, interpersonal and communication skills, performance skills and roles, ethics, and ethical practice. Didactic, active learning, and learner-centered approaches are implemented to develop and evaluate individual learner competencies throughout the curriculum. 3 credits

OT513 FUNDAMENTALS OF FIELDWORK: CLINICAL SKILLS AND COMMUNICATION

This course provides the necessary behavioral, social and clinical performance skills necessary to develop successful professional interaction with individual clients and groups. Medical terminology as well as emphasis on professional communication and written skills will be instructed. Learners will learn the behavioral art of therapeutic use of self. Emphasis will be on the learning of the use of implementing sound judgment in regard to safety of self and others and adhere to safety regulations throughout the occupational therapy process as appropriate to the setting and scope of practice. Learning will occur through self-directed, experiential, didactic and active participation strategies. (Includes a 1 week experience; Group treatment and Medical Terminology Exam) 3 credits

OT514 FIELDWORK LEVEL IA: INTERPROFESSIONAL COLLABORATION

This course provides the learners with the initial guided learning fieldwork experience to introduce the learner to the various healthcare and/or community settings, to apply knowledge to practice and to develop an understanding of the impact of disease and injury on the client and their family. Emphasis is placed on observational skills and the use of sound judgment in regard to the safety of self and others by adhering to safety regulations in the specific setting and scope of practice. Professional therapeutic interaction skills as well as a basic understanding of professional communication including written, verbal and non-verbal will be accomplished by the end of the course. 1 credit

OT515 FIELDWORK LEVEL IIA: IMMERSION IN EXPERIENTIAL PRACTICE LEVEL II

Fieldwork is an integral part of the OT Education and is designed to integrate the scientific principles learned in the didactic portion of the academic program into the clinical arena. In Level II A, learners will learn to implement clinical reasoning, reflective practice, safety awareness and therapeutic use of self as a part of the therapeutic process in both individual and group interaction. Application and Expansion of the knowledge of Occupational Therapy will be performed including assessment, interventions, therapeutic use of occupations, exercise and activities as well as the appropriate documentation that supports this process. By the end of the Level II A fieldwork, learners will have developed a professional identity as an Occupational Therapy Practitioner and professional and the experiential practice will be ensued to build upon for the second year of advanced coursework. 6 credits

OT516 CLINICAL REASONING AND PROFESSIONAL BEHAVIOR I

This course is designed to develop and enhance clinical reasoning skills through integration of personal experiences, professional competencies, current knowledge and reflection of the OT process in order to make effective and evidenced based decisions. The roles of procedural, interactive, pragmatic, and conditional reasoning are examined in order to have a basis for understanding the role of

critical reasoning as it applies to OT. The end result of this course will be demonstration of competency in the use of strategies for ongoing professional development to ensure practice is consistent with current and accepted standards. This is necessary in order to apply the principles of the teaching–learning process to design experiences to address the needs of the client, family, significant others, colleagues, other health providers, and the public. (Includes competency Exam before Level II fieldwork) 2 credits

OT517 CLINICAL REASONING AND PROFESSIONAL BEHAVIOR II

This second course in clinical reasoning and professional behavior provides the learner with advanced strategies for the development of clinical reasoning as it applies to the clients as well as the environment in which the OT interacts. Emphasis is on strategies for analyzing issues and making decisions to resolve personal and organizational ethical conflicts as well as understanding professional responsibilities related to liability issues under current models of service provision. Continued competency in oral, written and nonverbal communication is expected as well as continued advocacy for Occupational Therapy in various environments. 2 credits

OT518 ASSESSMENT AND INTERVENTIONS IN OT II: PEDIATRICS AND ADOLESCENT ASSESSMENT AND INTERVENTIONS

This course emphasizes the specific application of the previously acquired knowledge to more complex activities and issues of participation in children and adolescents. Learners develop theoretically sound, evidence- and occupation-based interventions grounded upon the analysis and application of screening and evaluation results and the use of relevant therapeutic skills. Learners are engaged in dynamic learning activities that build clinical competencies in the core knowledge of OT, critical reasoning, interpersonal and communication skills, performance skills and roles, ethics, and ethical. Didactic, active learning, and learner-centered approaches are implemented to develop and evaluate individual learner competencies throughout the curriculum. 3 credits

OT605 INTERPROFESSIONALISM AND LEADERSHIP

This course addresses how to articulate to consumers, potential employers, colleagues, third-party payers, regulatory boards, policymakers, other audiences, and the general public both the unique nature and value of the profession of occupational therapy. The course analyzes occupational therapy scope of practice, and role as supervisor, in relationship to other professions, and the occupational therapy assistant. Content also addresses the core competencies of interprofessional education and interprofessional collaboration, current policy issues, socioeconomic and political factors, as related to the provision of occupational therapy services. Lastly, there is a review of national requirements for credentialing and requirements for licensure, certification, or registration under state laws. 2 credits

OT606 LEADERSHIP AND SCHOLARLY INQUIRY I

This course addresses the content obtained in prior courses. Learners will articulate the importance of how scholarly activities contribute to the development of a body of knowledge relevant to the profession of occupational therapy. Course activities focus on evidence-based practice, systematic literature search strategies, critical analysis of the literature, and an introduction to the grant process. Content includes an introduction to research design, quantitative methods, qualitative methods, scientific writing, and inferential statistical analysis. Learners will leave the course with an understanding regarding publication, professional presentation skills, and the importance of scholarly activities within the field of occupational therapy. Learners select and begin to design a scholarly thesis project. 2 credits

OT607 LEADERSHIP AND SCHOLARLY INQUIRY II

This course builds on the content addressed in the first iteration of leadership and scholarly inquiry. Course activities focus on evidence-based practice, enhancing critical analysis skills, and researching appropriate grants related to the learner's thesis project. Further instruction in inferential statistical analysis, parametric and non-parametric statistics, occurs. Learners will implement their scholarly thesis project designed in the previous course. They will leave the course with skills to promote enhancement of peer-reviewed publication, professional presentation skills, and scholarly activities within the field of occupational therapy. 2 credits

OT608 ASSISTIVE TECH AND UNIVERSAL DESIGN

The Assistive Technology and Universal Design course will provide learners with background theory, principles of selection, application in practice, and procedures for applying assistive technology (AT) and universal design (UD) for people living with motor, sensory, and cognitive impairments. Through lecture and hands-on lab experiences, learners will be able to correctly identify, recommend, or design AT and UD for individuals living with disabilities. 2 credits

OT610 SPECIALTY PRACTICE: ACUTE CARE, HAND THERAPY, AND SENSORY INTEGRATION

This course integrates various aspects of course content to prepare the learner to enter into the specialty practice arenas of acute care, hand therapy, or sensory integration. The course is connected to the Level IIb fieldwork experience preparing learners for their final phase of academic fieldwork. Activities include in-depth discussion and review of the content areas. To address the areas of Acute Care, Hand Therapy, and Sensory Integration, the course consists of three modules exposing learners to these different areas of practice. For each module, experts from the field present learners with hands-on active learning opportunities pertaining to the specific content areas. 3 credits

OT611 SEMINAR: COMPETENCIES IN OT

Learners demonstrate their knowledge of the meaning and dynamics of occupation and activity, including the interaction of areas of occupation, performance skills, performance patterns, activity demands, context(s) and environments, and client factors. Through interprofessional workshops and simulated competency examinations, learners develop and implement intervention strategies. This course is a culmination of content taught throughout the program. Activities to prepare the learner for the National Board Certification for Occupational Therapy ® occur throughout the course. 1 credit

OT620 FIELDWORK LEVEL 1B: SPECIALTY AREA

The second Level I fieldwork experience builds upon the Level Ia experience and continues to emphasize skill development in the therapeutic process as well as professional communication. During this fieldwork experience, learners are given specific assignments within a specialty area to enhance their learning. By the end of this semester-long fieldwork experience, the learner will demonstrate an understanding of health literacy and demonstrate the ability to develop and implement intervention strategies to remediate and/or compensate for physical, developmental, mental or cognitive deficits that affect occupational performance. 1 credit

OT621 FIELDWORK LEVEL IIB: ADVANCED EXPERIENTIAL PRACTICE

The Level II Advanced Fieldwork is the final fieldwork experience in the program. Full integration of theory, Occupational Therapy values and performance skills are expected by the end of this 12 week experiential course. Learners will refine their skills in behavioral and social interactions with clients, supervisors and coworkers and model their professionalism through preparation, skill base and proficiency with content specific communication. The learner at this level will demonstrate appropriate selection of assessment skills, participate in examining differential diagnosis, select and implement appropriate interventions for physical, mental, cognitive, perceptual, neuromuscular, behavioral and sensory limitations of the client. Continued competence in documentation is expected as well as the ability to organize, collect, and analyze data in a systematic manner for the evaluation of practice outcomes. Completion of the Level II commences the end of the curriculum and prepares the learner to sit for the NBCOT Exam. 6 credits

PROGRAM: MASTER OF OCCUPATIONAL THERAPY (MOT)

Year 1: Fall			Year 1: Spring		
Course	Course Name	Cr.	Course	Course Name	Cr.
OT 500	Fundamentals of OT I: History and Theory	1	OT 510	Biomechanics and Physical Dysfunction	3
OT 505	Human Structure and Function I: Anatomy and Physiology Lecture and Lab	4	OT 506	Human Structure and Function II: Neuroscience and Behavior Lecture and Lab	4
OT 507	Health and Wellness I: Conditions in Adults and Gerontology	3	OT 511	OT in Mental Health and Psychosocial Practice	3
OT 509	Occupational Performance	3	OT 512	Assessment and Interventions in OT I: Adults and Gerontology	3
OT 513	Fundamentals of Fieldwork: Clinical Skills and Communication	3	OT 516	Clinical Reasoning and Professional Behavior I	2
			OT 514	Fieldwork Level Ia: Interprofessional Collaboration	1
Total Credits		14	Total Credits		16
Year 2: Fall			Year 2: Spring		
Course	Course Name	Cr.	Course	Course Name	Cr.
OT 508	Health and Wellness II: Conditions in Pediatrics and Adolescent	3	OT 518	Assessment and Interventions in OT II: Pediatrics and Adolescent	3
OT 501	Fundamentals of OT II: Emerging Practice and Advocacy	1	OT 607	Leadership and Scholarly Inquiry II	2

OT 605	Interprofessionalism and Leadership	2	OT 517	Clinical Reasoning and Professional Behavior II	2
OT 606	Leadership and Scholarly Inquiry I	2	OT 610	Specialty Practice: Acute Care, Hand Therapy, or Sensory Integration	3
OT 608	Assistive Tech and Universal Design	2	OT 611	Seminar: Competencies in OT	1
			OT 620	Fieldwork Level 1b: Specialty Area	1
Total Credits		10	Total Credits		12
Year 2: Summer			Year 3: Fall		
Course	Course Name	Cr.	Course	Course Name	Cr.
OT 515	Level IIa: Immersion in Experiential Practice	6	OT 621	Fieldwork Level IIb: Advanced Experiential Practice	6
Total Credits		6	Total Credits		6
			Professional courses: 52 credits Clinical Fieldwork: 12 credits Total Credits for the Program = 64		

PROGRAM: MASTER OF PUBLIC HEALTH (MPH)

CONCENTRATION IN EPIDEMIOLOGY *(Effective Fall 2023)*

First Year – Fall Semester					First Year – Spring Semester				
	Pre	Course #	Course Title	CR		Pre	Course #	Course Title	CR
	N/A		Introduction to Public Health	3		N/A		Introduction to Epidemiology	3
	N/A		Management & Health Policy Science	3		N/A		Introduction to Biostatistics	3
	N/A		Environmental Science Principles	3		Intro To Epi		Intermediate Epidemiologic Methods	3
			Elective	3		Intro to Epi		Cancer Epidemiology	3
			Total Credits	12				Total Credit	12
Second Year – Fall Semester					Second Year – Spring Semester				
	Pre	Course #	Course Title	CR		Pre	Course #	Course Title	CR
	Mgt & Health Policy/ Cancer Epi		Clinical Trials	3		Intro to Biostats		Meta-Analysis & QES	3
	N/A		Behavioral & Social Sciences	3		Intro to Epi/ Intro to Biostats		MPH 515 Integrated Learning Experience (Capstone)	3
	Mgt & Health Policy		Epidemiologic Research Proposal Dev. Research Protocol & IRB	3				Elective	3
			Elective	3					
			Total Credit	12				Total Credit	12

Elective - Options				
	Pre	Course #	Course Title	CR
	N/A		Basic Epidemiology	3
	Intro to PUBH		Infectious Disease Epidemiology	3
	N/A		Basic Biostatistics	3
	N/A		Social Epidemiology	3
	Intro to Epi		Advanced Epidemiologic Methods	3
	Intro to PUBH		Field Epidemiology	3
	Intro to PUBH		Genetic/Genomic Epidemiology	3
	Inter Epi		Epigenomic Epidemiology	3
	Intro to PUBH		Chronic Disease Epidemiology	3
			Total Credit	27

Abbreviations & Notes: Pre=prerequisites; CR=credit hours; QES= Quantitative Evidence Synthesis; Dev=Development; GPH =Graduate Public Health; NA=Pre-requisite in not applicable; IRB=Institutional Review Board. The MPH graduation requires 48 credit hours, including thesis. CR.

PROGRAM: MASTER OF PUBLIC HEALTH (MPH)

CONCENTRATION IN GLOBAL HEALTH *(Effective Fall 2023)*

First Year – Fall Semester					First Year – Spring Semester				
	Pre	Course #	Course Title	CR		Pre	Course #	Course Title	CR
	N/A	MPH500	Introduction to Public Health	3		N/A	MPH504	Introduction to Epidemiology	3
	N/A	MPH501	Management & Health Policy Science	3		N/A	MPH505	Introduction to Biostatistics	3
	N/A	MPH502	Introduction to Global Health	3		N/A	MPH506	International & Comparative Healthcare System	3
	N/A		Elective	3		N/A		Elective	3
			Total Credits	12				Total Credit	12
Second Year – Fall Semester					Second Year – Spring Semester				
	Pre	Course #	Course Title	CR		Pre	Course #	Course Title	CR
	MPH500	MPH510	Measures of Health Disparities & Global Health Integration	3		MPH504/ MPH505	MPH515	MPH Thesis	6
	MPH500	MPH511	Global Demographics and SDH	3		N/A		Elective	3
	N/A	MPH503	Environmental Science Principles	3		N/A		Elective	3
	N/A	MPH509	Behavioral & Social Sciences	3					
			Total Credits	12				Total Credit	12

Abbreviations & Notes: Pre=prerequisites; CR=credit hours; SDH= Social Determinants of Health; GPH =Graduate Public Health; NA=Pre-requisite is not applicable; IRB=Institutional Review Board, Sc=Science. The MPH graduation requires 48 credit hours, including thesis credit hours.

Elective – Options				
	Pre	Course #	Course Title	CR
	N/A	MPH524	Basic Epidemiology	3
	N/A	MPH525	Basic Biostatistics	3
	N/A	MPH520	Immigrants & Refugees Health	3
	N/A	MPH521	Global Health, Implementation	3
	N/A	MPH522	Global Public Health Policy	3
	MPH500	MPH523	Urbanicity & Public Health	3
	MPH500	MPH526	Public Health Law & Ethics	3
	N/A	MPH527	Epigenomic Global Health	3
			Total Credit	24

COLLEGE OF HUMANITIES, EDUCATION AND SOCIAL SCIENCES



Department of Education

Ed.D. in Educational Leadership
 Concentration in Higher Education
 Concentration in K-12
M.Ed. in Educational Leadership
MA in Equitable Curriculum and Instructional Leadership
MA in Teaching (MAT)

Department of Languages and Literatures

MA in Teaching English to Speakers of Other Languages (TESOL) / Bilingual Education
TELL Program Secondary Certification in Teacher of English Language Learners/ Bilingual Teacher
Online Graduate Certificate in TESOL
DUAL-TITLE MA in TESOL/Bilingual Education and M.Ed. in Educational Leadership

Public Administration

Master of Public Administration (MPA)

Sociology and Criminal Justice

MA in Justice Studies

DEPARTMENT OF EDUCATION

DOCTOR OF EDUCATION (Ed.D.) IN EDUCATIONAL LEADERSHIP

The Ed.D. Program trains and prepares transformational leaders for equity, diversity and social justice to eradicate systemic and systematic barriers to the progress of the world's most vulnerable children and their families.

This doctoral program aims to prepare culturally responsive, transformational senior-level administrative leaders, policymakers, and researchers who can design solutions across K-12 education, higher education institutions, and other education-related organizations. As innovative leaders, students will be able to impact the worlds of policy and practice to promote a positive school climate and ensure each student's success. By joining this program, students will envision the future of 21st century educational institutions, interacting with curious minds and implementing cutting-edge research practices to develop a new vision of education for a diverse society. Students will emerge as change agents and reflective practitioners who can address diverse educational issues and lead sustainable change at organizational and national levels.

Delaware State University's Ed.D. Program has received National Accreditation by the Council for the Accreditation of Educator Preparation (CAEP) for seven years for its K-12 concentration. This accreditation is quality assurance that the programs meet standards set by organizations representing the academic community, professionals, and other stakeholders. This concentration is deeply grounded in both the CAEP and National Educational Leadership Preparation (NELP) standards.

*Most states require Doctor of Education in K-12 to gain licensure to become a superintendent or assistant superintendent in a school district. Our program does not provide a licensure or a certification as a superintendent or assistant superintendent in a school district or as a Certified Central Office personnel, but helps students meet the eligibility criteria for these positions. For more information about the requirements for superintendent or assistant superintendent certification, please visit: <https://regulations.delaware.gov/AdminCode/title14/1500/1593.shtml>.

PROGRAM OBJECTIVES

In collaboration with the State of Delaware, the purpose of Delaware State University's Ed.D. in Educational Leadership program is to prepare educational leaders for prominent leadership and service positions in School Districts and Higher Education sectors. Our rigorous advanced program of study has been designed for working professionals to foster continuous refinement of their leadership skills to promote effective organizational and individual performance. Through a sound educational foundation and directed field experience, students will emerge as viable candidates for leadership positions throughout the country. At Delaware State University, students will find a unique balance between rigorous research, serious academic studies, partnership, collegiality, and professional development. Students will be prepared to take data-driven decisions to serve authentically, lead with integrity, hone their personal leadership style, create a new career path, and learn to meet the challenges of the 21st century.

The doctoral program offers two concentrations from which to choose:

(i) Doctor of Education (Ed.D.) in Educational Leadership in K-12, (three-and-a-half years; 55 credit hours)

(ii) Doctor of Education (Ed.D.) in Educational Leadership in Higher Education (three-and-a-half years; 55 credit hours)

Courses are conducted in an accelerated weekend format. Courses span eight weeks, and the classes are normally held in the first, third and sixth weekends of an eight-week session. Normally, a two-week break is provided between the courses so that the students can prepare for the next course.

PROGRAM GOALS

This high-quality doctoral program prepares transformational, culturally responsive and equity focused discerning educational leaders who value diversity, demonstrate deep commitment to equity and social justice, and can transform the educational system to impact student learning. The candidates are the role models for the community and display ethical and professional competence in their chosen fields to emerge as:

- Critical thinkers who can effectively utilize education software tools for data collection and analysis and adopt the latest information technology to broaden their vision of learning.
- Inquisitive reflective practitioners who believe in the concept of lifelong learning and display personal flexibility to sustain personal and professional development.
- Skilled educational leaders who can connect and apply cutting-edge research to policy and practice to serve the educational institutions to promote the success and well-being of each student.
- Competent leaders who are prepared to facilitate service, leadership and learning in all environments including urban, suburban, rural, undeveloped, and underserved.

The purpose of our Ed.D. program is to provide high-quality learning experience for academic competence of candidates; foster intellectual creativity through robust research and analytical inquiry; and hands-on high impact applied learning experiences to the critical problems of practice.

Specific goal for the of K-12 Concentration:

This concentration will prepare the candidates as effective administrators and equity practitioners who can articulate a vision for public schools, interact with curious minds, and implement cutting-edge research practices and technology to develop a new vision of education for the diverse society. They will emerge as effective instructional leaders with expertise in policy development, teaching innovations and curriculum development who can foresee the future of 21st century educational institutions. They will collaborate with diverse stakeholders for strategic planning, implementing and evaluating processes to foster supportive and inclusive district culture that benefits academic growth and ensures each student's success.

Specific goal for the Higher Education Concentration:

With a grounding in the conceptual underpinnings of the practice of higher education, this concentration will equip the candidates with the knowledge base and skills sets conducive for the effective organizational administration, policy development, strategic innovations, and social justice advocacy as related to post-secondary institutions. The candidates will emerge as ethical and socially responsive professionals who can connect theory and research to successfully operate within the diverse, social, political, educational, and organizational contexts of their institutions and the community.

STUDENT LEARNING OUTCOMES

For Ed.D. in K-12 Concentration:

The Education Graduate Programs at Delaware State University has established the following Learning Outcomes for its doctoral program in consonance with NELP Standards to ensure that the candidates can demonstrate the competency to:

1. Develop, design, and implement a district mission and vision that reflects a core set of values and priorities that include data use, technology, diversity, social justice, and digital citizenship.
2. Develop and maintain a supportive, equitable, culturally responsive, and inclusive district culture and advocate for ethical decisions and cultivate professional norms and culture.
3. Evaluate, design, cultivate, and implement coherent systems of curriculum, instruction, data analysis, assessment, and instructional leadership.
4. Understand and engage families, communities, and other constituents in the work of schools and the district and to advocate for district, student, and community needs.

5. Apply research to analyze and synthesize district level student learning and operational data by utilizing cutting-edge technology to conduct strategic inquiry and robust research to critical problems of practice to lead the district improvement.
6. Develop, monitor, evaluate and manage data informed district systems for equitable operations, resources, technology, and human capital management.
7. Cultivate meaningful relationships, lead collaborative decision making and advocate for institution and district needs in broader policy conversations.
8. Demonstrate critical and reflective thinking, effective reasoning, and creativity to conduct strategic inquiry and the application of data-driven decision making through analytical review and scholarly writings to lead institutional improvement.
9. Demonstrate authentic leadership qualities by being involved in the real administrative roles and collaborate with the stakeholders in the organizational, strategic, and contextual decision-making processes to ensure the success and well-being of each student and adult in the K-12 setting .

For Ed.D. in Higher Education Concentration:

The curriculum for the Ed.D. in Educational Leadership in Higher Education is distinctive in its focus on “core four” domains of leadership competency that permeate across the program. The curriculum has been intentionally framed by (1) educational equity, (2) inclusive leadership and practice, (3) critical social justice, and (4) adult learning and development.

Educational Equity

The histories of higher education are explored through critical lenses and sociocultural contexts to advance educational equity. This provides a foundation to better understand the loosely coupled American system of postsecondary education of institutional types that support the diverse contemporary college students and communities. Students examine and critique historical and current practices in relation to their own professional experiences and social identities. Doctoral students will be able to assess the needs and interests of students to implement progressive and contemporary approaches which allow students, faculty, and staff to flourish in higher education.

Inclusive Leadership and Practice

Leadership theories are emphasized throughout the program to allow students to become reflective scholar-practitioners. Inclusive leadership approaches are promoted to support humanizing higher education which allow students, faculty, and staff to find belonging within the academic community. Administrative cultures and theory, educational policy development, and university organizational models are explored. This supports doctoral students to promote inclusive leadership theory and approaches to serve as transformative leaders and agents of equitable change on their respective campuses or within their areas of influence.

Critical Social Justice

Critical theories and frameworks are emphasized to allow students to understand how to interrogate systems of oppression, power, and privilege that differently facilitate marginality across intersecting identities. Doctoral students will be able to develop their own nuanced approach towards critical praxis informed by the use of critical education theories.

Adult Learning & Development

Theories and models of adult and college student development and learning are explored to demonstrate the impact of the college experience on adult learning and identity development. These processes converge with systemic barriers of individual student persistence which can inform institutional retention efforts. Doctoral students will be able to apply current research and theory to connect issues of college access and enrollment management.

ADMISSION DEADLINES

Deadlines:

Rolling Admissions

Priority given to applications received by June 30 for fall admission and October 30 for spring admission.

Enrollment is contingent upon receipt of all required documents no later than two weeks prior to the enrollment period for U.S. applicants.

International Application Deadlines:

Fall enrollment – May 1: Spring enrollment: Oct. 1

Applicants who wish to seek admission in the Ed.D. program must meet the following requirements:

- An earned master's degree with a minimum cumulative grade point average of 3.00.
- An online application for admission.
- Application fee of \$50.00 made payable to Delaware State University.
- Official transcript(s) of all academic work completed.
- A "Personal Statement". The candidate must specifically explain why he or she wants to be admitted to the Ed.D. in Educational Leadership program. This statement needs to be focused on concentration-specific educational leadership. Specifications: 2-5 pages, APA style, grammatical error free.
- A sample of scholarly work (e.g., thesis, portfolio, project report, published research work, creative writings, etc.)
- A current professional resume.
- Three (3) letters of recommendation (two academic/professional recommendations and one (1) character recommendation) via the online application process.
- For admission in Ed.D. (Higher Ed. Concentration): For admission in Ed.D. in Educational Leadership in Higher Education, the applicant must be working toward a career in higher education (faculty, student affairs administrator, academic advisor) or seeking to obtain additional professional advancement from adjacent career areas.
- For admission in Ed. D. (K-12 Concentration): The applicant must hold a valid Delaware Initial, Continuing, or Advanced Licensure; or a Limited Standard, Standard or Professional Status Certificate issued by the Department of Education or must hold such or similar certification from any other state.
- Applicants not holding the licensure may also be admitted into the program but on a clear understanding that the doctoral degree will not lead to any licensure but will make them eligible for it, and they will still have to follow the individualized plan of Department of Education to meet the licensure requirements.
- Copies of earned teaching and/or administrative certificates (optional).

The Coordinator of Education Programs, along with the Education Graduate Admission Ad Hoc Committee, will review each application and make the recommendation for acceptance into the program to the School of Graduate, Adult and Extended Studies, which will extend an offer of admission to the applicant.

Additional Requirements for International Applicants

Please review application procedures at the following link: <https://www.desu.edu/academics/international-programs/prospective-international-students>. In addition to the requirements noted above, international applicants must submit WES, ECE, or GCE evaluation of all academic work completed as well and results from the TOEFL or IELTS examination if the earned baccalaureate degree is from a non-English speaking country.

All international students must also meet visa requirements of the Office of International Student Services (OISS) before a Certificate of Eligibility for Non-Immigrant (F-1), Student Vias (I-20 A-B form) can be issued. Please review procedures at the following link: <https://www.desu.edu/admissions/other-admissions-types/international-students>.

DEGREE REQUIREMENTS

This Program of Study requires the completion of 55 graduate credit hours which include a qualifying exam and authorship of a dissertation. For the K-12 concentration, this includes an integral component of a Applied Educational Internship/Field Experience. The students of the K-12 concentration will be required to complete 240 hours of internship in a K-12 setting. This extensive experience is grounded in strong research with focus on activities designed to provide rigorous, diverse, high-impact field-based experiences extended over time that result in the intern's demonstration of professional knowledge, skills, and dispositions articulated in professional standards.

QUALIFYING EXAMINATION

All students are required to pass the Qualifying Examination. It is a comprehensive exam designed to provide students an opportunity to demonstrate their analytical writing ability by conceptualizing and synthesizing their knowledge in an organized and cogent manner. The schedule of this exam is included in the cohort plan of the program provided to all the students at the time of New Student Orientation.

DISSERTATION

The Ed.D. program at Delaware State University offers several different options for the final dissertation experience. The dissertation is taught in a dissertation cohort model in which students must complete a five-course seminar sequence. The sequence presents an organized and highly supervised five phases of dissertation development which ranges from three to four semesters to complete. These are:

1. Prospectus development where you select your research topic, focus of practice, and methodology (EDUC 840)
2. Develop first three chapters and defend the proposal (EDUC 841)
3. Obtain Institutional Review Board approval and begin data collection (EDUC 842)
4. Analyze data and draft findings to connect to implications for practice (EDUC 843)
5. Finalize dissertation and defend to dissertation committee (EDUC 844)

All doctoral candidates must complete, orally present, and defend a research capstone to meet their final degree requirement. Students who do not complete this required must enroll in continuing dissertation credits (EDUC 829) to maintain continuous enrollment until the dissertation is completed and approved by the approved, supervising dissertation committee.

TRANSFER OF CREDITS

Applicants who have earned a grade of "B" or higher in doctoral-level courses taken at an accredited institution that are relatable to the program of study at Delaware State University can request for the transfer of credits. These courses will be evaluated by the Director, Education Graduate Programs, on an individual basis. No student will be allowed to transfer more than 24 credit hours, provided these credits have not been used to meet the requirements of a degree, diploma or certificate previously earned.

The applicants admitted to the doctoral program must provide supporting documentation, as may be required by the Director, Education Graduate Programs, at the time of admission or in any case no later than the first semester of study. The Director, Education Graduate Programs, will review all the submitted documentation and note the allowable course waivers in the program's recommendation to the Dean of the School of Graduate, Adult and Extended Studies, who will approve the credit hours allowed to be transferred.

FACULTY

The Education Department's distinguished faculty members include nationally and internationally known authors, researchers, and academicians. All the faculty members have achieved notable distinction in their respective fields. They combine their academic expertise with direct experiences in the field of education to offer practical guidance and mentorship to students to enable them to adapt to the professional world and make wise career choices.

CORE COURSES FOR K-12 AND HIGHER EDUCATION CONCENTRATIONS

COURSE DESCRIPTIONS FOR Ed. D. PROGRAM

EDUC 800: THE SUPERINTENDENT AS A SCHOLAR-PRACTITIONER EDUCATIONAL LEADER

This course gives an overview and provides the foundation for developing and cultivating the leadership skills and values that superintendents and K-12 leaders will find helpful to move from a theoretical base to becoming an effective scholar-practitioner educational leader. This course addresses district/institution vision, school culture, politics and governance, internal and external communication, organizing for high performance curriculum design and instructional delivery, and human resource management for student learning. The course also provides insights on how to utilize leadership and organizational theories as a theoretical framework and foundation for research in leadership studies. Students are encouraged in this course to be grounded in leadership theories in order to use them as a foundation for research or to critically evaluate empirical research studies. Methods and equitable practices that influence leadership and organizations will be explored based on the theory used. Emphasis on leadership and organizational performance outcomes and how implementations impact emerging global markets will be presented. The NELP Standards and AASA professional standards for superintendency are used to define the role of a superintendent/leader as scholar-practitioner. Credits, three hours

EDUC 801: SOCIAL JUSTICE, EQUITY AND CULTURAL RESPONSIVENESS: CRITICAL ANALYSIS OF CONTEMPORARY EDUCATIONAL ISSUES

This course assists advanced students to understand social justice, equity, and cultural responsiveness and to analyze current trends, problems and theories based upon an examination of recently surfacing educational events and/or topics from a historical perspective. Discussions will focus on a critical exploration of topics related, but not limited to, the formation of diverse curriculum, instructional policy and methodology, cultural responsiveness, social justice, and assessment of student success in education. Additionally, current issues that involve students with challenges, Every Student Succeeds Act, state standards and teacher certification, state testing, full inclusion, school choice, charter schools, and accreditation are typical topics of consideration. Components that relate to strategic administrative handling of current issues, challenges in the educational system, and professional norms found in NELP and CAEP Standards are addressed. Credits, three hours

EDUC 802: LEADERSHIP IN HIGHER EDUCATION: THEORY & PRACTICE

This course is designed to examine emerging leadership perspectives and educational leadership theory. It will focus on seminal works, contemporary organizational theories, models, policies, governance and management processes. The course adopts a cross-disciplinary and integrative view of the leadership phenomenon that highlights how different disciplines inform leadership study and illustrates various research methodologies used for understanding and assessing the concept of leadership. It will examine the complex social, economic, and political environments and the current and future trends in higher education while providing a foundational grounding in the study of leadership practices and research. Credits, three hours

EDUC-803: HUMAN CAPITAL & RESOURCES MANAGEMENT/PERSONNEL ADMINISTRATION

The 21st-century Human Resource (HR) department in educational organizations in general and higher education, in particular, serves as a strategic partner and an operational partner to the institution's leadership to navigate and solve the challenges and issues of equity, diversity, employee relations, and compensation, etc. HR decisions have a high impact on important organizational phenomena like professional learning and development, student and employee retention, and overall well-being of institutional stakeholders including, students, faculty, staff, and others. The students will analyze several pertinent HR topics like employee-related decisions, recruiting and hiring employees, managing the performance of employees, allocating rewards, and compliance with the law, etc. This course helps build critical thinking skills by analyzing how human resources practices can support an organization's strategic objectives and enhance long-term performance of staff for promoting student learning. Activities will be infused into the curriculum that will familiarize students with the challenge of sustainability facing today's higher education institutions that increases the role of human resource management practices.

EDUC 804: EFFECTIVE ADMINISTRATION: MANAGEMENT OF PEOPLE, FINANCE, FACILITIES, AND THE RESOURCES

The course explores the major issues that impact administrative policies, decisions, and one's effectiveness as a school leader. The emphasis is on data-informed and equitable management, communication, technology, governance, and operation systems. This application and research-focused course covers collaborative systems for district governance, cultural, social, economic, legal, and political interests. Leadership, decision making, authority, power; communication, conflict management, advocacy, organizational culture, and major changes affecting the K-12 system will be other key topics of the course. Issues related to operation and management as well as advocacy and governance under NELP and CAEP standards, are addressed. Credits, three hours

EDUC 805: RESEARCH DESIGN AND QUANTITATIVE RESEARCH METHODS

This course is designed to prepare doctoral students to understand, interpret, evaluate and design quantitative research and to develop the ability to select and use appropriate research methods. This course integrates the major concepts and practices of quantitative research methodology and introduces descriptive and inferential statistics. The 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 quantitative data. Additionally, this course includes readings on methodology, lectures, discussions, presentations, and in-class exercises that are designed to highlight various issues. Credits, three hours

EDUC 807: LEADING 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. The students will learn the concept of adaptive leadership and apply a framework for building and distributing leadership in the schools, engaging and empowering others in solving their school's most challenging problems. They will develop the knowledge and skills to lead a diverse school community that supports all students in reaching their potential. 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. As change agents, the students will develop the District Change Plan. Students will learn to identify and address equity challenges by using data and learn how to build an equitable school culture that promotes excellence for all. Credits, three hours

EDUC-808: ORGANIZATIONAL MANAGEMENT STRATEGIC PLANNING AND PROGRAM ANALYSIS

This course explores the steps of the strategic planning process in educational organizations for realizing district's mission and vision. The benefits of involving a broad range of personnel in the governance and operation systems at district level will be discussed. The doctoral student will examine the following strategic planning steps: the development and articulation of a mission statement; completion of an environmental scan; development of key objectives and initiatives; programs and activities to accomplish the key objectives; design of instructions, culturally responsive system of assessment and data collection; data-informed and equitable management practices; operational systems, resource plans for effective use; coordinated system for hiring, supervising and developing school staff and district professionals for better performance; and determination of performance measures to monitor and evaluate the organization's progress toward accomplishing its strategic goals. Credits, three hours

EDUC 812: INTERNSHIP: APPLIED EDUCATIONAL ADMINISTRATION

This course will enable the doctoral candidate to practice knowledge and skills acquired in coursework and professional experiences in an authentic setting. This internship includes both the process and the product. The purpose is to provide interns with coherent, authentic, and sustained opportunities to interact with stakeholders within multiple district environments, synthesize and apply the content knowledge, develop, and refine the leadership skills identified in NELP 1 to 7 professional standards (NELP 8.1). This high-impact hands-on supervised experience extends over 240 hours in addition to 60 hours of field experience spread across the program's curricula. The interns will complete 16 evidence-based authentic learning activities (NELP 8.2). In conjunction with the district administrator as a mentor and the university supervisor, the candidates will (NELP 8.3). These activities will provide diverse opportunities for the candidates to experience the everyday life of an administrator.

The candidates acquire practical skills on how everyday challenges are solved. Time management strategies, organizational techniques, successful secretarial relationships, interpersonal skills, communication practices, negotiation, culturally responsive instructional leadership, creative curricular design, evaluation of district vision and mission processes, equitable decision making, and strategic operational management conducive to district needs and priorities are the major experience areas. The candidates will engage in reflective practices, moral and ethical behavior in their personal conduct and relationship with others including community and family for strengthening student learning. Learn to collaborate with other administrative colleagues; and grow and mature, through the internship's challenges and rewards, into a competent and independent educational administrator. This experience is grounded in research and focuses on activities designed to solve high leverage district problems of practice. For these reasons, this internship is designed to be substantial, diverse, and meaningful, as articulated in NELP District Level Standards 1 to 7. Credits, three hours

EDUC 813: INTERNSHIP: APPLIED EDUCATIONAL ADMINISTRATION

This course is an extension of internship experience initiated as a part of EDUC 812. It enables the doctoral candidate to consolidate their internship experiences by allowing them to complete their mandatory internship hours and to collect artifacts to compile their internship portfolio. Under the supervision and guidance of the district administrator and the (university supervisor), the candidates will complete all the activities (NELP 8.3) and submit the portfolio on the assessment system for the final evaluation. The students will showcase their proficiency in professional dispositions, data-literacy, data analytics, and the use of technology as they develop their portfolio. This experience is grounded in strong research and focuses on activities designed to solve high leverage district problems of practice. For these reasons, this internship is designed to be substantial, diverse, and meaningful, as articulated in NELP District Level Standards 1 to 7. Credits, three hours.

EDUC 814: PUBLIC POLICY AND HIGHER EDUCATION

Doctoral students will be introduced to the fundamental issues and topics in contemporary higher education policy. It will introduce students to the historic and contemporary debates, research, and theories that shape public policy in higher education. Using an interdisciplinary perspective, the course offers a systematic overview of the key factors, structures, dynamics in the field of higher education in the USA, and global and domestic higher education policy development trends. This course provides an opportunity to critically review current policy issues and challenges in higher education. Students will examine the policymaking process through reviewing and understanding methods of policy analysis and policy research. Experiential learning will be an integral part of this course. Credits, three hours

EDUC 816: ETHICS AND LAW IN HIGHER EDUCATION

Through this course, the students gain real-world perspectives on legal and ethical issues faced by higher education. The course aims to provide general familiarity with higher education law and recognize when a legal issue presents itself in situations involving students, faculty, or administration. The course covers topics such as the Family and Education Rights Privacy Act (FERPA), Title IX, civil rights laws, and affirmative action policies. Likewise, this theory-to-practice oriented course includes other topics such as free speech, copyright laws, and students' relationship with the university. The course further expands to the ethical standards and decision-making process in higher education. Experiential learning is an integral part of this course. Credits, three hours

EDUC 824: GLOBALIZATION AND INTERNATIONALIZATION OF HIGHER EDUCATION – LEADERSHIP PERSPECTIVE

Over the last half century, the forces of globalization have impacted nearly every facet of life. This course will probe the rationale behind the rise of internationalization in higher education and will examine the historical and current development of globalization in higher education institutions. The students will learn the meaning, key concepts, theories, contemporary issues, and challenges of globalization of higher education. The students will understand social/political/economic factors, citizenship and immigration policies in a transnational context that impact students' identity, practices of student learning, and students' academic success.

In this increasingly globalized world, higher education professionals with intercultural competence must be well-versed in the trends of international higher education and prepared to operate in educational environment across borders and cultures. Hence, the higher education institutions are required to remodel not only their governance, operations, relationship with stakeholders but also to foster leadership that is essential for institution's success and effectiveness. In this course, the students will explore higher education administrative leadership characteristics, leadership styles, strategic organizational models, innovative policies, and practices in different types of higher education institutions. Credits, three hours

EDUC 826: LEGAL, ETHICAL AND MORAL FOUNDATIONS OF EDUCATIONAL LEADERSHIP

This course explores legal, ethical and moral issues governing Pre-K-12 education and identifies the fundamental principles that are central to being an ethical educational leader who is able to cultivate professional norms and culture. This course also examines the characteristics, principles, and practices of an educational leader who promotes the success of all students by acting with integrity, fairness, and in an ethical manner by fostering safe, nurturing, equitable, and inclusive district culture. Legal theories and case studies will be used to cover such topics as constitutional mandates of due process and equal protection, nondiscrimination in employment and educational programs, privacy and openness, tenure and academic freedom, contractual obligations, and program discontinuance and their applications in the real-life settings. Credits, three hours

EDUC 830: INSTRUCTIONAL LEADERSHIP IN LEARNING ORGANIZATION: LEARNING SYSTEM, CAPACITY BUILDING, AND EVALUATION

Doctoral students will be engaged in critical and reflective analysis of instructional leadership practices in schools. They develop understanding and skills of leading and managing curriculum, high quality instructions, assessment, services, and instructional resources that support the need of each student in the district. Using scholar-practitioner philosophical stance and practical cases and examples, the course offers district/building capacity development approaches and the critique of them. Topics like digital literacy, student learning and instructional leadership, professional learning communities in leading instruction, district-building collaboration for teaching learning transformation in K-12 systems will be addressed. Credits, three hours

EDUC 831: FOUNDATIONS OF DOCTORAL STUDIES

The purpose of this course is to provide an overview of the doctoral program and identify the skills required for students to become innovative equity leaders in K-12 and higher education sectors. The key features of this course will highlight the unique differences of each concentration. Doctoral capstone options will be discussed. Doctoral level core set of values and skills such as academic integrity, ethical decisions, time management, reflecting on the professional norms and dispositions, comprehending complex scholarly texts, research articles, and APA Style will also be discussed. Collaboration and individual assignments will ensure students have the competencies of critical thinking, creative writing, oral communication skills, and research abilities essential for completion of their capstone experience and development of high level of leadership skills. The students will begin the process of personal transformation by questioning assumptions and conventional patterns of thinking. Credit, one hour

EDUC 832 CONTEMPORARY ISSUES IN HIGHER EDUCATION

This doctoral level course examines the concepts, contemporary issues, and critical elements affecting higher education that have contributed to or limited educational opportunities and possibilities today. Higher education faces many challenges, such as the increasing importance of higher education in American and global societies, a lack of financial resources, disparities in the educational preparation of students, and inequitable practices. This course will enlighten the students to develop an understanding of the historical, social, political, and transnational contexts of educational settings and how they inform practices of student learning/identity and affect organizational climate for student success. In this course, the students will evaluate data to analyze effectiveness of current policies and recommend strategies to address the gaps. This course provides the students with a solid knowledge base relating to the major trends and practices of higher education in the U.S. and affords students the opportunity to critically analyze these trends and practices collaboratively, formulate personal positions, and discuss future potential implications. Experiential learning is an integral part of this course. Credits, three hours.

EDUC 833: APPLIED ASSESSMENT IN EDUCATIONAL RESEARCH: QUANTITATIVE, QUALITATIVE, AND MIXED METHOD DATA ANALYTICS

Education institutions must assess varied and extensive information to gauge institutional effectiveness and generate data-based decisions. This course reviews a broad range of quantitative, qualitative, and mixed research methods to prepare the students to apply them to resolve a variety of research problems. The students will identify deductive and inductive research paradigms and learn to locate, analyze, and interpret qualitative, quantitative, and mixed-method research and assessment data in the field of education. Furthermore, this course guides them to solidify the data needed for their capstone experience, identify suitable research design, and determine the most appropriate method to solve their research problem. At the end of the course, the students will be able to declare their capstone option. Credits, three hours.

EDUC 834: STRATEGIC FINANCIAL MANAGEMENT

This course explores core financial analysis, strategic planning models, evaluation tools and teaches students how to apply them to their business, institution, or organization. It introduces key budgeting structures and processes that effectively utilize institutional resources to support continuous quality improvement, enhance capacity building, student learning and development. It contains a project that allows students to gain experience adjusting budgets for administrative and academic units including financial support services for the students. They would work on scenario, strategic financial risks, and other types of financial analysis to determine which operating decisions will drive the greatest value. They will learn to anticipate how decisions such as tuition increase, changes in state and federal funding, interest rate fluctuations etc. affect financial performance and create value. The discussions, presentations, and case studies will teach students the jargon to communicate with finance leaders in their own language.

EDUC-835: USE OF TECHNOLOGY IN RESEARCH AND DATA-DRIVEN DECISION MAKING

This course focuses on interpreting data and emphasizes designing and evaluating assessment strategies through technological applications. Students will synthesize appropriate assessment measures and appraise data collection methods, determine if the assessment methods generate the necessary data, and make recommendations for improvements in the assessment process. The class participants will draw conclusions based on the data presented while discussing the limitations of data collection designs and validity of the results. In addition, presenting results to stakeholders and effectively using data to persuade institutional decisions will be practiced. Experiential learning forms an integral part of this course. Students will find the concepts presented in this course valuable when writing discussion or application portion of their capstone experience. Credits, three hours.

EDUC 836: ADMINISTRATIVE FIELD EXPERIENCE

Field Experience is a series of rigorous, substantial, high quality, supervised clinical experiences that enable the students to synthesize the theoretical and research-based content of the course offerings with practical and professional experiences of the internship. The students will complete 120 hours under the expert supervision and guidance of the appointed Site Supervisor in collaboration with the university supervisor. This field-based experience will prepare the students to develop and mature, through the field activities practical experience, challenges, rigorous assessments, and rewards, into a competent and independent educational administrator. They learn to face the everyday administrative challenges and devise an operational framework from which concepts, plans, and strategies for institution's improvement can be made. The students are encouraged to showcase their proficiency in research through data literacy, data analytics, and the use of technology as they complete the field experience activities. The students will acquire skills and competence to demonstrate an in-depth understanding of leadership concepts that are deeply linked to the CAS professional standards, and an appreciation for reflective practices in an authentic setting. Credits, three hours

EDUC 837: ORGANIZATIONAL DYNAMICS AND RISK MANAGEMENT STRATEGIES

Successful leaders are able to develop and communicate a vision while managing resources to effectively meet the goals of their organization. In this course, students will explore an organization's culture, trends, and opportunities for change, then discuss leadership strategies based on desired outcomes. They will analyze models used to create a diverse and inclusive culture, and their integration into institutional strategic plans. This course provides insight into the continuous process of examination and evaluation of an institution's external environment (economic, social, demographic, political, legal, technological, and international factors), internal organizational factors and future prospects, to set out a coherent plan to adjust the "business strategy model" to build a stronger, more effective institution of higher

education. The students will be introduced to the theories and practices related to risk management and mitigation, and crisis leadership including decision making, communication, and crisis as an opportunity for institutional change. The students will engage in active discovery of risk management principles and develop an awareness of the challenges, the tools, and the process of designing and implementing the risk management strategies. To develop a deeper understanding of institutional cultures and the professionals' role within those cultures, the students will further examine the integration of student affairs functions with administration for better organizational design, culture, and effectiveness. Experiential learning is an integral part of this course. Credits, three hours

EDUC-840: RESEARCH SEMINAR I: DEVELOPING PROSPECTUS

Educational professionals expand their knowledge of capstone research by reviewing the related literature, data collection tools, and resources to develop a research outline. Emphasis is placed on understanding a variety of leadership paradigms, quantitative and qualitative research competencies, ethical research practices and how to effectively analyze data using multivariate statistics. The students acquire an in-depth knowledge about the essential components of a research capstone including, but not limited to elements such as Research Problem, Purpose, Framework, Assumptions, the Thematic Issues, Literature Review, Research Questions, and Study Design. By the end of the course, the students will be able to develop a solid outline of their anticipated area of research inquiry that might comprise at least a portion of their research capstone work. At the end of the course, the students will pass through the Qualification Exam that ascertains the students' knowledge and skills needed to conduct the research inquiry. Credits, three hours

EDUC 841: RESEARCH SEMINAR II: PROPOSAL WRITING AND DEFENSE

Seminar II builds upon the course Seminar I and supports students in developing their prospectus into a specific three-chapter research proposal of their final capstone/dissertation. The course provides students with input on research conceptualization, chapter structures, and organization. Emphasis will be placed on the refining of research questions and further development of research methodology. The students will work independently to complete writing the first three chapters (introduction, literature review, and methodology) and have an in-class defense/presentation. The course fosters a collective conversation about writing and proposal defense that aims to support the writing process and timely completion of the research project. The students must have their capstone experience approved by their committee. Credits, three hours

EDUC 842: RESEARCH SEMINAR III: DATA COLLECTION

Doctoral candidates will continue independently progressing toward the completion of their capstone experience. Their experience must be approved by their committee members and candidates should work closely with their committee chair to discuss ethical feasibility issues as related to their capstone development and proceed to data collection and analysis. This course will involve extensive reading of research analysis and writing. The candidate will practice collecting, organizing, analyzing, and projecting the data in their research. By the end of this course, candidates must have successfully collected and analyzed the data required for their capstone experience. Credits, three hours

EDUC 843: RESEARCH SEMINAR IV: CAPSTONE WRITING

This course requires independent application of requisite knowledge on conducting and writing research under the guidance of the committee chair and the course professor. The candidates continue progressing toward the completion of their capstone experience with the goal of developing a working draft of chapters 4 & 5 of the research and submitting it to their committee chair. They will make statements of the results, write interpretations, and discuss the research findings to present conclusions, suggest implications of the study and make recommendations for future research. Their research product must be approved by their committee chair and the course professor. This course will involve extensive reading of research and writing. By the end of this course, candidates must demonstrate progress in their capstone experience to move on to their final capstone defense in the course EDUC 844. Credits, three hours

EDUC 844: RESEARCH SEMINAR V: RESEARCH CAPSTONE DEFENSE

This research seminar is designed to address doctoral candidates' progress in the choice of topic, determination of their research format, and dissertation/capstone chapter requirements. Assistance is given to clarify the research findings and conclusions. Doctoral candidates meet with the course professor as a cohort group and on an individual basis with their respective advisory committee chairs. Discussion of policies and procedures of the dissertation submission process is also addressed in this course. The candidates will have an opportunity to practice defending their capstone. Emphasis is placed on editing of the complete manuscript. The candidate's committee chair along with committee members work diligently to review the final manuscript. The target for the candidates is to complete their final defense and publish their manuscript on ProQuest to receive course credit. Credits, three hours

EDUC 888: DEMYSTIFYING QUALITATIVE RESEARCH METHODS IN EDUCATION

This research course provides students with the opportunity to develop knowledge and skills for designing qualitative research at the doctoral level. Students will explore the nature of qualitative inquiry; field work strategies and the nature of observation; theoretical approaches to qualitative research; the importance of quality assurance; and the ethical, legal, and social change implications of conducting qualitative research. They will practice using software to code data and interpret and present results. Course participants will apply their knowledge and skills by developing a possible qualitative research plan to examine their research interests. Credits, three hours

**PROGRAM: DOCTOR OF EDUCATION (ED.D.) IN
EDUCATIONAL LEADERSHIP (K-12 Concentration) (2024-25)**

Year 1: Fall			Year 1: Spring		
Course	Course Name	Cr.	Course	Course Name	Cr.
EDUC 831 (Core Course)	Foundations of Doctoral Studies	1	EDUC 805 (Core Course)	Research Design and Quantitative Research Methods	3
EDUC 800	The Superintendent as a Scholar-Practitioner Educational Leader	3			
EDUC 801	Social Justice, Equity, and Cultural Responsiveness: Critical Analysis of Contemporary Educational Issues	3	EDUC 888 (Core Course)	Demystifying Qualitative Research Methods in Education	3
Total Credits		7	Total Credits		6
Year 1: Summer-I				Year 1: Summer-II	
Course	Course Name	Cr.	Course	Course Name	Cr.
EDUC 830	Instructional Leadership in Learning Organization: Learning System, Capacity Building, and Evaluation	3	EDUC 833 (Core Course)	Applied Assessment in Educational Research: Quantitative, Qualitative, and Mixed Method Data Analytics *Constitution of Advisory Committee & Capstone Option Declaration by the students	3
Total Credits		3	Total Credits		3
	Year 2: Fall			Year 2: Spring	
Course	Course Name	Cr.	Course	Course Name	Cr.
EDUC 807	Leading Change at a Time of Increasing Demands, Pressures, and Societal Change	3	EDUC 804	Effective Administration: Management of People, Finance, Facilities, and the Resources	3
EDUC 826	Legal, Ethical and Moral Foundations of Educational Leadership	3	EDUC 835 (Core Course)	Use of Technology in Research and Data-Driven Decision Making (Initiation of Prospectus Development) (Apply for taking the Qualifying Exam)	3
Total Credits		6	Total Credits		6
	Year 2: Summer			Year 2: Summer	
Course	Course Name	Cr.	Course	Course Name	Cr.
EDUC 840	Research Seminar I: Developing Prospectus **Qualifying Exam - after the completion of 34 credit hours (including EDUC 840) and at least 3 core courses	3	EDUC 808	Organizational Management Strategic Planning & Program Analysis	3
Total Credits		3	Total Credits		3
	Year 3: Fall			Year 3: Spring	
Course	Course Name	Cr.	Course	Course Name	Cr.
EDUC 841	Research Seminar II: Proposal Writing and Defense *Apply for IRB & Candidacy	3	EDUC 812	Internship: Applied Educational Administration (120 hrs)	3
EDUC 842	Research Seminar III: Data Collection (Progression of Capstone Research)	3	EDUC 813	Internship: Applied Educational Administration (120 hrs)	3
Total Credits		6	Total Credits		6
	Year 3: Summer			Year 3: Summer	
Course	Course Name	Cr.	Course	Course Name:	Cr.
EDUC 843	Research Seminar IV: Capstone Writing	3	Final Capstone EDUC 844	Research Seminar V: Research Capstone Defense (Dissertation/Project Study/Case Study Analysis)	3
Total Credits		3	Total Credits		3
Total Credits for the Program = 55					

- Students must enroll in the Sustaining Course (EDUC 829) if final capstone requirement is not satisfied by the end of the culminating semester

PROGRAM: DOCTOR OF EDUCATION (ED.D.) IN EDUCATIONAL LEADERSHIP (Higher Education Concentration)
(2021-22) (Approved w.e.f. Fall 2021)

Year 1: Fall			Year 1: Spring		
Course #	Course Name	Cr.	Course #	Course Name	Cr.
EDUC 831 (Core Course)	Foundations of Doctoral Studies	1	EDUC 805 (Core Course)	Research Design and Quantitative Research Methods	3
EDUC 802	Leadership in Higher Education: Theory and Practice	3	EDUC 888 (Core Course)	Demystifying Qualitative Research Methods in Education	3
EDUC 832	Contemporary Issues in Higher Edu.	3			
Total Credits		7	Total Credits		6
Year 1: Summer-I			Year 1: Summer-II		
Course #	Course Name	Cr.	Course #	Course Name	Cr.
EDUC 803	Human Capital and Resource Management/Personnel Administration	3	EDUC 833 (Core Course)	Applied Assessment in Educational Research: Quantitative, Qualitative, and Mixed Method Data Analytics *Constitution of Advisory Committee & Capstone Option Declaration by the students	3
Total Credits		3	Total Credits		3
Year 2: Fall			Year 2: Spring		
Course #	Course Name	Cr.	Course #	Course Name	Cr.
EDUC 814	Public Policy and Higher Education	3	EDUC 834	Strategic Financial Management	3
EDUC 816	Ethics and Law in Higher Education	3	EDUC 835 (Core Course)	Use of Technology in Research and Data-Driven Decision Making (Initiation of Prospectus Development) (Apply for taking the Qualifying Exam)	3
Total Credits		6	Total Credits		6
Year 2: Summer			Year 2: Summer		
Course #	Course Name	Cr.	Course #	Course Name	Cr.
EDUC 840	Research Seminar I: Developing Prospectus **Qualifying Exam - after completion of 34 cr. hr.	3	EDUC 824	Globalization and Internationalization of Higher Education – Leadership Perspective	3
Total Credits		3	Total Credits		3
Year 3: Fall			Year 3: Spring		
Course #	Course Name	Cr.	Course #	Course Name	Cr.
EDUC 841	Research Seminar II: Proposal Writing and Defense *Apply for IRB & candidacy	3	EDUC 837	Organizational Dynamics, and Risk Management Strategies	3
EDUC 842	Research Seminar III: Data Collection	3	EDUC 836	Administrative Field Experience (120 hrs.)	3
Total Credits		6	Total Credits		6
Year 3: Summer			Year 3: Summer		
Course #	Course Name	Cr.	Course #	Course Name	Cr.
EDUC 843	Research Seminar IV: Capstone Writing	3	EDUC 844	Research Seminar V: Research Capstone Defense Dissertation/Project Study/Case Study Analysis)	3
Total Credits		3	Total Credits		3
			Total Credits for the Program = 55		

** The Jamaica Cohort will also follow the above-mentioned Curricular Sequence; however, instead of following the weekend class format, their classes will meet on 5 Thursdays (6 p.m. to 9 p.m.) and on 5 Sundays (10 a.m. to 4 p.m.).

**PROGRAM: DOCTOR OF EDUCATION (ED.D.) IN
EDUCATIONAL LEADERSHIP IN HIGHER EDUCATION
(NENU Cohort)**

Spring 2020 (at NENU)			Summer 2020 (at NENU)		
Course	Course Title	Cr.	Course	Course Title	Cr.
EDUC 802	Leadership in Higher Education: Theory and Practice	3	EDUC 803	Human Resource Management	3
EDUC 805	Research Design and Quantitative Research Methods	3	EDUC 832	Contemporary Issues in Higher Edu.	3
EDUC 834	Strategic Financial Management	3	EDUC 833	Applied Assessment and Data Analytics	3
Total Credits =		9	Total Credits =		9
Fall 2020 (at DSU)			Spring 2021 (at DSU)		
EDUC 831	Foundations of Doctoral Studies	1	EDUC 888	Qualitative & Mixed Research Methods in Education	3
EDUC 816	Ethics and Law in Higher Education	3			
EDUC 808	Organizational Strategic Planning & Program Analysis	3	EDUC 835	Use of Technology in Action Research and Data-Driven Decision Making	3
EDUC 814	Public Policy and Higher Education	3	EDUC 837	Organizational Dynamics	3
Total Credits =		10	Total Credits =		9
Summer 2021 (at DSU)			Fall 2021 (at DSU)		
EDUC 836	Administrative Field Experience (120 hrs.)	3	EDUC 842	Research Seminar III: Data Collection	3
EDUC 840	Research Seminar I: Prospectus Completion & Proposal Preparation	3	EDUC 843	Research Seminar IV: Capstone Writing	3
EDUC 841	Research Seminar II: Proposal Writing and Defense	3	EDUC 844	Research Seminar V: Capstone Defense	3
Total Credits =		9	Total Credits =		9

Total Credits = 55

**The classes for this cohort will meet 5 days a week (Monday through Friday) from 7:40 p.m. to 9:40 p.m. for each course.

MASTER OF EDUCATION (M.Ed.) IN EDUCATIONAL LEADERSHIP

Preparing Leaders for Equity & Transformation with specific focus of closing the gaps in equity, opportunity and access for the marginalized children and their families around the world.

This program aims to prepare transformational school leaders through new understandings of 21st century leadership models and frameworks that support diverse, inclusive, equitable, safe, and caring learning environments to promote positive school culture. The program encourages academic and personal excellence through rigorous learning experiences in the areas of strategic leadership, ethical and reflective leadership, community leadership, and instructional leadership. Emerging leaders will be culturally competent to translate authentic research on school leadership into quality practice to serve in high need schools. This program adheres to the CAEP and NELP standards.

Delaware State University's M.Ed. Program has received National Accreditation by the Council for the Accreditation of Educator Preparation (CAEP) for seven years. This accreditation is quality assurance that the program meets standards set by organizations representing the academic community, professionals, and other stakeholders.

PROGRAM OBJECTIVES

In collaboration with the State of Delaware, the purpose of Delaware State University's Master of Education (M. Ed.) in Educational Leadership Program is to prepare educators for prominent leadership and service positions in schools and other educational institutions. Through a rigorous educational foundation and directed field experience, students emerge as viable candidates for leadership positions. Since 2002, the master's program has been consistently adjusted to meet the current needs of K-12 education institutions. At Delaware State University, students will find a unique balance between rigorous research, serious academic studies, collegiality, and personal development. Students will be prepared to make data-driven decisions to serve authentically and lead with integrity. Students will hone their personal leadership style, create a new career path, and learn to meet the challenges in any situation. Our program will provide students with the confidence, credibility, and knowledge to pursue a career as a principal or assistant principal and in administrative posts related to education, empowering students to bring their school/institution to new levels of efficiency and productivity. Our program does not provide a licensure or a certification and will not certify a student as a schoolteacher, principal, assistant principal, or Certified Central Office Personnel. Most states require a Master of Education to gain licensure to become a principal or assistant principal. More information about the requirements for principal/assistant principal certification in the State of Delaware can be found at: <http://regulations.delaware.gov/AdminCode/title14/1500/1591.shtml>.

This program offers courses in an accelerated format (eight-week sessions) two days a week (Mondays and Thursdays) from 5:30 to 8 p.m. It offers the following two instruction delivery options:

- **face-to-face/hybrid**
- **online synchronous**

PROGRAM GOALS

The primary goal of Delaware State University's Master of Education (M. Ed.) in the Educational Leadership Program is to prepare leaders who are equipped with a repertoire of knowledge, skills, and dispositions to meet the challenges of school leadership. The additional goals are to prepare leaders who can:

- Articulate a new vision for public schools at the building levels, demonstrate technological awareness and competence, and create a positive school culture that promotes student learning and development to ensure each student's success in all environments including urban, suburban, rural, undeveloped, and underserved.
- Display competency in digital literacy, critical thinking, and problem-solving skills to help the students thrive in today's world.

- Engage diverse stakeholders and community in data collection, strategic planning, evaluation, and apply robust research to critical problems of practice and implementation processes that benefit the academic environment of the school.
- Demonstrate a deep commitment to diversity issues by recognizing and respecting a variety of ideas, values, and cultures to impact student learning.

STUDENT LEARNING OUTCOMES

Delaware State University commits itself to supporting students' professional goals that will exemplify ethical and authentic leadership qualities in public schools and other related educational institutions. Leadership abilities will be developed and refined through the integration of educational philosophies, theories, leadership constructs, and critical thought in the arenas of educational literacy, communication, systematic and empirical research inquiries, socio-cultural perspective, professional development, and transformational leadership. This program includes a six-credit internship, through which students will have an opportunity to apply experience and develop their leadership competencies in a real-life education setting.

Delaware State University graduates will be able to:

1. Develop, design, and implement a school mission and vision that reflects a core set of values and priorities that include data use, technology, diversity, and digital citizenship.
2. Develop a framework for examining the matters of significance in education in order to clarify personal viewpoints and develop a successful model of a school to support the future success and well-being of each student.
3. Promote professional collaborations and demonstrate ethical and professional competence in their chosen disciplines to promote student learning through the innovative curriculum and responsive use of technology.
4. Understand the special and complex educational needs of students in individualized and diverse ways and advocate for inclusive, equitable and culturally responsive instructional behavior support practices.
5. Develop and implement management, communication, assessment, technology, and operation systems in a school; use data ethically and develop a multi-year school resourcing plan.
6. Design a comprehensive plan for providing school community members with a healthy and positive school environment.
7. Collaboratively engage with diverse communities and develop relationships with other constituent groups around shared goals to benefit school programs, student learning, and promote equitable educational resources and opportunities.
8. Demonstrate the knowledge and application of information sources, data collection and data analysis strategies, and related technologies to achieve professional success.
9. Demonstrate authentic leadership qualities by being involved in the real administrative roles and collaborate with stakeholders on the instructional, organizational, strategic, and contextual decision-making process to ensure the success and well-being of each student and adult in their school.

ADMISSION DEADLINES AND DEGREE REQUIREMENTS for M.ED. PROGRAM

Application Deadlines:

Rolling Admissions

Priority given to applications received by June 30 for fall admission and October 30 for spring admission.

Enrollment is contingent upon receipt of all required documents no later than two weeks prior to the enrollment period for U.S. applicants.

International Application Deadlines:

Fall enrollment – May 1: Spring enrollment: Oct. 1

Applicants who wish to seek admission in the M. Ed. program must meet the following requirements:

- An earned baccalaureate degree in education or an allied field with a minimum undergraduate cumulative GPA of 3.00.
- Completed online application for admission.
- The nonrefundable application fee of \$50.00 made payable to Delaware State University.
- Official transcript(s) of all academic work completed.
- Testing must be within 5 years of the application. Scores must be submitted prior to being admitted into the program.-
- A current professional resume.
- Three (3) letters of recommendation (two academic/ professional recommendations and one character recommendation) via the online application process.
- A Statement of Purpose/Intent that needs to be content specific, focused on educational leadership. The candidate must specifically explain why he or she wants to be admitted to the M. Ed. in the Educational Leadership program. Specifications: 1-2 pages, APA format, grammatical error free.
- A valid Delaware Initial, Continuing, or Advanced License; or a Limited Standard, Standard or Professional Status Certificate issued by the Department prior to August 31, 2003, OR a such or similar licensure from another state.

The applicants not holding the licensure may also be admitted into the program but on a clear understanding that the masters' degree will not fulfill the requirements of any licensure and they will still have to follow the individualized plan to meet the licensure requirements.

The Director, Education Programs, along with the Education Graduate Admission Ad Hoc Committee will review each application and make the recommendation for acceptance into the program to the Dean of the School of Graduate, Adult and Extended Studies, who will extend an offer of admission to the applicant.

Additional Requirements for International Applicants:

Please review application procedures for international students. In addition to the requirements noted above, international applicants must submit WES or ECE evaluation of all academic work completed as well and results from the TOEFL or IELTS examination if the earned baccalaureate degree is from a non-English speaking country.

All international students must also meet the visa requirements of the Office of International Student Services (OISS) before a Certificate of Eligibility for Non-immigrant (F-1) Student Visa (I-20 A-B form) can be issued.

DEGREE REQUIREMENTS

This Program of Study requires the completion of **36 graduate credit hours**. Included as an integral component of the program is a 6-credit hour Applied Educational Internship.

CAPSTONE REQUIREMENTS:

Students are required to:

- Take and pass the Comprehensive Exam after completing 24 credit hours. This Capstone requirement is designed to provide students an opportunity to demonstrate their ability to conceptualize and critically analyze the content knowledge.
- Complete 240 hours of internship at the approved placement site and submit and present their internship portfolio comprising artifacts collected as a part of their internship activities and experience before a panel of the faculty. This internship experience represents a synthesis of key content and high-impact field-based experiences extended over time that result in the intern's demonstration of professional knowledge, skills, and dispositions articulated in the NELP Building Level Standards, and, most importantly, the intern's success in improving student achievement within a school.

TRANSFER OF CREDITS:

Applicants who have earned a grade of "B" or higher in graduate courses taken at an accredited institution and related to their proposed Program of Study can request consideration for transfer of credit. These courses will be evaluated on an individual basis by the respective Graduate Program. Applicants admitted to master's degree graduate programs may transfer a maximum of 9 graduate credits from another accredited institution toward the master's degree provided these credits have not been used to meet the requirements of a degree previously earned.

Applicants must provide supporting documentation, as may be required by the Director, Education Graduate Programs, at the time of admission or in any case no later than the first semester of study. The Director, Education Graduate Programs, will review all the submitted documentation and note the allowable course waivers in the program's recommendation to the Dean of the School of Graduate, Adult and Extended Studies, who will approve the hours allowed to be transferred.

The Department of Education's distinguished faculty members include nationally and internationally known authors, researchers, and academicians. The faculty members have achieved notable distinction in their respective fields. The faculty combines academic expertise with direct experiences in the field of education. Their knowledge, skills and experience enable them to offer practical guidance and mentorship, helping students adapt to the professional world and make wise career choices.

COURSE DESCRIPTIONS FOR M. Ed. PROGRAM

EDUC 605: CONTEMPORARY CURRICULUM DESIGNS AND IMPLEMENTATION PRACTICES

The course evaluates the historical, philosophical, sociological, epistemological, and pedagogical bases of curriculum to cultivate and advocate for equitable, inclusive, and culturally responsive curriculum design and implementation. The emphasis will be on high-quality and equitable academic and non-academic curricular design and implementation that covers impact of curriculum on development, and implementation of the school's instruction, technology, data systems, and assessment practices. Students explore and critically analyze curriculum designs and curriculum implementation practices and advocate for required changes. Credits, three hours

EDUC 614: HUMAN GROWTH AND DEVELOPMENT IMPLICATIONS: DESIGNING LEARNING EXPERIENCE TO MEET THE NEEDS OF DIVERSE STUDENTS

This course helps students to understand human development as a lifelong dynamic process in the physical, cognitive, and emotional dimensions in societal and cultural contexts. Students will analyze developmental continuities, changes, and mechanisms to account for the development in multiple domains across the human lifespan and draw educational implications of them to meet the needs of diverse students and adults in schools. The candidates will be oriented to culturally relevant and developmentally appropriate teaching and learning to meet the needs of each student based on cognitive levels and learning styles. The course also introduces students to the human developmental approach in educational leadership, policy, and student development through the nurturing, inclusive and equitable school culture. Candidates will conduct survey research, with attention to the teaching and development of diverse students. The candidates will acquire theoretical and practical knowledge about the relationships between school-wide learning systems, effective grouping and instructional approaches, behavioral development, and student learning achievements among students with diverse needs, including special needs populations and gifted and talented learners. Experiential learning is an essential component of this course. Credits, three hours

EDUC-625: INTERPRETING AND APPLYING EDUCATIONAL RESEARCH

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. Use of scholarly descriptive and inferential statistics to address research questions will be examined. Additionally, scholarly databases will be examined. Critique of research tailored to cultural responsiveness, professional development, learning and instruction will help to evaluate how data impacts students, current policy and practices, assessment, operations and management for the development of equitable and inclusive school mission and visions, stimulating long-lasting improvement. Participants will develop an action research proposal. Credits, three hours

EDUC 680: LEADERSHIP WITH VISION FOR CHANGING SCHOOL CULTURE IN A DIVERSE SOCIETY

This course investigates management roles and leadership styles of today's school leaders. Advanced students will acquire an understanding of political and economic theory as it relates to developing and maintaining positive relationships with all communities (internal and external). Moral and ethical issues in education and leadership and social, cultural, and developmental perspectives are discussed. Moreover, aspiring administrators will confront and debate the evolving role of the administrator with respect to new directions for supervision in the changing face of American education. A field-based practicum experience is required. Advanced students will immerse themselves in the real issues, problems, and workplace of a mentoring administrator. Finally, this course focuses on high standards of learning, success for all students, and valuing the unique diversities that interact with a pluralistic society. Credits, three hours

EDUC 681-60: ENGAGING COMMUNITIES: HUMAN RELATIONS IN DIVERSE POPULATIONS

This course examines how administrators must research, understand, collaborate, and communicate or respond to a diverse and changing society to foster a true sense of community in and outside the schools. The course primarily addresses three dimensions: 1) collaboratively engaging diverse staff, families, and communities in support of student learning; 2) Identifying and using diverse internal and external community resources to create schools as learning organizations (communities of practices); and 3) nurturing the development of personalized learning environments for students by using varied communication means. Since diverse populations is critical to the educational success of students, experiential learning is an essential component of this course. Credits, three hours

EDUC 682: ASSESSMENT OF INSTRUCTION: DATA-DRIVEN PRACTICES OF ASSESSMENT AND EVALUATION IN SCHOOLS

The course emphasizes on the role of assistant principals and principals as the instructional leaders of the school and the official in charge of promoting equitable, inclusive, and culturally responsive instruction and behavior support practices in schools. The course explores, explains, and critiques the instructional assessment and evaluation processes utilizing data-driven practices. The advanced students conduct evaluation research on topics such as 1.) Use of technology in instructional assessment; 2.) Culturally responsive and equitable assessment practices 3.) Reflective assessment practices, Instructional improvement, and student well-being. Additionally, the course focuses on collaboratively evaluating the school's curriculum, instruction, technology, data systems, and assessment practices. Experiential learning is an integral part of this course. Credits, three hours

EDUC 683: LEADING INNOVATION IN EDUCATIONAL TECHNOLOGY

The course addresses the current technology policies from a practitioner's point of view. The Internet and World Wide Web are used with the intent to make informed decisions. Advanced 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. Candidates are assigned to an on-site field experience, in which the student demonstrates the ability to report research, security, data collection, etc. Candidates complete a project focusing on the applications of technology policies related to the unique areas within educational administration, leadership, supervision, and teaching field. Credits, three hours

As leaders are increasingly implementing technologies into their districts and schools, they need to understand the implications and risks of doing so. Cyber Security for Educational Leaders will allow the candidate to gain knowledge in developing, integrating, and understanding technology policies that govern schools and districts. Based on research and best practices, the field experience will provide the knowledge to understand threats associated with technology use and policies and arms aspiring and practicing leaders with the necessary tools to protect their schools and to avoid litigation. Experiential learning is an integral part of this course. Credits, three hours

EDUC 684: LEADING INCLUSIVE SCHOOLS: LEGAL ISSUES, ETHICAL CONDUCT, AND SOCIAL JUSTICE IN TODAY'S SCHOOLS

This course examines the ethical and legal standards and practices that today's school leaders follow to design and cultivate a supportive and inclusive school culture. The major topics to be discussed are: (1) knowledge, skills, and commitments necessary to understand and demonstrate the capacity to advocate for equitable, inclusive, and legal decisions; (2) principles and practices of ethical leadership; (3) evaluate, communicate about, and implement laws, rights, policies, and regulations; (4) understand, analyze, and critique the legal and ethical issues that impact equitable access to educational resources, technologies, and opportunities that support the student learning; and (5) culturally responsive instruction and behavior support practices among teachers and staff. Credits, three hours

EDUC 685-60: SUPPORTING A SCHOOL VISION: CREATING SAFE AND NURTURING LEARNING ENVIRONMENT THROUGH EFFECTIVE RESOURCE & FISCAL MANAGEMENT

This course provides advanced students with an understanding of the school vision as related to issues and challenges facing administrators with regards to the financing of education in an era of intense change. To meet the needs and priorities, the school leaders are required to adopt strategic approaches to plan budgeting, accounting, auditing, and human resource management for the school improvement. Schools' sustainability and growth is invested in innovative fiscal practices that are sound and suitable for the business world. This course 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 nurturing learning environment for each student's success. Some other issues facing school administrators, teachers, school board members, legislators and other interested parties will also be discussed that include, but are not limited to: Every Student Succeeds Act, 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. Credits, three hours

EDUC-686: SUPERVISION OF INSTRUCTION AND LEADERSHIP IN ELEMENTARY & SECONDARY SCHOOLS

This course focuses on the core set of values, priorities, knowledge, dispositions, and performance skills required of school principals that include, but are not limited to, the following: (1) collaborative development, articulation, implementation, and stewardship of a vision of learning in a pluralistic and diverse society; (2) encouraging and achieving high standards of learning through application of new leadership, cultural sensitivity, and continuous learning; (3) effective data and technology use for continuous school improvement; (4) involvement of the school community; (5) continuous staff professional growth; (6) effective instruction and instructional leadership (learning theories, motivational theories, assessment strategies and recognizing student growth and development); (7) technology in promoting student learning and staff professional growth; (8) valuing student diversities, promoting equity, and building sense of community; (9) creating a safe and supportive learning environment; (10) implementing and evaluating curriculum and instruction; (11) management of school operations; and (12) selecting, supervising, and evaluating staff.

The students will have an opportunity to conduct a direct interview with an active school administrator in order to conceptualize and develop administrative skills and appreciate real-life experiences. Students will be expected to create an interview template with questions that will address, but are not limited to: (1) development, articulation, implementation and stewardship of a vision of site-based management; (2) chief administrator of disciplinary policies; (3) effective communications within the school, district, county, and state; (4) the opportunity to demonstrate professional dispositions (respect, fairness, dignity, responsibility, accountability, caring, nurturing, conflict resolver, negotiator, chief operating officer (CEO), communicator, collaborator, ethical decision-maker, and reactor to legal obligations); (5) developing and implementing strategic plans, systems theories, school improvements; (6) understand the change

process for systems, organizations and staff; (7) management of facilities, operations and resources for a safe, efficient and effective learning environment; (8) understand the Delaware Performance Assessment System (DPASII); (9) understand state and district accountability programs (No Child Left Behind); and (10) involving stake-holders in management processes. Credits, three hours

EDUC-690: APPLIED EDUCATIONAL LEADERSHIP INTERNSHIP

This course provides a supervised administrative internship experience of 240 hours in addition to 60 hours of field experience spread across the program's curricula. The candidates will complete authentic 16 evidence-based activities in diverse school settings (NELP 8.2). The purpose is to provide interns with coherent, authentic, and sustained opportunities to interact with stakeholders, synthesize and apply the content knowledge, develop, and refine the leadership skills identified in NELP 1 to 7 professional standards (NELP 8.1). An educational leader/administrator of the school will be assigned as a site supervisor to mentor and evaluate the candidate's performance in collaboration with the program faculty as the university supervisor (NELP 8.3). Candidates will learn hands-on skills to evaluate school's existing mission and vision processes and statements; engage in reflective practices, model professional norms, and develop an effective communication plan for advocating equitable practices and ethical decisions; evaluate school culture, policies and procedures to cultivate equitable and culturally responsive instruction and behavior support practices for inclusive school culture; use research evidence to suggest strategies for improving schools' curriculum and assessment practices; collaborate with community members to identify diverse community resources; and develop a data informed equitable resourcing plan aligned with the goals and priorities of the school. The candidates will enhance their problem solving and analytical skills to deal with the everyday challenges while learning to make equitable management decisions to promote professional culture and a positive school environment for each student success and well-being. Credits, six hours

College of Humanities, Education and Social Sciences
Department of Education



**PROGRAM: MASTER OF EDUCATION (M.ED.) IN
EDUCATIONAL LEADERSHIP 2024-2025**

Year 1: Fall			Year 1: Spring		
Course	Course Name	Cr.	Course	Course Name	Cr.
*EDUC 605 (Core Course)	Contemporary Curriculum Designs and Implementation Practices	3	EDUC 680	Leadership with a Vision for Changing School Culture in a Diverse Society	3
*EDUC 614 (Core Course)	Human Growth and Development Implications: Designing Learning System for meeting the needs of diverse students	3	*EDUC 681 (Core Course)	Engaging Communities: Human Relations in Diverse Populations	3
Total Credits		6	Total Credits		6
Year 1: Summer-I			Year 1: Summer-II		
Course	Course Name	Cr.	Course	Course Name	Cr.
EDUC 686	Supervision of Instruction and Leadership in Elementary & Secondary Schools	3	EDUC 684	Leading Inclusive Schools: Legal Issues, Ethical Conduct, and Social Justice in Today's Schools	3
Total Credits		3	Total Credits		3
Year 2: Fall			Year 2: Spring		
Course	Course Name	Cr.	Course	Course Name	Cr.
*EDUC 625 (Core Course)	Interpreting and applying Educational Research	3	EDUC 690 (Capstone)	Applied Educational Leadership Internship (240 hrs.) (Portfolio Presentation)	6
EDUC 682	Assessment of Instruction: Data-Driven practices of assessment and evaluation in schools (with Action Research Project)	3		(Apply for Comprehensive Exam)	
Total Credits		6	Total Credits		6
Year 2: Summer-I			Year 2: Summer-II		
Course	Course Name	Cr.	Course	Course Name	Cr.
EDUC 683	Leading Innovation in Educational Technology ** Comprehensive Exam	3	EDUC 685	Supporting A School Vision for Creating Safe and Nurturing Learning Environment Through Effective Resource & Fiscal Management	3
Total Credits		3	Total Credits		3
			Total Credits for the Program = 36		

MASTER OF ARTS IN EQUITABLE CURRICULUM AND INSTRUCTIONAL LEADERSHIP

The Master of Arts in Equitable Curriculum and Instructional Leadership program focuses on building educators' skills and capacity to advance social, racial, and educational justice. The ECIL program is designed for teachers who seek to redesign their school and the education system for equity; enhance their knowledge of curriculum and instruction; refine their pedagogical skills in culturally responsive and anti-racist practices; influence equitable classroom practices; redefine curriculum using contemporary design principals; and engage in action research to implement and measure systemic change efforts in education.

PROGRAM OBJECTIVES

The goal of the Master of Arts in Equitable Curriculum and Instructional Leadership program at Delaware State University in the Department of Education is to develop candidates in three distinct strands: Equity Literacy, Pedagogical Practices for Cultural Responsiveness, and Authentic Engagement Through a Social Justice Lens. Graduates of the program will be empowered to lead in inclusive schools and generate solutions to persistent inequities in real school contexts.

Through a cohort model, educators will engage and facilitate conversations about race and equity and develop their capacity to establish learning environments that reach diverse students through culturally responsive and anti-racist curricula. Through scenario-based instruction, candidates will interrogate the most current theories around equity, culturally relevant pedagogy, and systems change while applying their skills in designing curriculum, addressing students' social, emotional, and behavioral wellness, and cultivating change at the school and system levels.

The 4 +1 ECIL program is for those students currently matriculating at Delaware State University in a education connected major. These students begin the ECIL program coursework as early as their junior year of studies in their undergraduate program. These students may elect to pursue the traditional ECIL program upon successful completion of their undergraduate degree program.

PROGRAM GOALS

1. Engage and facilitate conversations about race and equity and courageously confront inequity and injustice.
2. Establish learning environments to reach diverse students through culturally responsive and anti-racist curricula that reflect an asset mindset toward students and families.
3. Provide practical strategies and tools to advocate for and lead more socially just actions and empower through thinking, faith, and hope.
4. Lead in inclusive schools and generate concrete solutions to persistent inequities in real school contexts.
5. Build intentional relationships with community partners and families.

STUDENT LEARNING OUTCOMES

- Program SLO1: Apply a deep knowledge of equity, social justice, and diversity to promote inclusive, equitable, and culturally responsive instructional and behavioral support practices in education.
- Program SLO2: Notice subtle biases, show curiosity, and skillfully confront issues related to inequities, social justice, and multiculturalism to conduct critical self-appraisal of these practices.
- Program SLO3: Evaluate diverse perspectives to navigate the ambiguity and complexity that comes with multiple perspectives to ensure a culturally sustaining curriculum and high instructional expectations.

- Program SLO4: Harness the power of diversity, equity, and social justice, as a source for creativity, innovation, and productive collaboration.
- Program SLO5: Develop the professionalism and dispositions appropriate to equity, social justice, and diversity by working inclusively with a diverse learning community.
- Program SLO6: Create an environment where each diverse perspective is considered for the cooperative purpose of making progress toward common goals.
- Program SLO7: Evaluate the inequities and disparities in real educational contexts.
- Program SLO8: Design the implementation of data-driven efforts that encourage social equity and inclusion.
- Program SLO9: Exhibit intercultural communication skills that are scholarly, culturally sensitive, equitable, and self-reflective.
- Program SLO10: Connect theory to practice in the areas of equity, diversity, and social justice while establishing partnerships with stakeholders.

ADMISSION DEADLINES AND DEGREE REQUIREMENTS

Application Deadlines:

Summer – April 15

All applicants are required to submit evidence of the following for consideration of unconditional admission:

Educators who wish to seek admission in the ECIL program are required to submit the following for consideration of unconditional admission:

1. An earned baccalaureate degree in education or an allied field with a minimum undergraduate cumulative GPA of 3.00.
2. A valid Delaware Initial, Continuing, or Advanced License; or a Limited Standard, Standard or Professional Status Certificate issued by the Department prior to August 31, 2003, OR a such or similar licensure from another state.
3. The applicants not holding the licensure may also be admitted into the program but on a clear understanding that the masters' degree will not fulfill the requirements of any licensure and they will still have to follow the individualized plan to meet the licensure requirements.
4. Resume and statement of philosophy of teaching and learning.
5. Two letters of recommendation, one of which must be an evaluation of the applicant's instructional ability and attitude toward the teaching/learning process. Applicants who lack teaching experience should ask for a recommendation from a college instructor in their major discipline or an employer familiar with their teaching potential.

DEGREE REQUIREMENTS

To earn a Master of Arts in Teaching degree, students must meet the following requirements:

- Complete 36 graduate credit hours of coursework.
- Complete 3 credits of field experience.
- Maintain a GPA of 3.00.
- Complete the Capstone with passing scores.

FACULTY

The Department of Education's distinguished faculty members include nationally and internationally known authors, researchers, and academics. The faculty members have achieved notable distinctions in their respective fields. The faculty combines academic expertise with direct experiences in the field of education. Their knowledge, skills, and experience enable them to offer practical guidance and mentorship, helping students adapt to the professional world and make wise career choices.

COURSE DESCRIPTIONS

EDUC 510: THE HISTORY OF GLOBAL SOCIAL JUSTICE MOVEMENTS AND EDUCATION

This course explores the origins and development of movements for social justice in education worldwide. The impact of social justice movements on education equity is explored by examining a series of historical and contemporary social justice movements ranging from pre-civil rights and post-colonial struggles to current global struggles for equity in education. 3 Credit Hours

EDUC 511: EQUITY LITERACY PRINCIPLES

This course introduces Equity Literacy as a framework with which to view education. Students learn the definition of equity literacy, examine examples of which programs have failed/worked, as well as dissect the role biases play in an inclusive environment. The course will build participants' ability to recognize the subtlest biases and oppressive ideologies. The course will emphasize the fact that equity is not merely about giving every student what they need to succeed in an individual sense, but a process through which we ensure that policies, practices, institutional cultures, and ideologies are actively equitable, purposefully attending to the interests of the students and families to whose interests we have attended inequitably. 3 Credit Hours

EDUC 512: REDESIGNING SCHOOLS AND SYSTEMS FOR EQUITY

In this course, students will combine the learning from the prior two courses and begin to apply the principles in a school setting. They will explore the connection between school policies and school practices. By looking at different case studies that highlight the different ways schools (and systems) can be redesigned for equitable outcomes, students will articulate how change management (Adaptive leadership by Ron Heifetz/John Kotter's Model for Change), through an equity lens can produce the conditions for an equitable system. 3 Credit Hours

EDUC 675: RESTORATIVE PRACTICES FOR SOCIAL, EMOTIONAL, 7 BEHAVIORAL WELLNESS

This course is designed to help students plan and implement intentional, systematic, evidence-based, responsive interactions, interventions, and instruction to support all children's learning and development. Research-supported best practices and strategies will be explored. Emphasis will be placed on structuring learning environments for students with social/emotional needs, serving students who have experienced trauma, completing a functional behavioral assessment, and creating a behavior plan. 3 Credit Hours

EDUC 676: REDEFINING CURRICULUM: CONTEMPORARY DESIGN PRINCIPLES

This course continues to build from the M.A Strand 1 courses—in exploring both individual, and collective identities and how these affect teaching and learning. Students will investigate, through the lens of historical racialized policies and practices, values that affect the creation and implementation of curriculum design. The course provides an examination of the basic concepts, principles, purposes, and tools used in the construction of curricula and students will explore the philosophies and narratives that are affecting the future of curricula design through a variety of cultural lenses. Through critical research that critiques 21st-century pedagogical trends and a project-based/research approach, students will design curricula based on equity-based teaching/learning practices within the "culturally relevant" sphere. This course prepares educators across grades and disciplines with the tools to become sustainable, social justice-minded educators— well-prepared to act as change agents. 4 Credit Hours

EDUC 677: CULTURALLY RESPONSIVE INSTRUCTION: DESIGN AND DELIVERY

In this course, students will investigate socio-political, economic, racial, and philosophical underpinnings that contribute to the development and continuation of (in)equitable education opportunities. Students will investigate Critical Race Theory, guiding students' research in anti-racist curriculum and pedagogical teaching philosophies—honoring multi-ethnic identities and global citizenship status. Analysis of teacher identity literature is necessary for this work and students will explore how their own identity may affect their pedagogy and curriculum development. Students will examine K-12 student identity literature by exploring various "cultural" pedagogies (multi-cultural, culturally relevant, culturally responsive, culturally sustaining, and culturally self-representative). Each of these will be

examined amidst (and in various degrees) critical pedagogy, anti-racist, liberatory, and equity-based education goals. Students will develop critical pedagogy teaching philosophies that place the lived experiences of their future students at the center when creating curricula and developing pedagogical skills. 4 Credit Hours

EDUC 678: EQUITABLE AND BALANCED ASSESSMENTS: PRACTICES AND PRINCIPLES

This course explores best practices in student assessment through the lens of equity, social justice, and culturally responsive assessment practices. The course provides an examination of the basic concepts, principles, purposes, and tools used in the construction and valid use of educational assessment instruments for the evaluation of classroom learning outcomes. Several aspects of assessment are presented including creating educational objectives; constructing tests; evaluating the psychometric properties of a test's reliability and validity; and interpreting of test scores norms, scales, and grades. Additional topics such as assessment score interpretation and standards-based grading will be covered. Students will examine the similarities and differences among various assessments (e.g. achievement, aptitude, performance, assessments) and between large-scale high-stakes assessment (summative) and standardized testing, and immediate (low-stakes) assessment (formative). The course explores the relationship between equity and assessment. 4 Credit Hours

EDUC 561: ACTION RESEARCH FOR EQUITY LEADERS

The course provides the foundation of practitioner inquiry. Students will understand the process of intentionally studying their own practice to implement an action research plan. The action research plan will follow the steps of practitioner inquiry: finding your passion, developing a plan, implementing the plan, and presenting the inquiry. Students will use these tools to create an action research plan for the final course of the program, Capstone: Research Synthesis/Symposium. 1 Credit Hours

EDUC 562: INFLUENCING EQUITABLE CLASSROOM PRACTICES

Improvement is the heartbeat of equitable instruction. When teachers can improve their ability to teach children of all backgrounds and skill sets, the promise of free and appropriate education for all can be realized. For teachers to improve, school leaders (and peers) must have the ability to positively influence their practices. This course builds upon the foundations laid in prior courses and teaches participants the art and skill of instructional coaching. Students who take and complete this course will engage in critical conversations about the ethics and skills needed to enhance the practice of teachers and how to evaluate coaching through an equity lens. This course helps to expand the capacity of its attendees to establish learning environments that reach diverse students and support culturally responsive classroom practices. 3 Credit Hours

EDUC 563: CULTIVATING CHANGE AT THE SCHOOL AND SYSTEMS LEVELS

This course develops the knowledge and skills of master teachers and teacher leaders to navigate the administrative, pedagogical, and community-level changes that take place in schools. This course provides skills to facilitate the implementation of change at classroom, school, and system levels. Students will reflect on and examine their own change leadership practices and change practices of schools. The course emphasizes a few key questions. What are the changing needs of the school? What does the change process look like? What will be the consequences of introducing changes in schools? Major topics include Identifying change needs for educational equity at the classroom and system level, communicating change, motivating the stakeholders for change, initiating the change, navigating resistance and change depression, and sustaining change in school, community, and classroom. Students will evaluate the change process and suggest continuous improvement strategies putting educational equity at the center. 3 Credit Hours

EDUC 564: LEADING TRANSFORMATIVE SCHOOL AND COMMUNITY PARTNERSHIPS

This course provides an overview of the knowledge, skills, and dispositions required of a school/teacher leader to create and sustain community partnerships that support the mission and vision of a school/district community while promoting equitable opportunities and outcomes for all students. Various theoretical perspectives and practical applications for mobilizing community organizations and their respective resources to benefit students and families will be explored. 3 Credit Hours

EDUC 566: RESEARCH SYNTHESIS/SYMPOSIUM/CAPSTONE

The course provides the culminating research experience for program completion. Students will design an action research plan directly aligned to one of the three strands: Equity Literacy, Pedagogical Practices for Cultural Responsiveness, or Authentic Engagement through a Social Justice Lens. The plan will be implemented in an educational setting. 2 Credit Hours

College of Humanities, Education and Social Sciences
Department of Education



**PROGRAM: MASTER OF ARTS (MA) IN EQUITABLE
CURRICULUM & INSTRUCTIONAL LEADERSHIP**

STRAND -1: EQUITY LITERACY (12 Credits)					
YEAR 1: SUMMER 2024			YEAR 1: FALL 2024		
Course	Course Name	Cr.	Course	Course Name	Cr.
EDUC 510	The History of Global Social Justice Movements and Education	3	EDUC 512	Redesigning Schools and Systems for Equity	3
EDUC 511	Equity Literacy Principles	3	EDUC 675	Restorative practices for social, emotional, and behavioral wellness	3
Total Credits		6	Total Credits		6
STRAND 2: PEDAGOGICAL PRACTICES FOR CULTURAL RESPONSIVENESS (12 Credits)					
YEAR 1: SPRING 2025			YEAR 2: SUMMER 2025		
Course	Course Name	Cr.	Course	Course Name	Cr.
EDUC 676	*Redefining curriculum: Contemporary design Principles * 1 credit Field Experience is embedded in this course	4	EDUC 678	*Equitable and Balanced Assessments: Practices and Principles * 1 credit Field Experience is embedded in this course	4
EDUC 677	*Culturally Responsive Instruction: Design and Delivery * 1 credit Field Experience is embedded in this course	4	EDUC 561	STRAND 3 Courses Action Research for Equity in Education	1
			EDUC 562	Influencing Equitable Classroom Practices	3
Total Credits		8	Total Credits		8
STRAND 3: AUTHENTIC ENGAGEMENT THROUGH A SOCIAL JUSTICE LENS (12 Credits)					
YEAR 2: FALL 2026			YEAR 2: SPRING 2026		
Course	Course Name	Cr	Course	Course Name	Cr.
EDUC 563	Cultivating Change at the School and System Levels	3	EDUC 566	* Capstone: Research Synthesis/Symposium	2
EDUC 564	Leading Transformative School and Community Partnerships	3			
Total Credits		6	Total Credits		2
Total Credit Hours for the Program = 36					

MASTER OF ARTS IN TEACHING (MAT)

PROGRAM OBJECTIVES

The goal of the Master of Arts in Teaching program at Delaware State University in the Education Department is to prepare highly qualified classroom teachers from diverse backgrounds who are change agents in Delaware schools. Currently the program offers three pathways:

- **The two-year traditional M.A.T. program:** This pathway is for candidates who have earned a bachelor's degree in a content taught at the middle and/or high school level or in a related arts area of study (PE, Art Education, or Music Education). Students in this program complete a full-year, unpaid teacher residency.
- **The Alternative Route to Teacher Certification (ARTC) M.A.T. program:** This pathway is for students who have earned a bachelor's degree in a high needs content area taught at the middle and/or high school level. ARTC candidates are able to secure employment immediately as a classroom teacher while also pursuing their M.A.T. degree at Delaware State University.
- **The 4 +1 M.A.T. program:** This pathway is for those students currently matriculating at Delaware State University in a major that includes content taught at the middle and/or high school level. These students begin the M.A.T. coursework as early as their junior year of studies (with fewer than 60 credits remaining in their academic program) in their undergraduate program. These students may elect to pursue the traditional M.A.T. program and complete student teaching or the ARTC M.A.T. program upon successful completion of their undergraduate degree program.

All pathways consist of a core coursework in curriculum, instruction, assessment, learner development, and classroom management. This program leads to certification in the state of Delaware in a secondary or related arts teaching field.

PROGRAM GOALS

The goals of the Delaware State University M.A.T. program are as follows:

- To prepare highly qualified classroom teachers for employment in Delaware schools and beyond.
- To prepare highly qualified classroom teachers in teacher shortage areas identified by Delaware DOE.
- To recruit and retain diverse teacher candidates by building a community of support with LEA partners, college faculty and staff, and DOE resources.
- To promote classroom teaching as a viable career option for students within the University in non-teaching areas of study.

STUDENT LEARNING OUTCOMES

Program SLO1: Teacher candidate will demonstrate an understanding of how to design and implement developmentally appropriate, equitable, challenging, and differentiated learning experiences.

Program SLO2: Teacher candidate will establish a safe, inclusive, and respectful learning environment for all students to learn.

Program SLO3: Teacher candidate will demonstrate pedagogical competence, as well as the understanding of intellectual history of the content they teach and how it connects to student identities.

Program SLO4: Teacher candidate will develop learning experiences that make the content relevant by engaging learners in criticality, critical thinking, creativity, and problem solving.

Program SLO5: Teacher candidate will apply formal and informal assessment strategies to evaluate and assess individual learning needs and to ensure the continuous intellectual and social development of the learner.

Program SLO6: Teacher candidate will organize curriculum, instruction, and assessment while leveraging technology to help diverse learners meet rigorous learning goals.

Program SLO7: Teacher candidate will understand awareness of their own personal values and biases to select appropriate instructional strategies.

Program SLO8: Teacher candidate will demonstrate a commitment to lifelong learning by engaging in professional learning and collaborative practices and uses evidence to continually evaluate their practice to improve teaching and learning.

Program SLO9: Teacher candidate will advocate using authentic engagement practices for learners, families, and the community in an ethical and equitable way to ensure learner growth.

ADMISSION DEADLINES AND DEGREE REQUIREMENTS

Application Deadlines:

Applications are taken on a rolling basis.

All applicants are required to submit evidence of the following for consideration of unconditional admission:

- Official transcripts showing completion of a bachelor's degree in an appropriate content area from an accredited university or college and a grade point average of 3.00.
- Official **Passing Praxis II (DE)** scores in the content area you intend to teach
- (2) Professional letters of recommendation
- Essay: Write an educational autobiography. Describe the most impactful (positive or negative) experiences you have had as a student.
- Resume

DEGREE REQUIREMENTS

To earn a Master of Arts in Teaching degree, students must meet the following requirements:

- Complete 30 graduate credit hours of coursework.
- Complete a 12-credit hour full-year teacher residency under the direction of a cooperating teacher or as the teacher of record for the ARTC pathway.
- Pass the PPAT with Delaware passing scores.
- Maintain a GPA of 3.00.

Required Coursework:

In addition to completing all coursework and assessments for each course in the program, the following is a graduation requirement as well:

Praxis Performance Assessment for Teachers (PPAT)

Required courses include:

EDUC 506 Curriculum Building
EDUC 522 Reflective Practitioner
EDUC 533 Assessment
EDUC 534 Learning Theory
EDUC 537 Motivation to Learn
EDUC 536 Instruction
EDUC 580 Student Teaching I
EDUC 527 Student Teaching II

FACULTY

The Education Department's distinguished faculty members include nationally and internationally known authors, researchers and academicians. The faculty members have achieved notable distinction in their respective fields. The faculty combines academic expertise with direct experiences in the field of education. Their knowledge, skills and experience enable them to offer practical guidance and mentorship, helping students adapt to the professional world and make wise career choices.

COURSE DESCRIPTIONS

EDUC-506. CURRICULUM BUILDING This three-credit course focuses on skills and knowledge for curriculum building, including analyzing standards, writing content summaries, and developing learner outcomes. Candidates in all content areas will examine language arts standards for skills that cut across the curriculum. 3 credits.

EDUC-522. REFLECTIVE PRACTITIONER This three-credit course represents the final phase of teacher training and serves to assess both professional readiness and the effectiveness of the Delaware State University MAT program. Students develop and conduct an action research project in their student teaching classrooms. (Pre-requisite: EDUC 506, EDUC 533, EDUC 534, EDUC 536, EDUC 537 or approval from the M.A.T. Program Coordinator). 3 credits.

EDUC-526. STUDENT TEACHING II. This six-credit course provides 14 weeks of full-time teaching experience in a middle or secondary classroom under the supervision of a certified classroom teaching and/or college supervisor. (Pre-requisite: EDUC 580). 6 credits.

EDUC-533. ASSESSMENT. This three-credit course provides an extensive examination of assessment models and techniques and their theoretical origins. Students will examine in-depth recent assessment practices such as the use of rubrics for performance assessment and portfolio assessment. 3 credits.

EDUC-534. LEARNING THEORY. This three-credit course examines classical and contemporary theories of learning that influence the teaching and learning environment, including those of Skinner, Piaget, Vygotsky, and Dewey. In addition, students will study human development with an emphasis on cognitive and social development in adolescents and pre-adolescents as a foundation for effective teaching and classroom management. 3 credits.

EDUC-536. INSTRUCTION. This three-credit course examines skills related to effective instructional delivery. Students will examine various teaching models. Various kinds of authentic assessment of student learning will be introduced, tried out, and evaluated in the classroom. Classroom management strategies and effective teaching strategies will be discussed and evaluated. 3 credits.

EDUC-537. MOTIVATION TO LEARN. This three-credit course prepares aspiring secondary education teachers with the essential knowledge, skills, attitudes, and strategies required for establishing and sustaining an inclusive and equitable classroom environment. The primary emphasis is on crafting learning spaces that foster student engagement, academic excellence, and socio-emotional well-being. Acknowledging the diverse backgrounds of students, the significance of cultivating classrooms that prioritize equity, encourage positive behavior, and guarantee the success of every student will be the focus. Participants will explore a variety of strategies, pedagogical methods, and classroom management techniques to cultivate an environment conducive to meaningful and impactful learning experiences. Credit 3 hours.

EDUC-580. STUDENT TEACHING I. Students participate in fourteen weeks of full-time experience as a practicing classroom teacher under the supervision of a certified classroom teacher and college supervisor. Students will meet regularly with the instructor and classmates where topics such as preparing for instruction, creating a classroom environment conducive to learning, motivating students to learn, implementing effective instructional strategies, as well as professionalism in the secondary classroom will be explored. Students will complete the Praxis Performance Assessment for Teachers during Student Teaching I. (Pre-requisite: EDUC 506, EDUC 533, EDUC 534, EDUC 536, EDUC 537 or approval from the M.A.T. Program Coordinator). 6 credits.

PROGRAM: MASTER OF ARTS IN TEACHING (MAT) (2019-2020)

Year 1: Fall			Year 1: Spring		
Course	Course Name	Cr.	Course	Course Name	Cr.
*EDUC 534	Learning Theory	3	*EDUC 533	Assessment	3
*EDUC 506	Curriculum Building	3	*EDUC 536	Instruction	3
Total Credits		6	Total Credits		6
Year 2: Fall			Year 2: Spring		
Course	Course Name	Cr.	Course	Course Name	Cr.
EDUC 580	Student Teaching I	6	EDUC 526	Student Teaching II	6
EDUC 682	Motivation to Learn	3	EDUC 522	Reflective Practitioner	3
Total Credits		9	Total Credits		9
			Total Credits for the Program = 30		

*Courses must be taken prior to beginning the full-year teaching residency for students not pursuing the ARTC pathway.

DUAL-TITLE MA TESOL/Bilingual Education and M.Ed. in Educational Leadership

PROGRAM OBJECTIVES

This dual-degree program implements the objectives of both programs being combined i.e. MA TESOL/Bilingual Education program and M. Ed. in Educational Leadership:

In collaboration with the State of Delaware, the purpose of Delaware State University's Master of Education (M. Ed.) in Educational Leadership program is to prepare educators for prominent leadership and service positions in schools and other educational institutions. Through a rigorous educational foundation and directed field experience, students emerge as viable candidates for leadership positions. Since 2002, the master's program has been consistently adjusted to meet the current needs of K-12 education institutions. At Delaware State University, students find a unique balance between rigorous research, serious academic studies, collegiality, and personal development. Students are prepared to make data-driven decisions to serve authentically and lead with integrity. Students hone their personal leadership style, create a new career path and learn to meet the challenges in any situation. This program provides the confidence, credibility and knowledge to pursue a career as a principal or assistant principal and in administrative posts related to education, empowering students to bring their school/institution to new levels of efficiency and productivity. This program does not provide a licensure or a certification and will not certify a student as a schoolteacher, principal, assistant principal, or Certified Central Office Personnel. Most states require a Master of Education to gain licensure to become a principal or assistant principal. More information about the requirements for principal/assistant principal certification in the State of Delaware can be found at: <http://regulations.delaware.gov/AdminCode/title14/1500/1591.shtml>.

The MA TESOL/Bilingual Education program is designed to provide students with fundamental skills and entry-level credentials for teaching English to speakers of other languages. The program prepares students to teach non-native speakers of English in community programs, language schools, and other similar programs both in the United States and internationally.

For more details, please visit the program's website: <https://chess.desu.edu/departments/education/dual-title-ma-tesolbilingual-education-med-educational-leadership>

DEPARTMENT OF LANGUAGES AND LITERATURES

MASTER OF ARTS IN TEACHING ENGLISH TO SPEAKERS OF OTHER LANGUAGES (TESOL) / BILINGUAL EDUCATION

PROGRAM OBJECTIVES

This program is designed to provide students with an advanced level of expertise and thorough training on the theory and practice of teaching English to non-native speakers of English (MA TESOL) and/or bilingual learners (Bilingual Education). The program provides students with the pedagogical and intellectual preparations necessary to teach in K-12 English Language Learner (ELL) or dual language immersion classrooms as well as in colleges, universities, and language institutes both in the United States and internationally. Further, students with a pre- or co-requisite K-12 teaching certification earn secondary certification in TEL (Teacher of English Learners) or Bilingual Teacher.

PROGRAM GOALS

The goal of the MA TESOL / Bilingual Education program is to produce educators who are prepared to teach English language and/or bilingual learners both in the U.S. and internationally in K-12 education, colleges and universities, and language institutes.

STUDENT LEARNING OUTCOMES

Student Learning Outcomes have been aligned with the 2018 TESOL International Association standards, and applied as outlined below:

1. Knowledge of Language - Candidates model and demonstrate understanding of English sentences, clauses, and phrases (SVO structures); processes; and functions as procedural knowledge.
2. Knowledge of the Learner (ELLs in the Sociocultural Context) - Candidates identify and describe personal identity, role, cultural understanding, personal biases as conscious, declarative knowledge.
3. Knowledge of Instruction - Candidates use and adapt relevant materials and resources, including digital resources. Candidates plan and implement strategies (conditional knowledge).
4. Knowledge of Assessment - Candidates apply knowledge to analyze, interpret, and evaluate data. Candidates demonstrate knowledge and understanding.
5. Knowledge of Professionalism - Candidates demonstrate leadership initiative and effective collaboration. Candidates practice self-assessment and reflection for self-improvement.

ADMISSION AND DEGREE REQUIREMENTS

Application Deadlines:

- Applications may be submitted at any time; successfully accepted candidates typically submit applications by **April 1** for fall admission or **October 1** for spring admission.

All Applicants are required to:

- Meet all graduate school requirements.
- Either:
 - show evidence that they have earned a bachelor's degree at an accredited college or university, possess the ability to do graduate work of high quality, and meet language proficiency requirements for English (and target language for those pursuing bilingual education); or
 - be a current undergraduate student with senior status and a minimum 3.0 overall GPA. Undergraduate applicants may apply during their junior year, and must also submit a letter of recommendation from their advisor, in addition to the two required letters of recommendation. Undergraduate admits to the program must complete their bachelor's degree prior to beginning the final semester of study in the MA program.
- Submit one official transcript from all previous undergraduate and graduate work, two letters of recommendation, and a 1,000-word Statement of Purpose indicating educational career goals and experience.
- Those pursuing K-12 certification (only) must have completed, or be concurrently enrolled in, a primary teacher education program.
- International applicants without a college degree from a U.S. institution must also have a minimum TOEFL score of 90 (iBT), 576 (paper), or an IELTS of 6.5.
- Applicants pursuing K-12 certification (only) need a pre- or co-requisite teacher education program.

DEGREE REQUIREMENTS

The MA TESOL / Bilingual Education degree requires the completing of 33 credit hours, consisting of 27 credit hours of Core Courses and 6 credit hours of approved electives courses. The program follows a praxis model in which students are expected to apply the learned theory and methods in the classroom. Accordingly, 80 hours of EFE (early field experience) are required as part of the Core Course curriculum, including a practicum course that places students directly in a K-12 or post-secondary classroom.

Students pursuing the bilingual education track must evidence language proficiency in their target language. Proficiency is evidenced by 1) achieving a minimum level of Advance Mid (for tests using the Roman alphabet) or Advanced Low (for tests using a non-Roman alphabet) based on the ACTFL Proficiency Guidelines on the ACTFL OPI in the target language, and 2) achieving a passing score on the ACTFL WPT in the target language.

The final required 6 Core Course credits can be obtained by one of two pathways:

- 1) Research and Thesis -- The completion of a research-based thesis in which students write a publishable thesis based on independent research. In addition to successfully defending the thesis, students are required to submit their work to a reputable peer-reviewed journal or scholarly publisher for publication consideration.
- 2) Applied Research -- The completion of an applied research project in a classroom setting suited to student's focus area of study that engages in current, ongoing issues in ELL / Bilingual Education pedagogy, identifies key problem areas or areas for improvement, and then recommends and implements evidence-based best practices to address the identified issue. This process will place students directly in the professional atmosphere and setting they will be working in, allow them to develop applied competencies, and contribute to the specific learning environment in which they are working, as well as to the field in general. All details of the project are reported in a comprehensive portfolio.

K-12 certification requirement: Per Delaware Department of Education requirements, students must successfully complete the program coursework AND pass the Praxis-II exam (Test # 5362) to receive K-12 certification as a Teacher of English Learners.

COURSE DESCRIPTIONS

ENG-504. SECOND LANGUAGE ACQUISITION

This course is an analysis of current issues in second language acquisition based on readings and research findings. Discussion of theories includes the Acculturation Model, the Nativization Model, Accommodation Theory, Discourse Theory, the Monitor Model, the Variable Competence Model, the Universal Hypothesis, Neuro-functional Theory and other models. Prerequisites: 12 semester hours of a foreign language. 3 credits.

ENGL-508. GRADUATE RESEARCH WRITING

Graduate students will learn to express complex ideas using oral and written research modes, acquiring knowledge of linguistic accuracy and (structural and lexical) complexity to develop disciplinary writing proficiency. Ongoing teacher-student interaction takes place in the selection of research topic, proposal, and plan; formation of outline; review of rough drafts; and critique of the final draft before submission to a disciplinary professor or advisor for graduate school credit. Through this course, students will have the means to connect as professionals with disciplinary professors and advisors for independent study. 3 credits.

ENGL-510. STRUCTURE OF MODERN ENGLISH

Structure of Modern English is an advanced course in the grammar and structure of English. It is designed to give intensive study and practice in analyzing the structure of English sounds, words, phrases, and sentences; doing error analysis; recognizing and correcting errors; taking examinations; writing research papers and engaging in various pedagogically-oriented linguistic analysis projects. 3 credits.

ENGL-511. TEACHING LITERACY FOR ENGLISH LANGUAGE LEARNERS

This course provides instruction on effective practices for literacy instruction of elementary, middle school, secondary, and adult English language learners. Literacy practices and instructional strategies focus on general language development, reading fluency and comprehension, lexical development, and interactive learner engagement. 3 credits.

ENGL-512. SEMINAR ON THEORIES AND PRACTICE OF SECOND LANGUAGE LEARNING AND TESTING

This seminar will focus on and put into practice relevant aspects of applied linguistics, second language acquisition (SLA), pedagogy and testing. Topics include interactive and non-interactive hypermedia technologies, computer-assisted language learning (CALL) and second language (L2) literacy, language testing and technology, distance learning, online chat discussions, software selection, and more. Course formats include readings, discussion, demonstrations, and hands-on sessions with technologies. As part of a teaching portfolio, students will create their own computer-based materials for teaching. 3 credits.

ENGL-514. SECOND LANGUAGE LEARNERS – IDENTITY, COMMUNITY, AND LANGUAGE LEARNING

This course explores the many factors that influence individual learners. The complexities of identity and the interaction of language and thought will be considered in order to develop a more extensive understanding of individual learners and how their backgrounds, cultures, communities, language, and communicative experiences influence and shape them as language learners. 3 credits.

ENGL-516. CLASSROOM – PLANNING, SUPPORTING LEARNERS

This course focuses on developing skills associated with establishing a classroom environment that is conducive and encouraging to learning and development. Topics addressed include current research based practices for classroom management, discipline, motivation, individual and group interaction, and more. This course also specifically focuses on strategies and skills for managing ELL and bilingual education learning environments. 3 credits.

ENG-518. METHODS OF TEACHING ENGLISH AS A SECOND LANGUAGE

This course introduces students to basic concepts and methodologies for teaching second language learners. It is designed as a review of theories, programs, approaches, strategies, and techniques for effective second language teaching methods. Additionally, the course addresses theories of acquisition of a second language. 3 credits.

ENGL-520. FOUNDATIONS OF BILINGUAL EDUCATION

This course is designed to equip bilingual and second language teachers with the tools, knowledge and philosophy for working with language minority students in the context of bilingual/ESL programs. The course introduces candidates to the historical, political and legal foundations of bilingual education programs in the United States, in addition to exploring different models of bilingual programs and their psycholinguistic and sociolinguistic foundations upon which they rest. 3 credits.

ENGL-590. PRACTICUM

This course provides students with the opportunity to supplement coursework with practical work experience related to their educational program. Students work under the immediate supervision of experienced personnel in the classroom (at School District or the University) where they are assigned as well as with the direct guidance of their instructor. 3 credits.

ENGL-591. RESEARCH AND THESIS

This course is one of two options for the culminating project in the completion of the MA TESOL / Bilingual Education degree. This course requires students to write and defend a publishable thesis based on independent research. In addition to submitting and defending the thesis, students are required to submit their work to a reputable peer-reviewed journal or scholarly publisher for publication consideration. 6 credits.

ENGL-592. APPLIED RESEARCH

This course is one of two options for the culminating project in the completion of the MA TESOL / Bilingual Education degree. This course requires students to complete an applied research project in a classroom setting suited to their focus area of study. As part of this project, they will engage in current, ongoing issues in ELL / Bilingual Education pedagogy, identify key problem areas or areas for improvement, and then recommend and implement evidence-based best practices to address the identified issue. This process will place students directly in the professional atmosphere and setting they will be working in, allow them to develop applied competencies, and contribute to the specific learning environment in which they are working, as well as to the field in general. All details of the project are reported in a comprehensive portfolio. 6 credits.

EDUC-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 learning 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 factors which may assist in facilitating mainstreaming efforts. 3 credits.

EDUC-614. HUMAN GROWTH AND DEVELOPMENT

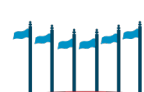
Educational implications of human development over the life span are examined. Students will survey research with special attention to the applications to teaching and developmentally appropriate school programs. 3 credits.

EDUC-625. 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.

EDUC-683. USING TECHNOLOGY TO ENHANCE STUDENT LEARNING AND ORGANIZATIONAL MANAGEMENT

This course addresses current technologies from a practitioner's point of view. The Internet, World Wide Web and production software are used 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.



PROGRAM: MA TESOL / BILINGUAL EDUCATION
FULL TIME ENROLLMENT – DOVER CAMPUS

Fall 1 Semester			
Course	Course Name	Credit	EFE
ENGL - 518	Methods of Teaching English as a Second Language	3	20
ENGL - 504	Second Language Acquisition	3	
Elective	Elective	3	
Total Credits		9	
Spring 1 Semester			
Course	Course Name	Credit	
ENGL - 510	Structure of Modern English	3	
ENGL - 512	Seminar on Theories and Practice of Second Language Learning and Testing	3	20
ENGL - 511	Teaching Literacy for English Language Learners	3	
Total Credits		9	
Fall 2 Semester			
Course	Course Name	Credit	
ENGL - 516	Classroom – Planning, Supporting Learners†	3	
Elective	Elective	3	
ENGL - 590	Practicum	3	40
Total Credits		9	
Spring 2 Semester			
Course	Course Name	Credit	
ENGL 591 OR ENGL 592	Research and Thesis OR Applied Research	6	
Total Credits		6	
Requirement Totals			
		33	80

Electives			
Course	Course Name	Credit	
ENGL 520	Foundations of Bilingual Education* (Fall)	3	
EDUC 557	Effective Teaching Strategies and Classroom Management† (Spring)	3	20
ENGL 514	Second Language Learners – Identity, Community, and Language Learning (Fall)	3	10
ENGL 508	Graduate Research Writing	1-3	
EDUC 614	Human Growth and Development (Fall)	3	
EDUC 625	Introduction to Statistics and Research Methods/ Action Research (Spring)	3	
EDUC 683	Using Technology to Enhance Student Learning and Organizational Management (Fall)	3	

† EDUC 557 may substitute ENGL 516.

*ENGL 520 – *Foundations of Bilingual Education* is a required elective selection for students pursuing bilingual education.

**Alternative tracks for course scheduling will be considered to meet student needs.

PROGRAM: MA TESOL / BILINGUAL EDUCATION
FULL TIME ENROLLMENT – SUSSEX CAMPUS

Fall 1 Semester			
Course	Course Name	Credit	EFE
ENGL - 518	Methods of Teaching English as a Second Language	3	20
ENGL - 512	Seminar on Theories and Practice of Second Language Learning and Testing	3	
Elective	Elective	3	
Total Credits		9	
Spring 1 Semester			
Course	Course Name	Credit	
ENGL - 510	Structure of Modern English	3	
ENGL - 504	Second Language Acquisition	3	20
ENGL - 511	Teaching Literacy for English Language Learners	3	
Total Credits		9	
Fall 2 Semester			
Course	Course Name	Credit	
ENGL - 516	Classroom – Planning, Supporting Learners†	3	
Elective	Elective	3	
ENGL - 590	Practicum	3	40
Total Credits		9	
Spring 2 Semester			
Course	Course Name	Credit	
ENGL 591 OR ENGL 592	Research and Thesis OR Applied Research	6	
Total Credits		6	
Requirement Totals			
		33	80
Electives			
Course	Course Name	Credit	
ENGL 520	Foundations of Bilingual Education* (Fall)	3	
EDUC 557	Effective Teaching Strategies and Classroom Management† (Spring)	3	20
ENGL 514	Second Language Learners – Identity, Community, and Language Learning (Fall)	3	10
ENGL 508	Graduate Research Writing	1-3	
EDUC 614	Human Growth and Development (Fall)	3	
EDUC 625	Introduction to Statistics and Research Methods/ Action Research (Spring)	3	
EDUC 683	Using Technology to Enhance Student Learning and Organizational Management (Fall)	3	

† EDUC 557 may substitute ENGL 516.

*ENGL 520 – *Foundations of Bilingual Education* is a required elective selection for students pursuing bilingual education.

**Alternative tracks for course scheduling will be considered to meet student needs.

PROGRAM: MA TESOL / BILINGUAL EDUCATION
FULL TIME ENROLLMENT – DOVER CAMPUS WITH SUMMER

Summer 1 Semester			
ENGL - 510	Structure of Modern English	3	
Elective	Elective	3	
Total Credits		6	
Fall 1 Semester			
Course	Course Name	Credit	EFE
ENGL - 518	Methods of Teaching English as a Second Language	3	20
ENGL - 504	Second Language Acquisition	3	
Total Credits		6	
Spring 1 Semester			
Course	Course Name	Credit	
ENGL - 512	Seminar on Theories and Practice of Second Language Learning and Testing	3	
ENGL - 511	Teaching Literacy for English Language Learners	3	
Total Credits		6	
Summer 2 Semester			
Elective	Elective	3	
Total Credits		3	
Fall 2 Semester			
Course	Course Name	Credit	
ENGL 516	Classroom – Planning, Supporting Learners†	3	
ENGL - 590	Practicum	3	40
Total Credits		9	
Spring 2 Semester			
Course	Course Name	Credit	
ENGL 591 OR ENGL 592	Research and Thesis OR Applied Research	6	
Total Credits		6	
Requirement Totals			
		33	60
Electives			
Course	Course Name	Credit	
ENGL 520	Foundations of Bilingual Education* (Fall or Summer)	3	
EDUC 557	Effective Teaching Strategies and Classroom Management† (Spring)	3	20
ENGL 514	Second Language Learners – Identity, Community & Language Learning (Spring)	3	10
ENGL 508	Graduate Research Writing	1-3	
EDUC 614	Human Growth and Development (Fall)	3	
EDUC 625	Introduction to Statistics & Research Methods/ Action Research (Spring)	3	
EDUC 683	Using Technology to Enhance Student Learning & Organizational Management (Fall)	3	

† EDUC 557 may substitute ENGL 516.

*ENGL 520 – *Foundations of Bilingual Education* is a required elective selection for students pursuing bilingual education.

**Alternative tracks for course scheduling will be considered to meet student needs.

TELL PROGRAM SECONDARY CERTIFICATION IN Teacher OF English Language Learners / Bilingual Teacher

PROGRAM OBJECTIVES

This program is designed to provide students expertise and training on the theory and practice of teaching English to non-native speakers of English and/or bilingual learners. The program provides students with the pedagogical and intellectual preparations necessary to teach in K-12 English Language Learner (ELL) or dual language immersion classrooms and obtain Delaware Department of Education secondary certification in either “1562 Teacher of English Learners” or “1561 Bilingual Teacher.”

PROGRAM GOALS

The goal of the TELL program is to produce K-12 educators who are certified in either DDOE “1562 Teacher of English Learners” or “1561 Bilingual Teacher.” Obtaining this secondary certification is evidence of an individual’s ability to provide high-quality, research-based instruction to English language learners and/or bilingual learners in K-12 education.

STUDENT LEARNING OUTCOMES

Student Learning Outcomes have been aligned with the 2018 TESOL International Association standards, and applied as outlined below:

1. Knowledge of Language - Candidates model and demonstrate understanding of English sentences, clauses, and phrases (SVO structures); processes; and functions as procedural knowledge.
2. Knowledge of the Learner (ELLs in the Sociocultural Context) - Candidates identify and describe personal identity, role, cultural understanding, personal biases as conscious, declarative knowledge.
3. Knowledge of Instruction - Candidates use and adapt relevant materials and resources, including digital resources. Candidates plan and implement strategies (conditional knowledge).
4. Knowledge of Assessment - Candidates apply knowledge to analyze, interpret, and evaluate data. Candidates demonstrate knowledge and understanding.
5. Knowledge of Professionalism - Candidates demonstrate leadership initiative and effective collaboration. Candidates practice self-assessment and reflection for self-improvement.

ADMISSION AND PROGRAM REQUIREMENTS

Application Deadlines:

- Applications received on a rolling basis.

All Applicants are required to:

- Meet all graduate school requirements.
- Either:
 - Show evidence that they have earned a bachelor's degree at an accredited college or university, possess the ability to do graduate work of high quality, and meet language proficiency requirements for English (and target language for those pursuing bilingual education); or,
- be a current undergraduate student with senior status and a minimum 3.0 overall GPA. Undergraduate applicants may apply during their junior year, and must also submit a letter of recommendation from their Advisor, in addition to the two required letters of recommendation. Undergraduate admits to the program must complete their bachelor's degree prior to beginning the final semester of study in the program.
- Submit one official transcript from all previous undergraduate and graduate work, two letters of recommendation, and a 1,000-word Statement of Purpose indicating educational career goals and experience.
- Applicants pursuing K-12 certification (only) must have completed, or be concurrently enrolled in, a primary teacher education program.
International applicants without a college degree from a U.S. institution must also have a minimum TOEFL score of 90 (iBT), 576 (paper), or an IELTS of 6.5.

K-12 certification requirement: Per Delaware Department of Education requirements, students must successfully complete the program coursework AND pass the Praxis-II exam (Test # 5362) to receive K-12 certification as a Teacher of English Learners.

COURSE DESCRIPTIONS

ENG-504. SECOND LANGUAGE ACQUISITION

This course is an analysis of current issues in second language acquisition based on readings and research findings. Discussion of theories includes the Acculturation Model, the Nativization Model, Accommodation Theory, Discourse Theory, the Monitor Model, the Variable Competence Model, the Universal Hypothesis, Neuro-functional Theory and other models. Prerequisites: 12 semester hours of a foreign language. 3 credits.

ENGL-510. STRUCTURE OF MODERN ENGLISH

Structure of Modern English is an advanced course in the grammar and structure of English. It is designed to give intensive study and practice in analyzing the structure of English sounds, words, phrases, and sentences; doing error analysis; recognizing and correcting errors; taking examinations; writing research papers and engaging in various pedagogically- oriented linguistic analysis projects. 3 credits.

ENGL-511. TEACHING LITERACY FOR ENGLISH LANGUAGE LEARNERS

This course provides instruction on effective practices for literacy instruction of elementary, middle school, secondary, and adult English language learners. Literacy practices and instructional strategies focus on general language development, reading fluency and comprehension, lexical development, and interactive learner engagement. 3 credits.

ENGL-512. SEMINAR ON THEORIES AND PRACTICE OF SECOND LANGUAGE LEARNING AND TESTING

This seminar will focus on and put into practice relevant aspects of applied linguistics, second language acquisition (SLA), pedagogy and testing. Topics include interactive and non-interactive hypermedia technologies, computer-assisted language learning (CALL) and second language (L2) literacy, language testing and technology, distance learning, online chat discussions, software selection, and more. Course formats include readings, discussion, demonstrations, and hands- on sessions with technologies. As part of a teaching portfolio, students will create their own computer-based materials for teaching. 3 credits.

ENG-518. METHODS OF TEACHING ENGLISH AS A SECOND LANGUAGE

This course introduces students to basic concepts and methodologies for teaching second language learners. It is designed as a review of theories, programs, approaches, strategies, and techniques for effective second language teaching methods. Additionally, the course addresses theories of acquisition of a second language. 3 credits.

**PROGRAM: TEACHER OF ENGLISH LEARNERS /
 BILINGUAL EDUCATION SECONDARY CERTIFICATION**

Fall Semester			
Course	Course Name	Credit	EFE
ENGL - 518	Methods of Teaching English as a Second Language	3	20
ENGL - 504	Second Language Acquisition	3	
ENGL - 512	Seminar on Theories and Practice of Second Language Learning and Testing	3	
Total Credits		9	
Spring Semester			
Course	Course Name	Credit	
ENGL - 510	Structure of Modern English	3	
ENGL - 511	Teaching Literacy for English Language Learners	3	
Total Credits		6	
Requirement Totals			
		15	20

ONLINE GRADUATE CERTIFICATE IN TESOL

PROGRAM OBJECTIVES

This program is designed to provide students with fundamental skills and entry-level credentials for teaching English to speakers of other languages. The program prepares students to teach non-native speakers of English in community programs, language schools, and other similar programs both in the United States and internationally.

PROGRAM GOALS

The goal of the online graduate certificate program is to ensure students are prepared to successfully guide the development and learning of English language learners. This is evidenced by a functional understanding of language, language teaching, learner identity, and classroom management strategies.

STUDENT LEARNING OUTCOMES

Student Learning Outcomes have been aligned with the 2018 TESOL International Association standards, and applied as outlined below:

1. Knowledge of Language - Candidates model and demonstrate understanding of English sentences, clauses, and phrases (SVO structures); processes; and functions as procedural knowledge.
2. Knowledge of the Learner (ELLs in the Sociocultural Context) - Candidates identify and describe personal identity, role, cultural understanding, personal biases as conscious, declarative knowledge.
3. Knowledge of Instruction - Candidates use and adapt relevant materials and resources, including digital resources. Candidates plan and implement strategies (conditional knowledge).
4. Knowledge of Assessment - Candidates apply knowledge to analyze, interpret, and evaluate data. Candidates demonstrate knowledge and understanding.
5. Knowledge of Professionalism - Candidates demonstrate leadership initiative and effective collaboration. Candidates practice self-assessment and reflection for self-improvement.

ADMISSION AND CERTIFICATE REQUIREMENTS

Application Deadlines:

- Applications received on a rolling basis.

All Applicants are required to:

- Meet all graduate school requirements.
- Either:
 - Show evidence that they have earned a bachelor's degree at an accredited college or university, possess the ability to do graduate work of high quality, and meet language proficiency requirements for English (and target language for those pursuing bilingual education); or,
- be a current undergraduate student with senior status and a minimum 3.0 overall GPA. Undergraduate applicants may apply during their junior year, and must also submit a letter of recommendation from their

Advisor, in addition to the two required letters of recommendation. Undergraduate admits to the program must complete their bachelor's degree prior to beginning the final semester of study in the program.

- Submit one official transcript from all previous undergraduate and graduate work, two letters of recommendation, and a 1,000-word Statement of Purpose indicating educational career goals and experience.
- International applicants without a college degree from a U.S. institution must also have a minimum TOEFL score of 90 (iBT), 576 (paper), or an IELTS of 6.5.

CERTIFICATE REQUIREMENTS

The online graduate certificate in TESOL program requires the completion of 12 credit hours. The program follows a praxis model in which students are expected to apply the learned theory and methods in the classroom as part of the course curricula. Students are also required to complete a final portfolio project that evidences their development through the program.

All courses completed in this program can also be applied toward the MA TESOL/ Bilingual Education degree.

COURSE DESCRIPTIONS

ENGL-510. STRUCTURE OF MODERN ENGLISH

Structure of Modern English is an advanced course in the grammar and structure of English. It is designed to give intensive study and practice in analyzing the structure of English sounds, words, phrases, and sentences; doing error analysis; recognizing and correcting errors; taking examinations; writing research papers and engaging in various pedagogically-oriented linguistic analysis projects. 3 credits.

ENGL-514. SECOND LANGUAGE LEARNERS – IDENTITY, COMMUNITY, AND LANGUAGE LEARNING

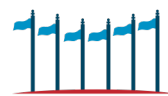
This course explores the many factors that influence individual learners. The complexities of identity and the interaction of language and thought will be considered in order to develop a more extensive understanding of individual learners and how their backgrounds, cultures, communities, language, and communicative experiences influence and shape them as language learners. 3 credits.

ENGL-516. CLASSROOM – PLANNING, SUPPORTING LEARNERS

This course focuses on developing skills associated with establishing a classroom environment that is conducive and encouraging to learning and development. Topics addressed include current research based practices for classroom management, discipline, motivation, individual and group interaction, and more. This course also specifically focuses on strategies and skills for managing ELL and bilingual education learning environments. 3 credits.

ENG-518. METHODS OF TEACHING ENGLISH AS A SECOND LANGUAGE

This course introduces students to basic concepts and methodologies for teaching second language learners. It is designed as a review of theories, programs, approaches, strategies, and techniques for effective second language teaching methods. Additionally, the course addresses theories of acquisition of a second language. 3 credits.



PROGRAM: ONLINE GRADUATE CERTIFICATE IN TESOL

Fall 1 Semester		
Course	Course Name	Credit
ENGL - 516	Classroom – Planning, Supporting Learners	3
ENGL - 518	Methods of Teaching English as a Second Language	3
Total Credits		6
Spring 1 Semester		
Course	Course Name	Credit
ENGL - 510	Structure of Modern English	3
ENGL - 514	Second Language Learners – Identity, Community and Language Learning	3
Total Credits		6
Total Program Credits		12

DUAL-TITLE MA TESOL/Bilingual Education and M.Ed. in Educational Leadership

PROGRAM OBJECTIVES

This dual-degree program implements the objectives of both programs being combined, i.e. MA TESOL/Bilingual Education program and M. Ed. in Educational Leadership:

In collaboration with the State of Delaware, the purpose of Delaware State University's Master of Education (M. Ed.) in Educational Leadership program is to prepare educators for prominent leadership and service positions in schools and other educational institutions. Through a rigorous educational foundation and directed field experience, students emerge as viable candidates for leadership positions. Since 2002, the master's program has been consistently adjusted to meet the current needs of K-12 education institutions. At Delaware State University, students find a unique balance between rigorous research, serious academic studies, collegiality, and personal development. Students are prepared to make data-driven decisions to serve authentically and lead with integrity. Students hone their personal leadership style, create a new career path and learn to meet the challenges in any situation. This program provides the confidence, credibility and knowledge to pursue a career as a principal or assistant principal and in administrative posts related to education, empowering students to bring their school/institution to new levels of efficiency and productivity. This program does not provide a licensure or a certification and will not certify a student as a schoolteacher, principal, assistant principal, or Certified Central Office Personnel. Most states require a Master of Education to gain licensure to become a principal or assistant principal. More information about the requirements for principal/assistant principal certification in the State of Delaware can be found at: <http://regulations.delaware.gov/AdminCode/title14/1500/1591.shtml>.

The MA TESOL/Bilingual Education program is designed to provide students with fundamental skills and entry-level credentials for teaching English to speakers of other languages. The program prepares students to teach non-native speakers of English in community programs, language schools, and other similar programs both in the United States and internationally.

STUDENT LEARNING OUTCOMES

TESOL/Bilingual Education SLOs:

Student Learning Outcomes have been aligned with the 2018 TESOL International Association standards, and applied as outlined below:

1. Knowledge of Language - Candidates model and demonstrate understanding of English sentences, clauses, and phrases (SVO structures); processes; and functions as procedural knowledge.
2. Knowledge of the Learner (ELLs in the Sociocultural Context) - Candidates identify and describe personal identity, role, cultural understanding, personal biases as conscious, declarative knowledge.
3. Knowledge of Instruction - Candidates use and adapt relevant materials and resources, including digital resources. Candidates plan and implement strategies (conditional knowledge).
4. Knowledge of Assessment - Candidates apply knowledge to analyze, interpret, and evaluate data. Candidates demonstrate knowledge and understanding.
5. Knowledge of Professionalism - Candidates demonstrate leadership initiative and effective collaboration. Candidates practice self-assessment and reflection for self-improvement.

M.Ed. in Educational Leadership SLOs:

- **SLO 1:** Candidates will be able to demonstrate the ability to develop, articulate, implement and promote a vision of learning for educational institutions at building level.
- **SLO 2:** Students will be able to develop high order analytical thinking and demonstrate skills to effectively integrate emerging technology applications for planning and managing information from a practitioner's point of view.
- **SLO 3:** Candidates will be able to learn and display the skills of management of the organization, operations, and resources for a safe, efficient, and effective learning environment and utilize technology for effective decision making.
- **SLO 4:** Candidates will be able to understand and act on issues relating to diversity, social justice, and equity, including attention to special population of students and the school community.
- **SLO 5:** Candidates will be able to learn how to think critically and solve problems through knowledge comprehension and analytical inquiry to demonstrate their intellectual creativity and research-based decision making.
- **SLO 6:** Candidates will be able to demonstrate professional knowledge and skills to incorporate, ethical, legal and professional behaviors to increase equitable educational opportunities and academic achievements for diverse population of students.
- **SLO 7:** Candidates will be able to exhibit instructional leadership skills in working with school personnel on issues of instruction, curriculum, culture, and professional development within the school.

ADMISSION AND PROGRAM REQUIREMENTS

Application Deadlines:

- Applications are received on a rolling basis.

All Applicants are required to:

- Meet all graduate school requirements.
- Either:
 - show evidence that they have earned a bachelor's degree at an accredited college or university in an aligned discipline with a minimum undergraduate cumulative grade point average of 3.0, possess the ability to do graduate work of high quality, and meet language proficiency requirements for English (and target language for those pursuing bilingual education); or,
 - be a current undergraduate student with senior status with a minimum undergraduate cumulative grade point average of 3.0. Undergraduate applicants may apply during their junior year, and must also submit a letter of recommendation from their advisor, in addition to the two required letters of recommendation. Undergraduate admits to the program may complete the TESOL/Bilingual Education course requirements during their senior year, but must complete their bachelor's degree prior to beginning the M.Ed. Educational Leadership coursework.
- Submit one official transcript from all previous undergraduate and graduate work, two letters of recommendation, and a 1,000-word Statement of Purpose indicating educational career goals and experience.

- Applicants pursuing K-12 certification (only) must have completed, or be concurrently enrolled in, a primary teacher education program.
- International applicants without a college degree from a U.S. institution must also have a minimum TOEFL score of 90 (iBT), 576 (paper), or an IELTS of 6.5.

COURSE DESCRIPTIONS

ENG-504. SECOND LANGUAGE ACQUISITION

This course is an analysis of current issues in second language acquisition based on readings and research findings. Discussion of theories includes the Acculturation Model, the Nativization Model, Accommodation Theory, Discourse Theory, the Monitor Model, the Variable Competence Model, the Universal Hypothesis, Neuro-functional Theory and other models. Prerequisites: 12 semester hours of a foreign language. 3 credits.

ENGL-510. STRUCTURE OF MODERN ENGLISH

Structure of Modern English is an advanced course in the grammar and structure of English. It is designed to give intensive study and practice in analyzing the structure of English sounds, words, phrases, and sentences; doing error analysis; recognizing and correcting errors; taking examinations; writing research papers and engaging in various pedagogically-oriented linguistic analysis projects. 3 credits.

ENGL-511. TEACHING LITERACY FOR ENGLISH LANGUAGE LEARNERS

This course provides instruction on effective practices for literacy instruction of elementary, middle school, secondary, and adult English language learners. Literacy practices and instructional strategies focus on general language development, reading fluency and comprehension, lexical development, and interactive learner engagement. 3 credits.

ENGL-512. SEMINAR ON THEORIES AND PRACTICE OF SECOND LANGUAGE LEARNING AND TESTING

This seminar will focus on and put into practice relevant aspects of applied linguistics, second language acquisition (SLA), pedagogy and testing. Topics include interactive and non-interactive hypermedia technologies, computer-assisted language learning (CALL) and second language (L2) literacy, language testing and technology, distance learning, online chat discussions, software selection, and more. Course formats include readings, discussion, demonstrations, and hands-on sessions with technologies. As part of a teaching portfolio, students will create their own computer-based materials for teaching. 3 credits.

ENG-518. METHODS OF TEACHING ENGLISH AS A SECOND LANGUAGE

This course introduces students to basic concepts and methodologies for teaching second language learners. It is designed as a review of theories, programs, approaches, strategies, and techniques for effective second language teaching methods. Additionally, the course addresses theories of acquisition of a second language. 3 credits.

+ All Courses Listed in the M.Ed. in Educational Leadership Degree



**PROGRAM: DUAL-TITLE MASTER OF EDUCATION IN
EDUCATIONAL LEADERSHIP (M.ED.) AND MASTER OF ARTS IN
TEACHING ENGLISH TO SPEAKERS OF OTHER LANGUAGES (M.A. TESOL)**

Standard Enrollment Track

Fall 1 Semester			
Course	Course Name	Credit	
ENGL - 504	Second Language Acquisition	3	
EDUC - 605	Curriculum Organization & Design	3	
Total Credits		6	
Spring 1 Semester			
Course	Course Name	Credit	
EDUC - 625	Introduction to Statistics and Research Methods/Action Research	3	
EDUC - 681	Human Relations in Diverse Populations	3	
Total Credits		6	
Year 1: Summer			
Course	Course Name	Credit	
EDUC – 686	Supervision and Leadership in Elementary & Secondary Schools	3	
EDUC – 684	Legal Issues, Ethical Conduct, and Social Justice in Today's Schools	3	
Total Credits		6	
Fall 2 Semester			
Course	Course Name	Credit	
EDUC – 614	Human Growth & Development	3	
ENGL - 518	Methods of Teaching English as a Second Language	3	
Total Credits		6	
Spring 2 Semester			
Course	Course Name	Credit	
ENGL - 512	Seminar on Theories and Practice of Second Language Learning and Testing	3	
ENGL - 511	Teaching Literacy for English Language Learners	3	
Total Credits		6	
Summer 2 Semester			
Course Name		Credit	
ENGL – 510	Structure of Modern English	3	
EDUC - 683	Using Technology to Enhance Student Learning and Organizational Management *Apply for Comprehensive Exam	3	
Total Credits		6	
Fall 3 Semester			
Course Name		Credit	

EDUC - 680	Leadership with a Vision for Changing School Culture in a Changing Society	3	
EDUC - 682	Assessment of Instruction: Supervision and Evaluation * Comprehensive Exam	3	
Total Credits		6	
Spring 3 Semester			
Course Name		Credit	
EDUC - 690	Applied Educational Leadership Internship (120 hrs.)	3	
EDUC - 690	Applied Educational Leadership Internship(120 hrs.)	3	
Total Credits		6	
Requirement Totals			
		48	

**PROGRAM: DUAL-TITLE MASTER OF EDUCATION IN
EDUCATIONAL LEADERSHIP (M.ED.) AND MASTER OF ARTS IN
TEACHING ENGLISH TO SPEAKERS OF OTHER LANGUAGES (M.A. TESOL)**

Early Enrollment (Undergraduate Senior Admission) Track

Fall 1 Semester			
Course	Course Name	Credit	
ENGL - 504	Second Language Acquisition	3	
ENGL - 518	Methods of Teaching English as a Second Language	3	
Total Credits		6	
Spring 1 Semester			
Course	Course Name	Credit	
ENGL - 512	Seminar on Theories and Practice of Second Language Learning and Testing	3	
ENGL - 511	Teaching Literacy for English Language Learners	3	
Total Credits		6	
Year 1: Summer			
Course	Course Name	Credit	
EDUC – 686	Supervision and Leadership in Elementary & Secondary Schools	3	
ENGL – 510	Structure of Modern English	3	
Total Credits		6	
Fall 2 Semester			
Course	Course Name	Credit	
EDUC – 614	Human Growth & Development	3	
EDUC - 605	Curriculum Organization & Design	3	
Total Credits		6	
Spring 2 Semester			
Course	Course Name	Credit	
EDUC - 625	Introduction to Statistics and Research Methods/Action Research	3	
EDUC - 681	Human Relations in Diverse Populations	3	
Total Credits		6	
Summer 2 Semester			
Course Name		Credit	
EDUC – 684	Legal Issues, Ethical Conduct, and Social Justice in Today's Schools	3	
EDUC - 683	Using Technology to Enhance Student Learning and Organizational Management *Apply for Comprehensive Exam	3	
Total Credits		6	
Fall 3 Semester			
Course Name		Credit	

EDUC - 680	Leadership with a Vision for Changing School Culture in a Changing Society	3	
EDUC - 682	Assessment of Instruction: Supervision and Evaluation * Comprehensive Exam	3	
Total Credits		6	
Spring 3 Semester			
Course Name		Credit	
EDUC - 690	Applied Educational Leadership Internship (120 hrs.)	3	
EDUC - 690	Applied Educational Leadership Internship(120 hrs.)	3	
Total Credits		6	
Requirement Totals			
		48	

SPANISH FOR SOCIAL WORK CERTIFICATE

PROGRAM OBJECTIVES

The Spanish for Social Work certificate program is designed to provide dual-language students with the knowledge, skills, and values needed to apply social work techniques with Spanish speaking populations and in Spanish-speaking settings. Students will take classes within both the Languages and Literature program and the Master of Social Work program to obtain a broad understanding of the application of social work practice skills with these populations and in these settings. The certificate program culminates in a two-semester field placement at an agency serving Spanish speaking populations which allows students to demonstrate competency related to language, culture, and core social work practice skills. The certificate program prepares students to become competent in communicating both in written and speaking communication when interacting with populations from diverse backgrounds. The program will be offered each year, starting in the fall semester. The program aims to make students more competitive in the workplace and aid in helping diverse communities receive culturally competent services. Students interested in enhancing their dual language skills and working to provide effective communication and translation skills should consider applying.

PROGRAM GOALS

- Increase the credentialing and certificate options for bilingual students of Social Work in the MSW program
- Increase the marketability of and competitive options for our graduate Social Work and language programs
- Meet the needs of the state and region by graduating students with needed skills to serve our communities

STUDENT LEARNING OUTCOMES

- Graduates communicate professionally, in speaking and writing, in Spanish using the best practices of Social Work with a deep knowledge of professional terminology.
- Graduates are able to interact successfully with the Spanish-speaking community.
- Graduates are able to translate and transcribe basic documents and interviews from Spanish to English and English to Spanish.
- Graduates have intercultural expertise and deep knowledge of the Spanish-speaking community in the region.
- Graduates have developed experience working with Spanish-speaking clients through field practicums.

ADMISSION DEADLINES AND DEGREE REQUIREMENTS

Application Deadlines:

Concurrent application or enrollment in the MSW program

All applicants are required to submit evidence of the following for consideration of unconditional admission:

- Admitted into or enrolled in the graduate Social Work Program
- Intermediate Spanish language proficiency according to ACTFL (American Council on the Teaching of Foreign Languages) Proficiency guidelines.
- Letter of Experience - Letter should outline applicant's experience and background with the Spanish language and their goals for completing the certificate.

DEGREE REQUIREMENTS

Students are required to complete a total of 15 credit hours (5 courses) as outlined in the program curriculum. Two of the courses, SCWK 635 and 636, are required for the MSW program. Students in the certificate program must complete these two practicum courses at an agency serving Spanish speaking populations which allows students to demonstrate competency related to language, culture, and core social work practice skills.

Required Coursework:

15 credit hours, 5 courses

Required courses include:

- INTL 600 – Intercultural Communication
- LING 601 – Writing and Translation
- SPAN 601 – Spanish for Social Work
- SCWK 635 – Field Practicum III
- SCWK 636 – Field Practicum IV

FACULTY

This program is housed in the Department of Languages and Literatures but operated as an interdisciplinary program with the Department of Social Work. INTL 600, LING 601, and SPAN 601 are taught by Languages and Literatures faculty and SCWK 635 and 636 are facilitated by faculty from the Social Work Department.

COURSE DESCRIPTIONS

INTL 600 – INTERCULTURAL COMMUNICATION

This course provides students with a functional understanding of the concepts and principles of intercultural communication and how to adapt language use appropriately for a variety of sociocultural contexts when communicating with individuals from different ethnic, racial, and cultural backgrounds. Further, this course focuses on the explicit development of language learning strategies to enhance students' progress in second and tertiary language development and acquiring culturally sensitive discourse practices. Through the lens of intercultural communication theory and research, students will explore how language shapes thought, how historical, social, and cultural dimensions frame relations between diverse groups, and how to overcome barriers that prevent fluid intercultural communication.

Credits, three hours.

LING 601 – WRITING AND TRANSLATION

This course introduces students with fundamental knowledge of translation and interpretation in bilingual and multilingual settings. Students will gain knowledge of major theories and key concepts of translation studies, and use translation theories to describe, analyze and critique translation phenomena with multilingual and multicultural language communities. This course also provides an array of learning and research tasks through which students will acquire analytic skills and strategies to investigate linguistically and culturally dynamic discourses that emerge in bilingual/multilingual translation practices. By the end of this course, students will develop skills for translating and interpreting various discourse types with expertise in intercultural pragmatics and multi-genre writing.

Credits, three hours.

SPAN 601 – SPANISH FOR SOCIAL WORK

This course is a graduate course that introduces students to the professional communication strategies in Spanish for Social Work. Student will gain linguistic and cultural competencies as well as practice skills for professional interactions within the Spanish-speaking community. By the end of the course, students will develop expertise communicating in Spanish in a variety of social work settings. This course meets one requirement of the Spanish for Social Work certificate.

Credits, three hours.

SCWK 635. FIELD PRACTICUM III

To be taken by second year students in the field. This course provides Advanced Generalist Practice students with opportunities to employ the knowledge, values, skills and conceptual frameworks that are related to 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 a Black Perspective in the helping process with all client systems. Credits, three hours.

SCWK 636. FIELD PRACTICUM IV

This course provides students with opportunities to employ the knowledge, values, skills and conceptual frameworks that are related to the advanced 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 a Black Perspective in the helping process with all client systems. Credits, three hours.

MASTER OF PUBLIC ADMINISTRATION (MPA)

PROGRAM OBJECTIVES

What makes Delaware State University's MPA unique is our focus on civic engagement and community empowerment. While our students develop the skills requisite for the Master of Public Administration, they will also develop their capacities for working alongside others to empower individuals and communities as agents for their own development. The MPA at Delaware State University allows students to advance their own careers while also advancing community interests. To this end, students will learn and practice the skills necessary to assess community contexts, engage with community members, identify and build leadership capacities among others, and serve as agents of community change.

We do this through classroom instruction, community-based projects, and collaboration engagement with nonprofit and governmental organizations. Students have the opportunity to learn from academic faculty, experienced practitioners, each other, and the communities with which they will engage.

PROGRAM GOALS

The Master of Public Administration program at Delaware State University contributes to the University's mission by engaging a diverse population of students and community stakeholders from Delaware and beyond. Students of the MPA program will graduate with the administrative, managerial and analytic skills and proficiencies commensurate with the academic and professional standards and principles of public administrators. They will be grounded in Delaware State University's core values and will advance society by empowering individuals and communities to achieve equitable, sustainable development through research, scholarship and service.

STUDENT LEARNING OUTCOMES

Graduates of the Master of Public Administration at Delaware State University will...

1. Identify the historical, theoretical, legal and civic roots of Public Administration as a function of democratic governance and as an academic and professional discipline;
2. Demonstrate the technical and research skills to successfully evaluate problems, gather and interpret data, and make informed decisions;
3. Apply principles of systematic, strategic planning and management;
4. Assess contexts, analyze policy and evaluate programs as Public Administration scholars and practitioners;
5. Communicate policy and administration principles effectively to a diverse range of audiences in a variety of media; and
6. Apply a working knowledge of the institutional, organizational and interpersonal networks of society to achieve goals.

ADMISSION DEADLINES AND DEGREE REQUIREMENTS

Application Deadlines:

Applications are accepted on a rolling basis. All applications must be complete two weeks before the start of the intended accelerated 8-week term of admission.

International Application Deadlines:

International applicants should follow the guidelines specified by the Office of International Students.

Applicants for the MPA Program must submit the following:

- An official transcript showing a bachelor's degree conferred with a minimum GPA of 2.5 on a 4.0 scale.
- A resume
- Two letters of recommendation
- A personal statement describing the student's experiences and career goals, and why the student believes an MPA from Delaware State University will help them achieve those goals.

DEGREE REQUIREMENTS

The MPA at Delaware State University is designed to deliver the vital skillsets of public and nonprofit managers, while also providing the contextual background and community engagement skills needed to be effective agents of community change.

Students must complete 12 credits of Foundation Courses before taking the Internship (if required) and Core Courses.

Foundation Courses:

MPA Foundation Courses – Should be taken before Core Courses

MPA503 (3 Credits): American Governance and Administration

MPA504 (3 Credits): Research Methods for Public Administration

MPA505 (3 Credits): Organizational and Community Leadership

MPA506 (3 Credits): Economics for Public Administration

MPA Core Courses – Taken only after successful completion of Foundation Courses

MPA601 (3 Credits): Administration in Context

MPA602 (3 Credits): Policy Analysis and Program Evaluation

MPA603 (3 Credits): Public Finance

MPA604 (3 Credits): Public Information Technology

MPA605 (3 Credits): Organizational Performance Management

MPA606 (3 Credits): Human Resources for Public Administration

MPA607 (3 Credits): MPA Graduate Project

MPA608 (3 Credits): Internship – If Required

Total: 33 Required, +3 for Internship if Required

Graduate Project:

In this final MPA course, MPA students demonstrate their mastery of program material. The Graduate Project is an applied policy analysis or program evaluation and plan to be completed over the duration of a full semester. It requires students to relate theory to practice in a real-world, experiential study. The policy focus of the project and the relevant level of government, nonprofit or community organization will be selected by the student and instructor together at the conclusion of the student's foundation courses. This will relate to the student's academic and career interests and wherever possible will engage with community stakeholder needs. The policy plan involves the review of a policy issue or program, its relevant history, an analysis plan, a full analysis complete with recommendations and a plan for implementation. The Graduate Project culminates with the submission of a written document as well as a presentation before a graduate committee.

Students who successfully complete all required coursework with an overall cumulative grade point average of 3.0 are able to move on to complete the Capstone project. The student must prepare (under the guidance of an MPA faculty member) and successfully present/defend their project. Outcomes report and rubric will be submitted to School of Graduate, Adult and Extended Studies prior to graduation.

INTERNSHIPS

All students are encouraged to pursue an internship; however, we recognize some applicants will join our program with a great deal of experience. Students without at least three years of managerial experience are required to complete an internship after completing their foundation courses. This determination is made at the time of application.

Our internship program is implemented by our Office of Career Services, who will help students seek, apply and complete their internship when they register for MPA608: Internship (3 Credits). We have relationships with many local public and nonprofit agencies and can develop opportunities for our online students in a location that is convenient for them.

FACULTY

As a practitioner-oriented program, the MPA Program draws faculty from working professionals with the appropriate degree qualifications to provide practical application knowledge of program material. Faculty members are accomplished professionals who share their knowledge and experience with students.

Additionally, the program benefits from accomplished interdisciplinary faculty from the College of Business, the College of Health and Behavioral Sciences, and the College of Humanities, Education and Social Sciences for foundational Core Courses.

COURSE DESCRIPTIONS

MPA 503. AMERICAN GOVERNANCE AND ADMINISTRATION

This MPA foundation course introduces students to the basics of governance in the American context. It explores the civic foundations of American democracy; the roles and functions of the public, nonprofit and private sectors in American society; the relationship of politics with policy; the principles of public service; and the ways in which governance can be performed to advance the interests of underserved and disempowered communities. Because Public Administration is a highly interdisciplinary field, this course assumes only a basic understanding of civics and builds upon that for public and nonprofit administrators. Further, this course introduces the concepts and some skills for effectively engaging with communities and identifying tools for civic empowerment. This course establishes the community engagement and empowerment ethos of the Master of Public Administration at Delaware State University.

Credits, three hours.

MPA504: RESEARCH METHODS FOR PUBLIC ADMINISTRATION

This MPA foundation course serves as both an introduction to and an extension of research methods skills for graduate students in public and nonprofit administration. The tools for acquiring and developing information and knowledge to inform decision making are vital to good stewardship of public resources and service of the public good. Rather than train students on all quantitative and qualitative research methodologies, this course will help the student understand what types of methodologies are available, their appropriate uses, how to interpret data and analysis, and how to recognize high-quality research. Later courses will build on these skills for application to community, managerial and policy research. Additionally, the course will examine the responsibility of administrators to make the best use of data, information and research in an era when technological advancements can provide more information than ever before.

MPA505: ORGANIZATIONAL AND COMMUNITY LEADERSHIP

This MPA foundation course is designed to provide students with the theoretical background as well as practical skills for leadership development in the public, nonprofit and community settings. This course helps students develop leadership capacities within themselves, then provides them with the tools for identifying and nurturing the leadership capacities of others in the public or nonprofit sectors, community organizations and individual community members. Students will identify their own leadership strengths and will build upon them through application-based exercises and projects.

Credits, three hours.

MPA506: ECONOMICS FOR PUBLIC ADMINISTRATION

This is a foundation course for students in the Master of Public Administration program. This course is designed to offer students a basic as well as applied knowledge of economic principles as they relate to the field of Public Administration. Basic economic principles will be the foundation of this course, and areas of agreement and contention will be presented and built upon so students are able to identify the economic intricacies of the community, nonprofit and policy problems they seek to impact.

Credits, three hours.

MPA601: ADMINISTRATION IN CONTEXT

This is an MPA core course in which students learn the history of Public Administration and the evolution of the discipline before exploring the context in which students can expect to serve as public administrators. A key to understanding context is the ability to trace the history of how those contexts came about. In this course, students will become familiar with American policy history, the history of nonprofits, and urban history. This course will build the skill of identifying salient and relevant characteristics of the communities they seek to engage and serve. Finally, students will develop a profile of a policy, nonprofit, community, or issue of their choosing.

Credits, three hours

MPA602: POLICY ANALYSIS AND PROGRAM EVALUATION

In this MPA core course, students learn the specific steps and practice of performing policy analysis and program evaluation. These skills, which are necessary for public administrators, will be built over the course of the term by building each component of an effective analysis. This course builds on the skills developed in Research Methods by applying them specifically to public, nonprofit and community problems similar to those they can expect to encounter in their careers.

Credits, three hours

MPA603: PUBLIC FINANCE

In this MPA core course, students develop the practical skills associated with managing public and nonprofit funds. It acquaints students with the economic and political implications, processes, data systems and techniques for effective administration of budgeting and finance in the public and non-profit settings.

Credits, three hours

MPA604: PUBLIC INFORMATION TECHNOLOGY

This MPA core course introduces students to the uses and applications of advancing technology in public and nonprofit administration as well as community engagement. It begins by exploring the ways in which governance and Public Administration were and are impacted by the rise of information technology broadly and explores the implications for these impacts on students' careers as public administrators. It explores some of the ways technology has been leveraged by the public and nonprofit sectors for understanding and responding to challenges as well as empowering communities. Further, students are exposed to some of the more common software packages they will encounter throughout their careers.

Credits, three hours

MPA605: ORGANIZATIONAL PERFORMANCE MANAGEMENT

This MPA core course teaches Public Administration students about the methods and practices of organizational management through strategic performance management systems in governmental, nonprofit and community organizations. This course emphasizes the application of a number of management systems to for the purposes of organizational management and community empowerment. Students will examine real-world situations and events through the use of case study analyses. The student will learn about these systems and demonstrate their understanding by developing a plan for an organization or community of their choosing.

Credits, three hours.

MPA606: HUMAN RESOURCES FOR PUBLIC ADMINISTRATION

In this MPA core course, MPA students are exposed to Strategic Human Resources Management, the legal intricacies of HR, methods for successfully identifying job functions, recruiting, compensating, retaining, evaluating and managing staff within public and nonprofit organizations to accomplish strategic organizational goals. This course establishes and builds students' working knowledge with an emphasis on how the public and nonprofit sectors differ from the private sector and each other. Students are expected to demonstrate their knowledge through application of course content to an organization or case study.

Credits, three hours

MPA607: GRADUATE PROJECT

In this final MPA course, MPA students demonstrate their mastery of program material. The Graduate Project is an applied policy analysis or program evaluation and plan to be completed over the duration of a full semester. It requires students to relate theory to practice in a real-world, experiential study. The policy focus of the project and the relevant level of government, nonprofit or community organization will be selected by the student and instructor together at the conclusion of the student's foundation courses. This will relate to the student's academic and career interests and wherever possible will engage with community stakeholder needs. The policy plan involves the review of a policy issue or program, its relevant history, an analysis plan, a full analysis complete with recommendations and a plan for implementation. The Graduate Project culminates with the submission of a written document as well as a presentation before a graduate committee.

Credits, three hours.

MPA608: INTERNSHIP

The Internship is a special MPA core course required for students who do not have 3 to 5 years of professional management experience upon applying to the MPA Program. In this course, students will spend 90 hours with a host organization in the public or nonprofit sector over the course of a full semester. Placement details are established before the start of the semester with the instructor and students will be expected to reflect on their experience periodically through written assignments. Students are expected to learn from and contribute their developing MPA skills to the organization of their placement.

Credits, three hours

PROGRAM: MASTER OF PUBLIC ADMINISTRATION
Six Credits Per Semester Beginning Fall with Internship

Year 1 Fall Term 1 (Foundation)			Year 1 Fall Term 2 (Foundation)		
Course	Course Name	Cr	Course	Course Name	Cr
MPA503	American Governance and Administration	3	MPA505	Organizational and Community Leadership	3
Total Credits		3	Total Credits		3

Year 1 Spring Term 1 (Foundation)			Year 1 Spring Term 2 (Foundation)		
Course	Course Name	Cr	Course	Course Name	Cr
MPA504	Research Methods for Public Administration	3	MPA506	Economics for Public Administration	3
Total Credits		3	Total Credits		3

Year 2 Fall Term 1 (Core)			Year 2 Fall Term 2 (Core)		
Course	Course Name	Cr	Course	Course Name	Cr
MPA608	Internship (Full Semester)				3
			MPA605	Organizational Performance Management	3
Total Credits			Total Credits		6

Year 2 Spring Term 1 (Core)			Year 2 Spring Term 2 (Core)		
Course	Course Name	Cr	Course	Course Name	Cr
MPA601	Administration in Context	3	MPA602	Policy Analysis and Program Evaluation	3
Total Credits		3	Total Credits		3

Year 2 Summer Term 1 (Core)			Year 2 Summer Term 2 (Core)		
Course	Course Name	Cr	Course	Course Name	Cr
MPA604	Public Information Technology	3	MPA606	Human Resources for Public Administration	3
Total Credits		3	Total Credits		3

Year 3 Fall Term 1 (Core)			Year 3 Fall Term 2 (Core)		
Course	Course Name	Cr	Course	Course Name	Cr
MPA603	Public Finance	3			
MPA607	Graduate Project (Full Semester)				3
Total Credits		3	Total Credits		3
			Total Credits: 36		

- *Denotes a Core Requirement
- +Denotes an Elective
- Total Core Credits = 33 Base, 36 if Internship is Required
- Total Elective Credits = 0
- Candidacy Requirement:
- Capstone or Culminating Experience: MPA607 – Graduate Project

PROGRAM: MASTER OF PUBLIC ADMINISTRATION
12 Credits Per Semester Beginning Spring with No Internship

Year 1 Spring Term 1 (Foundation)			Year 1 Spring Term 2 (Foundation)		
Course	Course Name	Cr	Course	Course Name	Cr
MPA503	American Governance and Administration	3	MPA505	Organizational and Community Leadership	3
MPA504	Research Methods for Public Administration	3	MPA506	Economics for Public Administration	3
Total Credits		6	Total Credits		6

Year 1 Summer Term 1 (Core)			Year 1 Summer Term 2 (Core)		
Course	Course Name	Cr	Course	Course Name	Cr
MPA604	Public Information Technology	3	MPA606	Human Resources for Public Administration	3
Total Credits		3	Total Credits		3

Year 1 Fall Term 1 (Core)			Year 1 Fall Term 2 (Core)		
Course	Course Name	Cr	Course	Course Name	Cr
MPA603	Public Finance	3	MPA605	Organizational Performance Management	3
Total Credits		3	Total Credits		3

Year 2 Spring Term 1 (Core)			Year 2 Spring Term 2 (Core)		
Course	Course Name	Cr	Course	Course Name	Cr
MPA601	Administration in Context	3	MPA602	Policy Analysis and Program Evaluation	3
MPA607	Graduate Project (Full Semester)				3
Total Credits		3	Total Credits		6
			Total Credits: 33		

- *Denotes a Core Requirement
- +Denotes an Elective
- Total Core Credits = 33 Base, 36 if Internship is Required
- Total Elective Credits = 0
- Candidacy Requirement:
- Capstone or Culminating Experience: MPA607 – Graduate Project

DEPARTMENT OF SOCIOLOGY AND CRIMINAL JUSTICE

MASTER OF ARTS IN JUSTICE STUDIES

PROGRAM OBJECTIVES

This program is designed to prepare students with a bachelor's degree and no professional experience for positions in government and non-government organizations, think tanks, criminal and juvenile justice systems, nonprofits, public service and/or future doctoral programs.

PROGRAM GOALS

The goal of the Master of Arts in Justice Studies is to educate and prepare students for careers in the social sciences, with specific emphasis on careers in the criminal justice field, research, public service, nonprofits, and further studies in graduate and professional programs.

STUDENT LEARNING OUTCOMES

The Department of Sociology and Criminal Justice has established the following student learning outcomes for the Master of Arts in Justice Studies:

- SLO 1: Justice Studies Perspective – Students will be able to define, use, and/or develop a critical argument using justice studies theories to examine a social problem.
- SLO 2: Studying Inequality and Crime – Students will be able to define, understand, explain, apply, examine, and critique methodological and principles associated with sound, ethical research that examines inequalities in the Criminal and Juvenile Justice Systems as it relates to the intersection of race, class, and gender.
- SLO 3: Health Equity and Justice – Students will be able to understand, explain, examine, and critique inequalities associated with health in American society.
- SLO 4: Global Perspectives in Justice Studies – Students will be able to identify, define, and examine global perspectives and issues as they relate to justice studies.

ADMISSION DEADLINES AND DEGREE REQUIREMENTS

Application Deadline:

- Fall Only Enrollment – June 30

Admissions Requirements:

All applicants are required to submit evidence of the following for consideration of unconditional admission:

- The earning of a baccalaureate degree at an accredited college or university (or its equivalent for foreign students) and the ability to engage in high-quality graduate work. A background in the social and behavioral sciences is preferred. No academic credit is given for life and/or professional experience.
- Official transcripts of all previous undergraduate and graduate work. The applicant's undergraduate transcript must reflect a cumulative grade point average of 3.0 and a 3.25 average in their undergraduate major.
- Personal Statement – The statement must be no more than two (2) typed pages, double spaced, 12-point Times New Roman font.

- Three letters of recommendation. These letters should be from individuals who can provide information about the student's scholarly ability, moral character, and characteristics to succeed in a graduate program. Individuals like present or past teachers, advisors, supervisors, and colleagues are in positions to provide credible recommendations.
- A writing sample from an upper-level course in the student's major that is approximately 10 pages, although longer more detailed papers are encouraged.

Degree Requirements:

The Master of Arts in Justice Studies requires the completion of 37 graduate credit hours, consisting of 16 credit hours of Core Courses, 15 credit hours of approved elective courses, and 6 credit hours of either a Master's Thesis or Practicum courses. Students choosing the Master's Thesis option must successfully complete guided independent research and orally present and defend a Master's Thesis paper. Students choosing the Practicum option must successfully find and complete an internship, and orally present and defend a Practicum paper about their experience.

Required Coursework:

Students enrolled in the Master of Arts in Justice Studies are required to complete 37 credit hours consisting of 16 credits hours of core courses, 15 credit hours of elective courses, and 6 credit hours of either a Thesis or Practicum.

Required courses include:

SCCJ 600	Proseminar in Justice Studies	SCCJ 601 OR SCCJ 602	Criminological Theories OR Sociological Theories
SCCJ 603	Theories of Justice	SCCJ 605	Research Methods in Justice Studies
SCCJ 606 OR SCCJ 607	Statistical Analysis in Justice Studies OR Qualitative Methods in Justice Studies	SCCJ 608 OR SCCJ 609	Issues in Justice Studies OR Issues in Juvenile Justice
SCCJ 660 OR SCCJ 662	Thesis I OR Practicum I	SCCJ 661 OR SCCJ 663	Thesis II OR Practicum II

FACULTY

The Department of Sociology and Criminal Justice includes nationally distinguished faculty who provide expertise in teaching and research. The faculty are dedicated to their teaching and respective research interests. Specific areas of research expertise include population health and demography, urban sociology, global health issues, health and inequality, experiences of currently and formerly incarcerated individuals, experiences of people who experience victimization, and the impact of structural disadvantage.

COURSE DESCRIPTIONS

SCCJ-600. PROSEMINAR IN JUSTICE STUDIES

This graduate proseminar course is designed to provide students enrolled in the Justice Studies Master's Program with the essentials for a smooth transition to graduate life and success within the program. The course will provide students introductory information of the justice studies discipline and how to be good scholars and researchers. The course will include faculty speakers from the Sociology and Criminal Justice Department to provide students an overview of the types of research conducted in the department and information for how students can become involved. Credit, one hour.

SCCJ-601. CRIMINOLOGICAL THEORIES

This graduate level course focuses on the development of criminological thought with a thorough analysis of classical and neoclassical literature, an examination of contemporary criminological thought using a sociological lens and a discussion of criminal justice theory. Further emphasis is placed on critiquing and applying criminological thought to current criminal justice events. Credit, three hours.

SCCJ-602. SOCIOLOGICAL THEORIES

This graduate course will review many of the key social theories in the classical and contemporary sociological tradition. This course will provide an in-depth engagement with the canonical works, develop your ability to read and understand theories critically and introduce you to the logic of social inquiry. The course emphasizes a close reading of original texts, as well as seminar-style class discussions. Credit, three hours.

SCCJ-603. THEORIES OF JUSTICE

This graduate course will compare and contrast classical and contemporary theories of social justice. We will apply these theories to contemporary issues of social injustice in the US and the Global system. The aim of this course will be to show some implications these theories have in aiding the construction of public policy around critical issues in our society. The course emphasizes a close reading of original texts, as well as seminar-style class discussions. Credit, three hours.

SCCJ-605. RESEARCH METHODS IN JUSTICE STUDIES

This graduate level seminar will provide students with advanced skills necessary to conduct and evaluate research in the Justice Studies discipline. Students will discuss the central methods that justice studies scholars use to gather information about social phenomena, along with “best practices” in research design that help ensure data quality and usefulness. Students will gain firsthand experience with the research process as they apply various methodologies in class and for their own research project. Credit, three hours.

SCCJ-606. STATISTICAL ANALYSIS IN JUSTICE STUDIES

This graduate seminar will cover moderate-level statistical techniques most commonly used by justice studies scholars. The goal of this course is to understand the logic of quantitative justice studies research and gain hands-on practice in statistical analysis of social data. Students will learn how to answer a particular research question of their choosing and build the knowledge from which they can critically evaluate quality of statistical evidence produced by justice studies scholars. Credits, three hours.

SCCJ-607. QUALITATIVE METHODS IN JUSTICE STUDIES

This graduate seminar trains students in qualitative methodology, from conceptualization, through design and data collection processes for use in their own scholarship, and problem solving and evaluation of qualitative justice studies scholarship. The course includes an advanced discussion of qualitative research design and the role of theory in guiding and informing research design. The course is structured so students learn the important components for completing an original, qualitative research project. Credits, three hours.

SCCJ-608. ISSUES IN JUSTICE STUDIES

This graduate course explores key questions, topics, and current issues in Justice Studies. The class will engage these topics from within contemporary philosophical, political, economic, sociological, and theological approaches to justice and equity. Topics will include but are not limited to human rights, environmental justice, civil society, social movements, democratization, liberation theology, social and political philosophy, the global south, and globalization. The course emphasizes a close reading of original texts, as well as seminar-style class discussions. Credits, three hours.

SCCJ-609. ISSUES IN JUVENILE JUSTICE

This graduate seminar explores how the development of the juvenile justice system and the enactment of corresponding laws and policies impact youthful offenders. With a predominant focus on past issues, such as truancy and lack of familial stability, and current issues, such as substance abuse and misuse, mental illness and violence, that confront youthful offenders, this course analyzes how well the juvenile justice system is equipped to handle the progressive issues that confront youthful offenders. By the end of this seminar, students will be able to critique the responses of the juvenile justice system and understand how youthful offenders remain a part of the justice system into adulthood. Credits, three hours.

SCCJ-610. POPULATION DYNAMICS

This graduate course examines the causes and consequences of population change. This course will examine demographic dynamics including fertility, mortality, migration, technology, lifestyle and culture. Moreover, this course will examine related issues of hunger, the spread of illness and disease, environmental degradation, health services, household formation, the labor force, marriage and divorce among other phenomena. This course emphasizes primary readings and seminar style discussions. Credits, three hours.

SCCJ-611. ENVIRONMENT AND SUSTAINABILITY

This graduate seminar explores the intricate relationship between environmental resilience and corresponding ecological vulnerability of communities through the prism of the United Nations Sustainable Development Goals. Drawing on the social constructionist perspective and grounded theory, the course critiques notions of de-linked social and environmental perspectives. The impact of environmental issues, such as the lack of resources, environmental degradation, environmental program assistance, and minimal community engagement, are also examined. Credits, three hours.

SCCJ-612. HEALTH ECOLOGIES

This graduate course explores the impacts that human-environment interactions have on health. It focuses on the topics of disease diffusion, geographical information systems (GIS) for public health, health and healthcare disparities and various methods for analyzing health/disease data. This course analyzes primary readings and will include seminar style discussions. Credits, three hours.

SCCJ-615. RACE AND JUSTICE

This graduate course addresses the origins, consequences, and perpetuation of stratification, specifically by race and ethnicity. The focus on the study of race and ethnicity will employ a global perspective to understand how it informs intersectional identities and processes. Students will be introduced to the foundational readings, including contemporary theories and empirical research. The course emphasizes a close reading of original texts, as well as seminar-style class discussions. Credits, three hours.

SCCJ-616. INTERSECTIONALITY AND JUSTICE STUDIES

This graduate level seminar aims to critically examine important issues, questions, and debates regarding the intersection or the notion that race, class, gender, sexuality, and other terrains of difference gain meaning from each other. This will include investigating intersectionality in its different representations, discussing the wide range of doing intersectional scholarship, introducing students to intersectionality beyond the canonical texts, and discussing how race, class, gender, and sexuality are embedded in social institutions, including the criminal and juvenile justice systems. Credits, three hours.

SCCJ-617. POWER AND INEQUALITY IN SOCIETY

This course focuses on the current American experience with socioeconomic inequality and mobility. The goals of the course are to understand the structure of inequality in contemporary U.S., to learn the principal theories and evidence for long-term trends in inequality, to understand the persistence of poverty and the impact of social policies on American rates of poverty, and to understand the forces that both produce and inhibit intergenerational social mobility in the U.S. Credits, three hours.

SCCJ-618. URBAN STRUCTURE AND PROCESS

This course will tackle the broad topic of Urban Sociology. Urban Sociology focuses our attention to the built environment and reminds us that no house, skyscraper, factory, landfill, sidewalk, or store is there by accident nor is it just a spatial adaptation of nature. It is instead a social product, built by people and bound by all the forces of power, privilege, wealth, ideology, and culture that shape all aspects of our lives. Through a variety of social processes and changes, the built environment takes shape, likewise the built environment will have different meanings to different people and will ultimately continue to shape our lived experiences. Credits, three hours.

SCCJ-620. COMMUNITY AND SOCIAL CHANGE

This graduate seminar examines the causes, mechanics, patterns, strategies, and consequences of change in structure (relationships and institutions) of societies, and analysis of specific kinds of change such as revolutions, social movements, modernization, and industrialization. Students will engage with primary readings, case studies, and empirical research to understand the socio-historical context of social change; they will be able to use theories to identify and differentiate patterns of social change and to explain when, how and why social changes occur. The course emphasizes a close reading of original texts, as well as seminar-style class discussions. Credits, three hours.

SCCJ-621. GLOBAL JUSTICE

This graduate seminar explores the theoretical foundations of justice beyond the borders of the nation-state. We will examine issues of political and economic justice, human rights, environmental justice, women's rights among other globally relevant topics. This course will critique and engage with the idea of the possibility of global justice through global democracy, global criminal justice systems, transnational organizations, and global civil society. The course emphasizes a close reading of original texts, as well as seminar-style class discussions. Credits, three hours.

SCCJ-622. JUVENILE JUSTICE POLICY

This graduate level course is a continuation of SCCJ 609 that critiques the responses of the juvenile justice system and juvenile justice practitioners to youthful offenders. Students will read current and past legislation and policies that impact adjudicated (and detained) youth that include addressing their treatment and rehabilitative needs, providing substantive educational and vocational programming while they are detained and assisting in their successful reintegration into the community and at home. This course will also focus on critiquing pending legislation and the intended (and unintended) consequences that impact youthful offenders. Credits, three hours.

SCCJ-623. AMERICAN PENAL SYSTEM

This graduate seminar critically examines the American correctional system with an analysis of the historical development of the penal system, the purpose of punishment, the treatment of people who are subjected to criminal justice system control, correctional programming, and offender reintegration into the community. Additional topics address disproportionate minority confinement, the treatment of mental illness within correctional systems offenders and the fluctuation of treatment and educational programming in correctional facilities. Credits, three hours.

SCCJ-624. GLOBAL CRIMINOLOGY

This graduate seminar is designed to familiarize students with the similarities and differences in the criminal justice systems from selected western and non-western cultures using a comparative approach. This perspective will focus on the impact of the legal, cultural, political, philosophical, and historical elements which have shaped these international justice systems. This course emphasizes the reading of primary texts and seminar style discussions. Credits, three hours.

SCCJ-650. SPECIAL TOPICS IN JUSTICE AND EQUITY

This graduate seminar explores an emerging or trending topic in the justice and equity concentration that is not addressed in the required or elective courses. The topic for the graduate seminar will be selected by the instructor who will have expertise and research experience in the subject matter. The intent of the course is to ensure that students have examined emerging and trending topics in the justice studies discipline, so they are prepared for the next step in their careers. Credits, three hours.

SCCJ-651. SPECIAL TOPICS IN CRIME AND JUSTICE

This graduate seminar explores an emerging or trending topic in the crime and justice concentration that is not addressed in the required or elective courses. The topic for the graduate seminar will be selected by the instructor who will have expertise and research experience in the subject matter. The intent of the course is to ensure that students have examined emerging and trending topics in the justice studies discipline, so they are prepared for the next step in their careers. Credits, three hours.

SCCJ-652. INDEPENDENT STUDY IN JUSTICE STUDIES

Independent study allows graduate students enrolled in the Justice Studies MA program to pursue a specific topic with a faculty member for academic credit. This includes exploring an idea, contributing to research, or developing a project under the guidance of a faculty member from the Sociology and Criminal Justice Department. Independent study credits can only be earned based on topics not covered in the Justice Studies MA program curriculum. Students must receive consent of the instructor and can only take one independent study class towards their graduate degree. Credits, three hours.

SCCJ-660. THESIS I

An in-depth individualized investigation of a research question conducted under close supervision of the thesis advisor. The student is required to present the study's findings in a scholarly paper and an oral presentation. University and departmental guidelines are to be followed in preparing and defending the thesis. (Advisor Approval). Credits, three hours.

SCCJ-661. THESIS II

An in-depth individualized investigation of a research question conducted under close supervision of the thesis advisor. The student is required to present the study's findings in a scholarly paper and an oral presentation. University and departmental guidelines are to be followed in preparing and defending the thesis. (Pre-req SCCJ 660). Credits, three hours.

SCCJ-662. PRACTICUM I

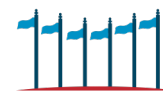
This course provides students with opportunities to employ the knowledge, values, skills and conceptual frameworks that are related to their field of study while under the direction of an approved supervisor. Students are enabled to develop and refine the skills necessary for effective practice and to integrate the concepts and methods of Justice Studies into their chosen career pathways. University and departmental guidelines are to be followed in final course product including course reports, paper projects, organizational evaluations. (Need Advisor Approval). Credits, three hours.

SCCJ-663. PRACTICUM II

This course provides students with opportunities to employ the knowledge, values, skills and conceptual frameworks that are related to their field of study while under the direction of an approved supervisor. Students are enabled to develop and refine the skills necessary for effective advance practice and to integrate the concepts and methods of Justice Studies into their chosen career pathways. University and departmental guidelines are to be followed in final course product including course reports, paper projects, organizational evaluations. (Pre-req SCCJ 662). Credits, three hours.

PROGRAM: MASTER OF ARTS (MA) IN JUSTICE STUDIES
(JUSTICE AND EQUITY CONCENTRATION)
Full-Time Enrollment (2023-2024)

Year 1: Fall Semester					Year 1: Spring Semester				
Course	Course Name	Sem	Cr	Gr	Course	Course Name	Sem	Cr	Gr
SCCJ 600	Proseminar in Justice Studies	F	1		SCCJ 602	Sociological Theories	S	3	
SCCJ 603	Theories of Justice	F	3		SCCJ 606 OR SCCJ 607	Statistical Analysis in Justice Studies OR Qualitative Methods in Justice Studies	S	3	
SCCJ 605	Research Methods in Justice Studies	F	3			Elective in Concentration	B	3	
SCCJ 608	Issues in Justice Studies	F	3						
	Total Credits = 10					Total Credits = 9			
Year 2: Fall Semester					Year 2: Spring Semester				
Course	Course Name	Sem	Cr	Gr	Course	Course Name	Sem	Cr	Gr
	Elective in Concentration	B	3			Elective in Concentration	B	3	
	Elective in Concentration	B	3			Elective in Concentration	B	3	
SCCJ 660 OR SCCJ 663	Thesis I OR Practicum I	B	3		SCCJ 661 OR SCCJ 664	Thesis II OR Practicum II	B	3	
	Total Credits = 9					Total Credits = 9			
						Total credits = 37			



**PROGRAM: MASTER OF ARTS (MA) IN JUSTICE STUDIES
(CRIME AND JUSTICE CONCENTRATION)**
Full-Time Enrollment (2023-2024)

Year One: Fall Semester					Year One: Spring Semester				
Course	Course Name	Sem	Cr	Gr	Course	Course Name	Sem	Cr	Gr
SCCJ 600	Proseminar in Justice Studies	F	1		SCCJ 601	Criminological Theories	S	3	
SCCJ 603	Theories of Justice	F	3		SCCJ 606 OR SCCJ 607	Statistical Analysis in Justice Studies OR Qualitative Methods in Justice Studies	S	3	
SCCJ 605	Research Methods in Justice Studies	F	3			Elective in Concentration	B	3	
SCCJ 609	Issues in Juvenile Justice	F	3						
	Total Credits = 10					Total Credits = 9			
Year Two: Fall Semester					Year Two: Spring Semester				
Course	Course Name	Sem	Cr	Gr	Course	Course Name	Sem	Cr	Gr
	Elective in Concentration	B	3			Elective in Concentration	B	3	
	Elective in Concentration	B	3			Elective in Concentration	B	3	
SCCJ 660 OR SCCJ 663	Thesis I OR Practicum I	B	3		SCCJ 661 OR SCCJ 664	Thesis II OR Practicum II	B	3	
	Total Credits = 9					Total Credits = 9			
						Total Credits = 37			