



# GRADUATE CATALOG

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

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**Delaware State University**

Graduate Studies and Research

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# THE UNIVERSITY

## MISSION STATEMENT

Delaware State University is a public, comprehensive, 1890 land-grant institution that offers access and opportunity to diverse populations from Delaware, the nation, and the world. Building on its heritage as a historically black college, the University purposefully integrates the highest standards of excellence in teaching, research, and service in its baccalaureate, master's and doctoral programs. Its commitment to advance science technology, liberal arts, and the professions produces capable and productive leaders who contribute to the sustainability and economic development of the global community.

## VISION STATEMENT

As one of America's most highly respected Historically Black Colleges and Universities, Delaware State University will be renowned for a standard of academic excellence that prepares our graduates to become the first choice of employers in a global market and invigorates the economy and the culture of Delaware and the Mid-Atlantic Region.

## CORE VALUES

- Community
- Integrity
- Diversity
- Scholarship
- Outreach

## 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**

The Delaware College for Colored Students, now known as Delaware State University, was established May 15, 1891, by the Delaware General Assembly under the provisions of the Morrill Act of 1890 by which land-grant colleges for blacks came into existence in states maintaining separate educational facilities.

Because there was already a private Delaware College (now the University of Delaware) located in Newark, DE, to avoid confusion new state legislation was passed and enacted in early 1893 to change the black school's name to the State College for Colored Students. That would be the institution's name for the next 54 years.

Through the conservative and practical planning of the Board of Trustees appointed by Gov. Robert A. Reynolds, the College was launched upon its mission of education and public service on February 2, 1892. Five courses of study leading to a baccalaureate degree were offered: Agricultural, Chemical, Classical, Engineering, and Scientific. A Preparatory Department was established in 1893 for students who were not qualified to pursue a major course of study upon entrance. A three-year normal course leading to a teacher's certificate was initiated in 1897. The College graduated its first class of degree candidates in May 1898.

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

In 1944, the College received provisional accreditation by the Middle States Association of Colleges and Schools. The University's accreditation was most recently reaffirmed by the Middle States Commission on Higher Education (MSCHE) in 2012.

In 1947, the name of the institution was changed to "Delaware State College" by legislative action. On July 1, 1993, the College turned another chapter in its history when Gov. Thomas Carper signed a name change into law, renaming the institution Delaware State University.

On July 1, Wesley College joined with Delaware State University through a historic acquisition that combines the longstanding heritages of Wesley as a premiere liberal arts college and Delaware State University as America's most diverse, contemporary Historically Black College/University.

Through the years, Delaware State University has grown in stature as a center for teaching, research and public service. The purpose and objectives of the University have broadened in keeping up with changing times. While recognizing its historical heritage, the University provides higher education today for a diverse student population. Academic units are organized into the College of Agriculture, Science & Technology; the College of Business; the Wesley College of Health & Behavioral Sciences; and the College of Humanities, Education & Social Sciences.

The University offers 46 undergraduate degrees, which include unique and traditional majors such as Agriculture, Aviation, Computer Science, Criminal Justice, Hospitality & Tourism Management, Kinesiology, Management, Mass Communications, Natural Resources, New Media in Arts, Nursing, Physics, Social Work and Textiles & Apparel Studies.

Delaware State University also offers 21 master's degrees in Agriculture (Animal Science or Plant Science), Applied Optics, Biological Sciences (M.S.), Business Administration (Business Analytics, CPA, Finance, Information Systems), Applied Chemistry (M.S.), Computer Science, Educational Leadership, Food Science and Biotechnology (Biotechnology, Food Chemistry or Food Microbiology), Justice Studies, Mathematics (Pure or Applied), Molecular and Cellular Neuroscience, Natural Resources, Nursing (Global Leadership or Nursing Education), Occupational Therapy, Physics, Public Administration, Social Work, Sport Administration, Teaching, Teaching English to Speakers of Other Languages/Bilingual Education (TESOL), and dual-title TESOL/Educational Leadership.

The University also has six doctoral programs in Applied Chemistry; Educational Leadership (K-12 or Higher Education); Interdisciplinary Applied Mathematics and Mathematical Physics; Neuroscience; Integrative Agriculture, Food and Environmental Sciences; and Optics.

The institution has national academic program accreditations from the Accreditation Commission for Education in Nursing (ACEN); the Council on Social Work Education (CSWE); the Accreditation Commission for Programs in Hospitality Administration (ACPHA); the Accreditation Council for Occupational Therapy Education (ACOTE); the Council for the Accreditation of Educator Preparation (CAEP) and the Society of Health and Physical Educators (SHAPE) (a Specialized Professional Association (SPA) under CAEP); and the Accreditation Council for Education in Nutrition and Dietetics (ACEND). The University's College of Business is an accredited member of AACSB International —The Association to Advance Collegiate Schools of Business. The University's Law Studies Program has American Bar Association (ABA) Approval.

The underpinning of the growth and development of Delaware State University has been the leadership of 12 permanent Presidents and three Acting Presidents. The 12 permanent Presidents have included Wesley P. Webb (1891-1895), William C. Jason (1895-1923), Richard S. Grossley (1923-1942), Howard D. Gregg (1942-1949), Oscar J. Chapman (1950-1951), Jerome H. Holland (1953-1960), Luna I. Mishoe (1960-1987), William B. DeLauder (1987-2003), Allen L. Sessoms (2003-2008), Dr. Harry L. Williams (2010-2017), Dr. Wilma Mishoe (2018-2019), and Dr. Tony Allen (2020-present). The three Acting Presidents are listed as follows: Maurice E. Thomasson served twice as Acting President from 1949-50 and 1951-1953; Dr. Claibourne Smith served as Acting President from 2008-2010; and Dr. Wilma Mishoe served as Acting President during the first six months of 2018.

As a result of the efforts of past and current Presidents, administrators, faculty, staff and students, the University is well-positioned to reach new levels of prestige and respect in the new millennium.



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

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

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

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

The University also has locations in downtown Dover, Wilmington and Georgetown, DE.

The physical facilities at the Dover main campus support various University programs. Major administrative and academic facilities are listed below.

**Claibourne D. Smith Administration Building** accommodates a small Café, the Office of Admissions, the Office of Financial Aid, the Office of Student Accounts, the Office of Records & Registration, the Cashier's Office, the Human Resources Office, the Office of Finance and Administration, the Payroll Office, the Institutional Advancement Office, the Student ID/Photo Office, the Academic Affairs & Provost's Office and the President's Office.

**Agriculture Annex Building** is the home of the College of Agriculture, Science and Technology and the Department of Human Ecology, as well as certain offices and laboratories of the Department of Agriculture and Natural Resources.

**Alumni Stadium** serves as the site for many University activities, including football, track and field contests and other outdoor events.

**William W.W. Baker Building** is the home of the Department of Agriculture and Natural Resources.

**Bank of America Building** is the home of the College of Business, which includes the departments of Accounting, Economics & Finance and Business Administration, as well as the Aviation Program and the Hospitality & Tourism Management Program, the Delaware Center for Enterprise Development and the SunGard IT Help Desk.

**Delaware Hall** houses the departments of Psychology and Sociology & Criminal Justice.

**Education and Humanities Building** houses the departments of Art, Languages & Literatures, Education and Music. This facility also houses the Child Development Laboratory and the Office of the Dean of the College of Humanities, Education & Social Sciences, the Office of Distance Education & Learning Technologies and Counseling Services, as well as serving as the site for the University's wide-ranging cultural enrichment programs in the E&H Theater.

**ETV Building** houses the departments of History, Political Science & Philosophy, Mathematical Sciences and Mass Communications.

**Grossley Hall** houses several classrooms, certain offices of the Athletics Department, the Office of International Affairs, certain offices of Student Success, and the Office of Institutional Research & Analysis.

**William C. Jason Library**, a six-story structure, houses a collection of more than 490,333 publications, including books, electronic materials, media materials and microbooks. The library is also home to offices of Student Success, Graduate Studies and Research, as well as the Arts Center/Gallery, which traditionally features the works of critically acclaimed artists from the United States and abroad as well as art student and faculty exhibitions.

**Lockerman Hall**, built circa 1720, is often referred to as "the birthplace of Delaware State University." It is the only building from the institution's inaugural 1891 year that still exists. Though it has undergone a massive renovation, its architectural integrity has been preserved. It is listed on the National Register of Historic Places.

**Martin Luther King Jr. Student Center**, a three-story structure completed in 2010, is the home for the Student Government Association; *The DSU Hornet* (student newspaper); the Office of Career Services; the Copy Center, which serves the printing needs of the University; and the University Bookstore. Extramural activities for students are also held in the facility. The offices for the Vice President of Student Affairs, Student Leadership and Activities, and Judicial Affairs are also located in this building.

**Memorial Hall Complex** houses the Department of Sport Management, the Physical Education Program, the Office of Sports Medicine and the Varsity Strength & Conditioning Center, as well as the intercollegiate sport gymnasium.

**Luna I. Mishoe Science Center** houses offices, classrooms and facilities for the departments of Biological Sciences, Chemistry, Computer & Information Sciences and Physics & Engineering.

**John R. Price Building** houses the offices of the Dean of the College of Health and Behavioral Sciences. The departments of Public & Allied Health Sciences, Nursing and Social Work are also located in this facility.

**Maurice Thomasson Center** houses the Division of Adult and Continuing Education, Assessment Office, Office of Testing, Office of Title III, Office of Alumni Relations and Delaware State University Alumni Association office.

**Optical Science Center for Applied Research Building**, a state-of-the-art facility completed in 2015, houses OSCAR laboratories and offices.

**Ulysses S. Washington Cooperative Extension Center** houses the University's Cooperative Extension outreach programs that include youth development, family life education, community resource development and agriculture education. The Center is also the home of the Herbarium, which houses the most extensive collection of plants that is indigenous to the Delmarva Peninsula.

**Wellness & Recreation Center**, a 54,000-square-foot structure completed in 2009, includes dual basketball courts with seating areas and men and women's locker rooms on the first floor. The second floor has a variety of Life Fitness weight machines and free weights as well as a running track that winds around the exercise areas and overlooks the basketball courts on the floor below. The facility also has a swimming pool and sections for aerobic and other fitness classes.

# Fall 2021 Academic Calendar

# Delaware State University

## Graduate Studies and Research

**May 1 (Saturday)**.....International Applicants: Deadline for Receipt of Complete Graduate Applications for Fall 2021. *Please review all requirements via [sgaes.desu.edu/admissions](https://sgaes.desu.edu/admissions). The applicant is encouraged to contact his or her program(s) of interest via [sgaes.desu.edu/about/graduate-program-directory](https://sgaes.desu.edu/about/graduate-program-directory) as some have earlier deadlines.*

**June 30 (Wednesday)**.....Domestic Applicants: Deadline for Receipt of Complete Graduate Applications for Fall 2021. *Please review all requirements via [sgaes.desu.edu/admissions](https://sgaes.desu.edu/admissions). The applicant is encouraged to contact his or her program(s) of interest via [sgaes.desu.edu/about/graduate-program-directory](https://sgaes.desu.edu/about/graduate-program-directory) as some have earlier deadlines.*

**July 16 (Friday)**.....Fall 2021 Payment Due Date

**July 27 (Tuesday)**.....New Graduate Student Orientation  
*All first-time graduate enrollees are expected to participate in this activity. Details will be posted at the Graduate Studies website: [sgaes.desu.edu](https://sgaes.desu.edu).*

**August 23-28 (Monday-Saturday)** ..... Residence Halls Open for All Students

**August 26-29 (Thursday-Sunday)** ..... Welcome Days

**August 27 (Friday)** .....Opening Institute (Virtual)

**August 29-September 4 (Sunday-Saturday)** ..... I Love DSU Week

**August 30 (Monday)** ..... Classes Begin at 8 a.m.

**August 30 (Monday)** ..... Accelerated Session I Classes Begin at 8 a.m.

**August 30 (Monday)** ..... Late Registration Begins

**September 3 (Friday)** .....Last Day for Submission of Committee Forms to Graduate Studies and Research for Approval

*Thesis students should establish committees no later than the end of the 2nd semester of full-time enrollment; Ed.D. students should meet this milestone by the end of the 3rd semester of full-time enrollment; Ph.D. students, by the 5th semester of full-time enrollment.*

**September 6 (Monday)**.....Labor Day (University Closed)

**September 8 (Wednesday)** ..... Last Day for Adding Classes

**September 8 (Wednesday)** .....Last Day to Change Course(s) to Audit Status

**September 8 (Wednesday)** .....Late Registration Ends

**September 8 (Wednesday)** .....SAP Appeal Due Date for Spring 2022

**September 9 (Thursday)** .....Effective Date for \$10 Per Drop Processing Fee

**September 9 (Thursday)** .....Effective Date for Receiving a Grade of "W" for Dropped Courses

**September 9 (Thursday)** ..... General Faculty Meeting (Virtual)

**September 9-13 (Thursday-Monday)**.... Documentation for Non-Attendance Period

**September 16 (Thursday)**.....Last Day to Drop Accelerated I Course

**September 17 (Friday)**.....Academic Early Alert Begins

**September 23 (Thursday)** .....Constitution Day

**September 23 (Thursday)** .....Convocation

**September 24 (Friday)**.....Applications & Audits for December Commencement due to Graduate Studies for review and approval prior to submission to the Registrar's Office by October 1

**October 4-8 (Monday-Friday)** ..... Midterm Evaluations Administered

**October 6 (Wednesday)** .....Residency Status Audit

**October 7 (Thursday)**.....Last Day to Remove Incompletes

**October 8 (Friday)**.....Last Day to Schedule a Thesis or Dissertation Defense with Graduate Studies and Research for December 2021 Graduation

**October 8 (Friday)**.....Last Day for Submission of Candidacy Forms along with supporting documentation to Graduate Studies and Research for approval. *Students must be in academic good standing in order to meet this milestone. Students must complete the requisite number of course requirements (as noted in the Plan of Study) with*

*minimum GPA of 3.0 (some programs may have more stringent requirements) along with identified activities designated to meet the culminating activity. Graduate students must meet candidacy requirements (as determined in your Program of Study) no later than one semester prior to graduation. Doctoral students must meet candidacy requirements no later than two semesters prior to graduation (or sooner if noted in your program of study).*

**October 18-November 12 (Monday-Friday)**.....Academic Advisement Period

**October 22 (Friday)** ..... Accelerated Session I Last Day of Classes

**October 23 (Saturday)**..... Homecoming

**October 25 (Monday)**..... Accelerated Session II Classes Begin

**October 25 (Monday)**.....Mid-Term Grades Due

**October 25-26 (Monday and Tuesday)**..... Priority Pre-Registration

**October 27-November 24 (Wednesday-Wednesday)**.....Preregistration for Spring and Summer

**October 29 (Friday)**.....Last Day to Complete the Thesis or Dissertation Defense for December 2021 Graduation

**October 30 (Saturday)**.....Fall Open House

**November 3 (Wednesday)**.....Financial Aid 60% Completion Date

**November 4 (Thursday)** ..... Census Date

**November 5 (Friday)**.....Last Day for December 2021 Graduates to File thesis or dissertation outcome reports to Graduate Studies and Research

**November 8-December 9 (Monday-Thursday)**.....Fall Course Evaluations

**November 12 (Friday)**.....Last Day to Submit Final Copies of the Thesis or the Dissertation via ProQuest with Graduate Studies and Research for Review/Approval *Please review the Thesis/Dissertation Handbook: [sgaes.desu.edu/admissions/current-students](https://sgaes.desu.edu/admissions/current-students). Questions regarding general formatting of theses/dissertations may be forwarded to [gradstudies@desu.edu](mailto:gradstudies@desu.edu) for review. Outcomes reports must have been submitted by the noted deadline for review and approval of all submissions.*

**November 12 (Friday)**.....Last Day to Submit the Thesis/Dissertation Approval Page to Graduate Studies and Research

**November 19 (Friday)**.....Last Day to Drop Accelerated II Course

**November 21 (Sunday)**.....Exit Interview for December Graduates

**November 24 (Wednesday)**.....Residence Halls Close at 5 p.m. for Fall 2021

**November 25-28 (Thursday-Sunday)** .....Thanksgiving Recess

**December 1 (Wednesday)** .....Last Day to Drop/Withdraw from the University

**December 9 (Thursday)** .....Last Day of Classes

**December 10 (Friday)**.....Reading Day

**December 10 (Friday)**.....Residency Status Final Audit

**December 13-17 (Monday-Friday)**.....Final Examinations

**December 17 (Friday)** .....Winter Recess Begins (Students)

**December 17 (Friday)** ..... Accelerated Session II Last Day of Classes

**December 17 (Friday)** .....Spring/Winter Payment Due Date

**December 20 (Monday)**..... Non-thesis Outcomes Reports Due to Graduate Studies for December 2021 graduation

**December 20 (Monday)** .....Final Grades Due

**December 23-January 2 (Thursday-Sunday)**.....Winter Recess (University Closed)

*\*\*If you are enrolled in an accelerated program, please refer to the Accelerated Academic Calendar for other important dates.*

# ACADEMIC CALENDAR

FALL 2021 (202201)

DOVER, WILMINGTON AND GEORGETOWN

\*\*\* 8 WEEK ACCELERATED SESSIONS \*\*\*

## ACCELERATED SESSION I

August 30, 2021 – October 22, 2021

August 25-28 (Thursday-Sunday)	Registration
August 30 (Monday)	Classes Begin @ 8:00 am
August 30 (Monday)	Late Registration Begins
September 2 (Thursday)	Last Day to Add Classes
September 3 (Friday)	Effective date for receiving a grade of "W" for dropped course
September 3-7 (Friday-Tuesday)	Documentation for Non-Attendance Period
September 6 (Monday)	Labor Day Recess (University Closed)
September 13 (Monday)	Academic Early Alert Begins
September 16 (Thursday)	Last Day to Drop Accelerated I Course
September 16 (Thursday)	Census Date
September 27 (Monday)	Mid-Term Grades Due
<b>September 30 (Thursday)</b>	<b>Financial Aid 60% Completion Date</b>
September 30-October 24 (Thursday-Sunday)	Registration for Accelerated Session II
October 1-22 (Friday-Friday)	Accelerated II Fall Course Evaluations
October 18-22 Monday-Friday)	Final Examinations
October 22 (Friday)	Last Day of Classes
October 25 (Monday)	Final Grades Due

## ACCELERATED SESSION II

October 25, 2021 – December 17, 2021

October 21-22 (Thursday-Friday)	Registration
October 25 (Monday)	Classes Begin
October 25 (Monday)	Late Registration Begins
<b>October 27-November 24 (Wednesday-Wednesday)</b>	<b>Pre-Registration for Spring &amp; Summer</b>
October 28 (Thursday)	Last Day to Add Classes
October 29 (Friday)	Effective date for receiving a grade of "W" for dropped course
October 29-November 1 (Friday-Monday)	Documentation for Non-Attendance Period
November 8 (Monday)	Academic Early Alert Begins
November 15-December 9 (Monday-Thursday)	Accelerated II Fall Course Evaluations
November 19 (Friday)	Last Day to Drop Accelerated II Course
November 19 (Friday)	Census Date
<b>November 24 (Wednesday)</b>	<b>Financial Aid 60% Completion Date</b>
November 25-28 (Thursday-Sunday)	Thanksgiving Recess
November 29 (Monday)	Midterm Grades Due
December 11 (Saturday)	Commencement
December 13-17 (Monday-Friday)	Final Examinations
December 17 (Friday)	Last Day of Classes
December 20 (Monday)	Final Grades Due
December 23-January 2 (Thursday-Sunday)	Winter Recess Begins (University Closed)

# Spring 2022 Academic Calendar

**November 1** (Monday).....International Applicants: Deadline for Receipt of Complete Graduate Applications for Spring 2022. Please review all requirements via [sgaes.desu.edu/admissions](https://sgaes.desu.edu/admissions). The applicant is encouraged to contact his or her program(s) of interest via [sgaes.desu.edu/about/graduate-program-directory](https://sgaes.desu.edu/about/graduate-program-directory) as some have earlier deadlines.

**November 15** (Monday).....Domestic Applicants: Deadline for Receipt of Complete Graduate Applications for Spring 2022. Please review all requirements via [sgaes.desu.edu/admissions](https://sgaes.desu.edu/admissions). The applicant is encouraged to contact his or her program(s) of interest via [sgaes.desu.edu/about/graduate-program-directory](https://sgaes.desu.edu/about/graduate-program-directory) as some have earlier deadlines.

**December 10** (Friday) ..... Winter/Spring Payment Due Date

**January 6** (Thursday) ..... Residence Halls Open for New Students Only

**January 6-7** (Thursday-Friday) ..... New Student Registration

**January 8** (Saturday at noon) ..... Residence Halls Open for Returning Students

**January 10** (Monday) ..... Classes Begin at 8 a.m.

**January 10** (Monday)..... Accelerated Session I Classes Begin at 8 a.m.

**January 10** (Monday)..... Late Registration Begins

**January 11-14** (Tuesday-Friday) ..... I Love DSU Week

**January 12** (Wednesday) ..... Late Registration Ends

**January 12** (Wednesday) ..... Last Day to Change Course(s) to Audit Status

**January 13** (Thursday).....General Faculty Meeting (Virtual)

**January 17** (Monday).....Martin Luther King Jr. Observance (University Closed)

**January 19** (Wednesday) ..... Last Day to Add Classes

**January 20-24** (Thursday-Monday)..... Documentation for Non-Attendance Period

**January 20** (Thursday) .....Effective Date for \$10 Per Drop Processing Fee

**January 20** (Thursday).....Effective Date for Receiving a Grade of "W" for Dropped Courses

**January 21** (Friday) ..... Last Day to Drop Accelerated Session I Course

**January 21** (Friday) .....Deadline for Submission of Committee Forms to Graduate Studies and Research for Approval

*Thesis students should establish committees no later than the end of the 2nd semester of full-time enrollment; Ed.D. students should meet this milestone by the end of the 3rd semester of full-time enrollment; Ph.D. students, by the 5th semester of full-time enrollment.*

**January 28** (Friday).....Applications & Audits for May Commencement due to Graduate Studies for review and approval for submission to the Registrar's Office by February 4

**February 1** (Tuesday).....Academic Early Alert Begins

**February 10** (Thursday) ..... Founders Day

**February 14** (Monday).....Residency Status Audit

**February 18** (Friday).....Last Day to Remove Incompletes

**February 28-March 4** (Monday-Friday) ..... Midterm Evaluations Administered

**February 28-April 1** (Monday-Friday).....Academic Advisement Period

**March 4** (Friday).....Residence Halls Close at 5 p.m. for Spring Break

**March 4** (Friday).....Accelerated Session I Last Day of Classes

**March 7-11** (Monday-Friday).....Spring Break

**March 7-11** (Monday-Friday).....MEAC

**March 7** (Monday).....Mid-Term Grades Due in Chairs' Offices

**March 14** (Monday)..... Accelerated Session II Classes Begin

**March 15** (Tuesday).....Deadline for Submission of Candidacy Forms along with supporting documentation to Graduate Studies and Research for approval. Students must be in academic good standing in order to meet this milestone. Students must complete the requisite number of course requirements (as noted in the Plan

*of Study) with minimum GPA of 3.0 (some programs may have more stringent requirements) along with identified activities designated to meet the culminating activity. Graduate students must meet candidacy requirements (as determined in your Program of Study) no later than one semester prior to graduation. Doctoral students must meet candidacy requirements no later than two semesters prior to graduation (or sooner if noted in your program of study).*

**March 16** (Wednesday).....Financial Aid 60% Completion Date

**March 16** (Wednesday) ..... Census Date

**March 18** (Friday).....Last Day to Schedule a Thesis or Dissertation Defense with Graduate Studies and Research for May 2022 Graduation

**March 18** (Friday).....Last Day to Drop Accelerated II Course

**March 23-April 28** (Wednesday-Thursday).....Spring Course Evaluations

**April 1** (Friday).....Exit Interview for May Graduates Due

**April 4-5** (Monday and Tuesday)..... Priority Pre-Registration

**April 6-22** (Wednesday-Friday).....Preregistration for Fall 2022

**April 8** (Friday).....Last Day to Complete the Thesis or Dissertation Defense for May 2022 Graduation

**April 9** (Saturday) ..... Spring Open House

**April 13** (Wednesday) ..... Last Day to Drop/Withdraw from the University through the Office of Records and Registration

**April 13** (Wednesday) .....Annual Delaware State University Research Day

**April 15** (Friday).....Last Day for May 2021 Graduates to File Thesis or Dissertation Outcome Reports to Graduate Studies and Research

**April 15-18** (Friday-Monday).....Easter Recess (University Closed)

**April 21** (Thursday) ..... Last Day of Classes

**April 21** (Thursday) ..... Last Day of Work Study

**April 22** (Friday).....Last Day to Submit Final Copies of the Thesis or the Dissertation via ProQuest with Graduate Studies and Research for Review/Approval

*Please review the Thesis/Dissertation Handbook: [sgaes.desu.edu/admissions/current-students](https://sgaes.desu.edu/admissions/current-students). Questions regarding general formatting of theses/dissertations may be forwarded to [gradstudies@desu.edu](mailto:gradstudies@desu.edu) for review. Outcomes reports must have been submitted by the noted deadline for review and approval of all submissions.*

**April 22** (Friday).....Last Day to Submit the Thesis/ Dissertation Approval Page to Graduate Studies and Research

**April 22** (Friday).....Residency Status Final Audit

**April 22** (Friday).....Reading Day

**April 25-29** (Monday-Friday) ..... Final Examinations

**May 2** (Monday).....Final Grades Due

**May 2** (Monday)..... Non-thesis Outcomes Reports Due to Graduate Studies for May 2022 Graduation

**May 4 or 5** (Wednesday or Thursday).....Assessment Summit

**May 5** (Thursday) .....General Faculty Meeting

**May 6** (Friday).....Residence Halls Close at 5 p.m.

**May 6** (Friday) ..... Accelerated Session II Last Day of Classes

**May 6** (Friday).....Summer Payment Due Date

**May 14** (Saturday).....Commencement

**May 27** (Friday)..... SAP Appeals Due for Fall 2021

**July 5** (Tuesday)..... Fall Payment Due Date

**\*\*If you are enrolled in an accelerated program, please refer to the Accelerated Academic Calendar for other important dates.**

# ACADEMIC CALENDAR

## SPRING 2022 (202203)

DOVER, WILMINGTON AND GEORGETOWN

\*\*\* 8 WEEK SESSIONS \*\*\*

### ACCELERATED SESSION I

January 10, 2022 – March 4, 2022

January 6-7 (Thursday-Friday)	Registration
January 10 (Tuesday)	Classes Begin
January 10 (Tuesday)	Late Registration Begins
January 13 (Thursday)	Last Day to Add Classes
January 14 (Friday)	Effective date for receiving a grade of "W" for dropped course
January 14-18 (Friday-Tuesday)	Documentation for Non-Attendance Period
January 17 (Monday)	Martin Luther King, Jr. Day-University Closed
January 18 (Tuesday)	Academic Early Alert Begins
January 21 (Friday)	Last Day to Drop Accelerated I Course
January 21 (Friday)	Census Date
February 7 (Monday)	Mid-Term Grades Due
<b>February 10 (Thursday)</b>	<b>Financial Aid 60% Completion Date</b>
February 14- March 4 (Monday-Friday)	Accelerated Session I Course Evaluations
March 4 (Friday)	Last Day of Classes
March 7 (Monday)	Final Grades Due

### ACCELERATED SESSION II

March 14, 2022 – May 6, 2022

March 7-11 (Monday-Friday)	Spring Break
March 7-11 (Monday-Friday)	MEAC
March 10-13 (Thursday-Sunday)	Registration
March 14 (Monday)	Classes Begin
March 14 (Monday)	Late Registration Begins
March 17 (Thursday)	Last Day to Add Classes
March 18 (Friday)	Effective date for receiving a grade of "W" for dropped course
March 18-21 (Friday-Monday)	Documentation for Non-Attendance Period
March 18 (Friday)	Last Day to Drop Accelerated II Course
March 18 (Friday)	Census Date
March 21 (Monday)	Academic Early Alert Begins
March 29- April 14 (Tuesday-Thursday)	Accelerated Session II Course Evaluations
April 11 (Monday)	Mid-Term Grades Due
<b>April 14 Thursday</b>	<b>Financial Aid 60% Completion Date</b>
April 15-18 (Friday-Monday)	Easter Recess (University Closed)
May 6 (Friday)	Last Day of Class
May 9 (Monday)	Final Grades Due
May 14 (Saturday)	Commencement

# GRADUATE APPLICATION DEADLINES

## APPLICATION DEADLINES (Domestic)

- June 30 for Fall (August) enrollment
- September 1 for Fall Session II (October) enrollment
- November 15 for Spring (January) enrollment
- February 1 for Spring Session II (March) enrollment
- April 15 for Summer (May) enrollment

## APPLICATION DEADLINES (International)

- May 1 for Fall (August) enrollment
- August 1 for Fall Session II (October) enrollment
- November 1 for Spring (January) enrollment
- January 15 for Spring Session II (March) enrollment
- April 1 for Summer (May) enrollment

\*The MBA, MPA, and MSA programs offered at the Wilmington location feature rolling admissions. Enrollment is contingent upon receipt of all required documents no later than two weeks prior to the enrollment period for domestic applicants and four weeks for international applicants.

# GRADUATE ADMISSION POLICIES AND PROCEDURES

## ELIGIBILITY AND APPLICATION PROCEDURES

For admission to graduate study, applicants must show evidence of an earned baccalaureate degree from an accredited college or university and the potential to produce graduate work of high quality. An official transcript of all previous undergraduate and graduate work must be submitted. Applicants for degree status should have a minimum cumulative undergraduate grade point average of 2.50 (on a 4-point scale) and a scholastic average of 3.0 in their undergraduate major. The applicant must have successfully completed requisite courses or a specified degree program at the undergraduate level as determined by the recommending program. For all graduate programs, official scores on the Graduate Record Examination (GRE), Graduate Management Admission Test (GMAT), Miller Analogies Test (MAT), or other specified examinations or documents as defined by the recommending program is required. Students scoring below the 50th percentile on the verbal and/or analytical writing section of their standardized examination may be required to demonstrate additional proficiency. Individual departments and doctoral programs may have more rigorous standards and earlier deadlines. Applicants are therefore encouraged to contact the program of interest prior to submission of application materials. Test scores are valid up to five years from test dates.

A completed application package consists of the following:

- An online application, available at the following link: <https://www.applyweb.com/desug>;
- Letters of recommendation submitted by persons acquainted with the student's academic and/or professional performance as well as his or her potential for graduate study in the noted discipline (**see program requirements**);
- Standardized examination scores (**see program requirements**);
- One official transcript from each college or university attended;
- Supplemental documents (**see program requirements**); and
- A nonrefundable \$50.00 application fee.

All official documents must be forwarded to [gradstudieswilm@desu.edu](mailto:gradstudieswilm@desu.edu) or sent via regular mail to Delaware State University Office of Graduate Admissions, 3931 Kirkwood Hwy., Wilmington, DE 19808. GRE Scores are received electronically via the University Testing Service; please **select code 5153** for electronic submission of scores.

\*Please note that all application materials are to be received by the deadline noted. Incomplete applications **will not be** reviewed. Some graduate programs have earlier deadlines and more stringent admission requirements than noted for Graduate Studies and Research. Also note that some programs only admit once per year. The applicant is therefore advised to contact the prospective program of interest prior to submission of the application. **Complete** applications are reviewed and evaluated by the respective Department, which recommends action to the Dean of Graduate, Adult and Extended Studies. The Dean of Graduate, Adult and Extended Studies reviews all recommendations along with application materials, renders an admission decision and extends an offer of admission to the applicant.

## RETENTION OF APPLICATIONS

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

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

## GRADUATE INTERNATIONAL ADMISSIONS

In addition to the requirements noted above, international applicants to graduate programs of study must demonstrate a satisfactory level of proficiency in the English language. This proficiency requirement may be satisfied by meeting the criteria in any one of the following categories:

- Foreign applicants who hold the baccalaureate degree from a regionally accredited college or university within the United States are presumed to be proficient in the English language.
- Foreign applicants who hold the baccalaureate degree or its equivalent from a foreign institution in which English is the language of instruction are presumed to be proficient in English.
- Foreign applicants who do not meet the requirements outlined in 1 and 2 above must take the Test of English as a Foreign Language (TOEFL). Applicants should attain a score of at least 550 on the TOEFL (paper-based test), or a 79 (new Internet-based TOEFL) or a 6.5 minimum IELTS score. Have transcripts evaluated by the World Education Service (WES), Educational Credential Evaluators (ECE), Global Credential Evaluations Inc. (GCE) or the Association of Collegiate Registrars and Admissions Officers (AACRAO) and then forwarded by the evaluating organization to the Delaware State University Office of Graduate Admissions c/o DSU@Wilmington, 3931 Kirkwood Hwy., Wilmington, DE 19808. All academic records must be converted into their U.S. education equivalents by a University-recognized credential agency to obtain transfer credit for education completed at non-U.S. postsecondary institutions. Transcript evaluations must be submitted sealed from the evaluating organization.
- Complete and submit an I-20 Application, F-1 Student Seeking Financial Statement, and an Affidavit of Support for Free Room & Board (<https://www.desu.edu/academics/international-programs/resources-forms>) to the Office of International Affairs ([cmoore@desu.edu](mailto:cmoore@desu.edu)).

Official scores (along with all official documents) should be submitted to the Delaware State University Office of Graduate Admissions c/o DSU@Wilmington, 3931 Kirkwood Hwy., Wilmington, DE 19808.

**PLEASE NOTE:** Graduate Studies and Research reserves the right to request that transcripts from international English-speaking institutions be evaluated by WES or any of the other recognized credential agencies if educational equivalency cannot clearly be determined.

## IN-STATE PERMANENT RESIDENT

A student with an Alien Registration Receipt Card (“Green Card”) has been given permanent residence in the United States as an immigrant, refugee, or alien and, therefore, may enroll at any University location for full- or part-time study. Tuition costs are determined by location of residency. Verification of permanent residence status is required at the time of application. Any student without appropriate identification as a permanent resident of Delaware will be required to pay out-of-state tuition and fees.

- To apply as a student with permanent residency status, please note this information on the citizenship section of the online application and provide a notarized copy of permanent resident status, temporary evidence, or actual Alien Registration Receipt Card (Green Card) as an admission requirement.

To apply as a student with permanent residency status in the State of Delaware, please be prepared to submit the following documents to be used as verification:

- A notarized copy of the student’s Alien Registration Receipt Card (“GreenCard”);
- If dependent, proof that the student’s parents or guardian has maintained a continuous residence in the state of Delaware for a period of 12 full consecutive months (verified by a deed or lease and/or Delaware tax return forms) immediately prior to the first day of classes for the semester or session for which Delaware residency status is claimed;
- If independent, proof that the student has maintained continuous residence in the state of Delaware for a period of 12 full consecutive months (verified by deed or lease) immediately prior to the first day of classes for the semester or session for which Delaware resident status is claimed;
- An independent out-of-state resident who has worked in the state of Delaware for at least 12 consecutive months (excluding work study) may qualify for in-state residence classification (verified by Delaware tax return forms).

**PLEASE NOTE:** *The tax return should show proof that the student (or whoever claimed the student as a dependent) paid taxes to the state of Delaware for one full year.*

## APPLICATION FOR A STUDENT VISA\*

The Office of International Student Services issues the Form I-20 A-B Certificate of Eligibility for Nonimmigrant (F-1) to students who receive an offer of admission; for graduate students the offer is via Graduate Studies and Research. Additionally, students must complete the I-20 application, financial statement for F-1 students and an affidavit of support for room and board if residing off campus. Documentation of financial support for F-1 students is comprised of an affidavit of annual cash support with the following attachments:

- A Financial Statement or a signed copy of the student’s award letter or contract stating the exact amount of funds he or she will be receiving and for how long.
- An official letter from the student’s bank on official letterhead stating the current balance and date the account was opened; or
- An official letter from the University sponsor noting the source, amount, and length of university support; an Affidavit of Support for Free Room and Board (submit only if the student will reside with a friend or relative).
- A copy of the deed, lease or rent receipts (submit only if the student will reside with a friend or relative) and an official letter from the sponsor’s or student’s employer stating his/her position and income.

Additionally, students must also indicate their level of support for the remaining years of their Program of Study. Interested applicants are strongly encouraged to visit the Office of International Affairs website at: <https://www.desu.edu/academics/international-programs>.

Affidavits along with their attachments should be submitted to: The Office of International Student Services via email: [internationalaffairs@desu.edu](mailto:internationalaffairs@desu.edu); by mail: Delaware State University, Office of International Student Services, 1200 North DuPont Highway, Grossley Hall, Room 115A, Dover, DE 19901; or by fax: 302.857.6567.

Questions regarding this process should be directed to Mrs. Candace Alphonso-Moore at 302-857-6474 or [cmoore@desu.edu](mailto:cmoore@desu.edu).

## **F-1 TRANSFER STUDENTS\***

Graduate students with an F-1 Visa seeking to transfer to Delaware State University from another U.S. institution must meet admission standards as previously noted. Additional requirements include:

- A copy of the I-20 from the previous institution
- An International Student Transfer Form
- Documentation of financial support as noted in the previous section

**\*Students issued an F-1 visa are required to maintain full-time status during their entire graduate matriculation.**

## **STUDENTS WITH OTHER TYPES OF VISAS**

Prospective students with a temporary Visa status such as J or B (i.e., visitors, business, exchange, etc.) should contact the Office of International Student Services if they wish to change their status to an F-1 Student Visa.

Nonimmigrant students, other than F-1 international student Visa holders, may take as many credit courses as their admission status permits, as long as the term begins and ends within the duration of stay indicated on the visa in their passport. All international students studying on visas enrolled at Delaware State University are subject to the out-of-state tuition rates. Refunds will not be issued after the term's scheduled drop dates.

## **GRADUATE ADMISSION STATUS**

Applicants for graduate degrees are considered for admission and, if admitted, classified in one of four categories: Unconditional Admission, Provisional Admission, Conditional Admission, and Non-Degree Admission. Successful applicants are notified of their classification at the time of admission. While guidelines are noted below, please note that all graduate programs reserve the right to note more stringent admission guidelines and earlier deadlines than Graduate Studies and Research. It is therefore advisable to discuss program requirements with the Program Director prior to submission of application materials.

### **UNCONDITIONAL ADMISSION REQUIRES:**

- A bachelor's degree from a fully accredited four-year college or university;
- A minimum of 2.50 cumulative grade point average (GPA) as well as a scholastic average of 3.00 in the major on a 4.00-point system of grading (or the equivalent in another grading system);
- An acceptable score on the specified standardized examination;
- Completion of all undergraduate prerequisites for the selected Graduate Program;
- Submission of other admission documents as outlined by the respective program of interest.

### **PROVISIONAL ADMISSION INCLUDES:**

- An applicant who has not attained a baccalaureate degree from a fully accredited four-year college or university but who has completed at least 80 percent of degree requirements in the requisite or closely related discipline at the time of application submission and meets all other graduate admission requirements. Applicants in this category must submit official transcripts documenting receipt of the baccalaureate degree at least 30 days prior to the first date of enrollment in order to be eligible to register for graduate courses. International applicants must provide WES, GCE, AACRO or ECE evaluated transcripts 60 days prior to enrollment noting completion of the baccalaureate degree.

## How provisional admission status impacts your financial aid award:

### **Student Eligibility**

– 34 CFR 668.32.

- A person must be enrolled as a regular student in an eligible program to receive Federal Student Aid (FSA) funds .).
- A regular student is someone who is enrolled or accepted for enrollment in an eligible institution for the purpose of obtaining a degree or certificate offered by the school.
- A school must document a student's enrollment in an eligible program at the time of admission, and it must have a system to notify the Office of Financial Aid if the student leaves the program. It must also document that an aid recipient is a regular student.

### **Conditional Acceptance**

Some schools admit students provisionally or conditionally, for example, until they provide further documentation, such as academic transcripts or test scores, or demonstrate an ability to succeed in the program by receiving acceptable grades in program coursework. Typically, the school will limit these students' enrollment in terms of number of courses or enrollment status until they meet the necessary conditions. Students admitted as *conditional* are regular students only if the school officially accepts them into the eligible degree or certificate program.

The Department does not define official acceptance or admission. If the student is merely allowed to take some courses before being officially admitted to the program, s/he is not considered a regular student and is not eligible for Title IV funds until she is officially admitted.

### **Provisional / Conditional acceptance examples**

1. Delaware State University allows students to take graduate courses before they have taken the GRE, but it limits them to no more than three courses and does not admit them into its graduate programs until they have submitted acceptable GRE scores. They aren't regular students, and since the school hasn't admitted them, they aren't eligible for Title IV funds. (*Provisional*)
2. When Delaware State University accepts students into its graduate programs, it requires that the students receive no grade lower than a "B" in the first three courses. During this time, the school considers students to be admitted into the program, so they are eligible for FSA. If, however, students receive a grade lower than a B in any of the first three classes, their admittance will be withdrawn and they then will be ineligible for further Title IV funds. (*Conditional*)

For additional financial aid information, please see contact information for the Office of Financial Aid at

<https://www.desu.edu/admissions/financial-aid/resources/contact-financial-aid>.

## **CONDITIONAL ADMISSION INCLUDES:**

- An applicant who has attained a baccalaureate degree from a fully accredited four-year college or university in the requisite or closely related discipline and meets all graduate admission requirements, but must show proficiency in select upper division undergraduate or foundational graduate courses, earning a grade of B or better during the first year of enrollment. Specific course will be noted on the offer letter.
- A graduate of an accredited college or university who does not meet minimum graduate admission requirements and/or prescribed program requirements. Students in this category are required to meet the conditions noted in the admission offer or risk termination from their program.
- An applicant who has not attained the requisite degree at the time of application but will have met these requirements prior to graduate enrollment. Native students unable to document degree receipt prior to enrollment will be admitted provisionally for one semester. For international applicants, this requires a third party-evaluated transcript via WES, AACRO, ECE, GCE noting receipt of all degrees by the prescribed date of enrollment.
- Prospective international students who have not completed or do not meet the prescribed TOEFL or IELTS score requirement or who do not demonstrate English proficiency sufficient for academic success, but meet all other admissions criteria may be admitted conditionally and can enroll in the University's English Language Institute. All of the appropriate application fees and verification of financial support must be submitted to the Office of International Affairs, which will complete the appropriate immigration forms, usually a Form I-20 in preparation for a student's arrival to the United States.

## **NON-DEGREE ADMISSION**

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

- To complete certification requirements,
- To earn hours beyond the master's degree;
- To enrich their professional development; or
- To transfer earned credits to a degree program at another institution.

A non-degree-seeking student can take up to 9 credits hours in this status. A student who is subsequently admitted into a Delaware State University graduate degree program may petition to carry forward 9 semester hours of credit earned while in this status. Review and recommendation of transfer credit is made by the Chairperson or Program Director to the Dean of Graduate, Adult and Extended Studies for approval.

The applicant is advised that only fully admitted students, those admitted unconditionally, are eligible to receive federally funded financial aid. This information is also noted to the applicant in the admission offer.

## **SUBMITTING AN APPEAL REGARDING DENIAL OF ADMISSION**

Applicants wishing to file an appeal concerning denial of admission to a Graduate Program should only submit if there is evidence of a policy breach, as follows:

- Applicants wishing to appeal a denial of admission must do so 30 days prior to the first date of the enrollment term. Applicants should file, in writing, the appeal to the appropriate Chairperson or Graduate Program Director for resolution. The Chairperson or Graduate Program Director (under the direction of the Chairperson) shall submit any recommendation changes to Graduate Studies and Research, copying the student within 10 working days.
- If the disposition is not favorable, the Dean of Graduate, Adult and Extended Studies shall provide the final decision in writing to the student copying the Graduate Program Director and Department Chairperson within 10 working days. The Dean will only consider requests that can document evidence of a policy violation. All applicants are advised to review program admission standards prior to application submission as well as submission of an appeal.

## **CHANGE OF STATUS**

Admission status and requirements for change of status will be noted on each student's Program of Study and submitted to Graduate Studies and Research by the end of the first semester of enrollment by the Graduate Program Director. Provisionally admitted students must satisfy all admission requirements by the time noted in their offer of admission. Application for change of status must be submitted to the respective Graduate Program Director, who recommends action to the Dean of Graduate, Adult and Extended Studies. Students who are not fully admitted are limited to taking no more than 9 credit hours of graduate courses toward a graduate degree. Admissions holds will be placed on a student's account if all admissions requirements are not satisfied by the date noted in their offer of admission.

## **TRANSFER OF CREDIT**

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.

In all cases, the credit must be directly related to the graduate student's Program of Study and must have been completed within the time limit allowed by Delaware State University for the graduate degree sought by the applicant. Requests for transfer of graduate credit to master's programs should be included on the student's Program of Study and recommended by the Graduate Program Director, accompanied by an official transcript and the Application for Transfer of Credit form. All documents are then submitted to Graduate Studies and Research for review and approval no later than the end of the student's first semester of enrollment.

Applicants admitted to doctoral programs with an earned master's degree from an accredited institution must provide supporting documentation (as requested by the Program) at the time of admission. Program Directors will review all documentation and note the allowable course waivers in the Program's recommendation to Graduate Studies and Research. The Dean of Graduate, Adult and Extended Studies will note approval of hours in the admissions offer.

This policy does not pertain to courses taken at another institution during graduate matriculation at Delaware State University per the approval of the Program administrators and the University Registrar.

## **READMISSION**

### **AFTER A LAPSE IN REGISTRATION**

After the third semester in which a student's program runs, a student who has not registered must comply with the normal admissions process. Students will be asked to provide the reason for not continuing their studies and indicate their plan to succeed in the program, if admission is granted. The student must be in an unconditional admissions status. The Graduate Admissions Office will provide assistance with completing the application since students may not need to provide all documents required for admission. The Program Director/Department will follow all normal admissions processes to determine if a student will be readmitted to his or her program. The student will follow the regular admissions process and be subject to all applicable application fees.

### **AFTER ACADEMIC DISMISSAL**

A student must complete the readmission application and obtain approval for the Program Director. Students are required to submit a letter indicating the extenuating circumstances that led to academic dismissal and an outline/plan for succeeding in their program. Program Directors provide a statement in support of readmission and a success plan for the student. A new Plan of Study is submitted with the aforementioned documentation. The Dean of the School of Graduate, Adult and Extended Studies will review all documentation and render a decision.

Students requesting reinstatement of their financial aid must file the appropriate documents as noted via the Office of Financial Aid in addition to receiving reinstatement from Graduate Studies and Research.

## **APPLICANT CLASSIFICATION DEFINITIONS**

**Delaware Resident** - A student who is a resident of the state of Delaware or whose parent(s) are residents of the state of Delaware (if the student is a dependent) is considered a resident of the state. If the student is a dependent, and graduated from an out-of-state College or University, proof of residency must be submitted in order to avoid out-of-state tuition. Original (or notarized copies) of two of the following items can be submitted to show proof of residency:

- A completed Delaware tax return form from the previous year;
- A lease or mortgage agreement.

Applicants should indicate residency on their application for admission to the University. Applicants who are minors are considered to be resident applicants if their parent(s) or legal guardian(s) have been residents of Delaware for at least one year. Adult applicants (at least 24 years of age) are considered to be residents of Delaware if they have been residents of the state for at least one year prior to the date of their initial quest for admission to the University. A student who may have been admitted into the University at non-residency or out-of-state status may apply for a change in residency status after being enrolled at the University for 12 consecutive months. A student seeking a change in residency status should complete a Request for Change of Residence Form and submit an original or notarized copy of two of the following supporting documents to the Office of the Registrar:

- A completed Delaware tax return form from the previous year;
- A lease or mortgage agreement; and
- A Delaware State University student I.D.

**Please Note: The aforementioned does not apply to international students.**

**Non-Resident** - A student who is not a resident, or whose parent(s) are not residents of the State of Delaware (if considered a minor or dependent).

**International** - A student who is not a citizen or immigrant (permanent resident) of the United States of America is considered an international student. International students who are not U.S. citizens or immigrants should have a completed admission application on file three months prior to the beginning of the term in which they intend to enroll (**please review admission program requirements and deadlines**).

Questions regarding residency or changes in residency status should be directed to the Office of Records and Registration: 302.857.6375 or [registrar@desu.edu](mailto:registrar@desu.edu).

## GRADUATE ACADEMIC POLICIES AND REGULATIONS

### ACADEMIC MISCONDUCT

#### ACADEMIC MISCONDUCT MAY ENCOMPASS ANY COMBINATION OF THE FOLLOWING:

**Cheating** – The unauthorized use of information or materials, falsification of data and/or results, or the receipt of outside assistance in connection with any submitted work or activity for credit. This may include (but is not limited to) quizzes, projects, reports, papers, examinations, thesis, and/or dissertations.

**Plagiarism** – The act of taking credit for the ideas, words, or work of another. This includes (but is not limited to) quoting, summarizing, or paraphrasing from the work(s) of another without proper attribution.

### ACADEMIC INTEGRITY POLICY

- All graduate faculty should discuss the importance of academic integrity to the graduate education and research process. Academic misconduct should clearly be defined on course syllabi and graduate handbooks **along with the consequences to academic infractions**.
- Any faculty observing any graduate student involved in academic misconduct should submit a memorandum summarizing the alleged infraction(s) along with any documentation and proposed sanctions in writing to the student, copying the Department Chair, the Graduate Program Director, the Dean of the Academic unit in which the infraction occurred, and the Dean of Graduate, Adult and Extended Studies within 24 hours of the alleged infraction.
- The alleged infraction will be addressed through established Departmental/Academic College processes and will come to Graduate Studies and Research only if a resolution cannot be reached.
- A memorandum will be forwarded to Graduate Studies and Research within two business days following any decision made at the Program, Department, or College level and placed in the student's file. If the situation cannot be resolved, then the student(s) in question must appear before the Graduate Studies Academic Misconduct Committee within five business days from receipt of the College's final decision. The Committee Chair will submit a summary report within 48 hours of the hearing to the Dean of Graduate, Adult and Extended Studies. If the student admits to the infraction and agrees with the proposed sanction, then these actions will constitute the summary report. If the student(s) do not agree that they are guilty of the alleged infraction and/or the sanction proposed by the faculty member, then the committee's findings and recommendation should be included in the summary report.
- Any graduate student observing academic misconduct will notify a Department faculty member, Graduate Program Director, or Department Chair who will submit to the previously described process within 24 hours of receiving any pertinent information.
- The Dean of Graduate, Adult and Extended Studies will submit a recommendation in writing to the Provost and Vice President, Academic Affairs, whose decision will be final. The findings will be relayed in writing to the student(s) in question and copied to the Program Director, Department Chairperson, and Academic Dean.

## **ADMISSION DEFERMENT**

Students who have met all admission standards and have therefore been unconditionally admitted to a Graduate Program of Study may request a deferral of up to one academic year subject to the approval of the Program administrators. Deferred students are subject to any Program changes that have been implemented during the deferment, and any funding offers made at the time of the initial offer are no longer binding.

## **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 Graduate Studies and Research.
- **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 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/student-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](https://www.desu.edu/mydesu) student services portal. Prior to development and submission of the Plan of Study to Graduate Studies and Research, 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

Degree-seeking students may consult with an Advisor prior to registering; however, their Plan of Study should provide them with the guidance needed for registration. Students may have their Academic Departments continue to enter their registrations and schedule changes (drop/adds), or they may register and make adjustments to their schedule online. To register online, students may visit the University's myDESU website at [my.desu.edu](https://www.desu.edu). Students may also view their transcripts, as well as Student Accounts and Financial Aid information, at the myDESU website listed above. Unofficial transcripts and schedules may also be printed.

## CHANGE IN PROGRAM OR PERSONAL DATA

Students must submit personal data (address or telephone number) changes on the appropriate forms available in the Office of Records and Registration as often as changes are made or may update their personal data on the myDESU website.

In order for a student to request a change in his or her program, the student must be in good academic standing (at least a 3.0 GPA) in the existing program. Students must fill out the Change of Program application and obtain the signatures of the former Program Director and the new Program Director. A Plan of Study is submitted to the Office of Graduate Studies and Research. Students may be subject to providing supplemental documentation. Students wishing to change concentrations within a program may do so based upon the recommendation of the Program Director and approval of Department Chairperson within the first year of enrollment. Changes become effective at the start of the next semester. Program changes cannot take place in between Block I or Block II of any semester.

## 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**

Full-time graduate enrollment is defined at Delaware State University as a minimum of 6 credit hours. Students enrolled in less than 6 credit hours per semester are considered part-time students, with those enrolled for 3 credit hours defined as half-time students. Full-time students must meet the academic regulations specified within this document to remain in good standing.

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**

Courses may be taken for audit by graduate or non-degree students with the permission of the Instructor and the student's Advisor. No credits are earned for auditing courses. The deadline for designating a course as an audit is at the end of the first week of each semester. A grade of "AU" is entered on the graduate student's record for the course. Persons carrying less than full-time credit hour load of 6 credit hours are charged the per credit hour fee for the course. The final grade of "AU" is assigned to the course and does not affect the grade point average. Courses taken for audit do not count toward full-time enrollment or for financial aid eligibility. Official requests to audit a course are accepted by the Office of Records and Registration during the period between pre-registration and late registration (the period for submitting a request to audit a course coincides with the add period.) The Notice of Class Change form (Drop/Add Slip) should be used to change a course to audit status.

## **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. 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 CLASSES ONLINE**

Eligible students without financial holds are permitted to add and drop classes online at the University's myDESU website at [my.desu.edu](http://my.desu.edu). The approval to adjust the course schedule online must be obtained from the student's Academic Advisor prior to going online to adjust his or her schedule.

### **ADDING CLASSES**

To add a class, students may go online after obtaining approval from their Academic Advisor or Department Chair or follow the steps below:

- Obtain a Notice of Class Change form (Drop/Add Slip) from their Academic Department.
- Complete the student and class information portions of the form.
- Obtain the signatures of the appropriate Instructor and the appropriate Advisor/ Chair.
- Submit the completed form to the Office of Records and Registration. The effective date of the drop is the date the slip is filed in the Records Office.

The deadline for adding of classes is outlined in the Academic Calendar. For courses offered on a schedule different from the regular fall, spring, and summer terms, the add period is the shorter of one week or the calendar equivalent of 13 percent of the instructional time. For such courses that meet only once per week, the add period ends on the day before the second meeting of the class. The last day to drop such a course is prior to completion of 60 percent of the instructional time.

### **DROPPING CLASSES**

To drop a class, students may go online after obtaining approval from their Academic Advisor or Department Chair or follow the steps below:

#### **THROUGH THE END OF LATE REGISTRATION**

- Obtain the Notice of Class Change Form (Drop Slip) from the Academic Department.
- Have Instructors and Advisors/Chairs sign and date the form.
- Submit the form to the Office of Records and Registration.

The effective date of the drop is the date the slip is filed in the Records Office. Courses dropped prior to the end of the late registration period will not appear on the student's grade report or transcript (a current Refund Policy statement may be obtained from the Office of Student Accounts to determine the student's financial responsibility).

#### **AFTER LATE REGISTRATION THROUGH THE SCHEDULED LAST DAY FOR DROPPING CLASSES**

- Obtain the Notice of Class Change Form (Drop Slip) from the Academic Department.
- Have Instructors and Advisors/Chairs sign and date the form.
- Submit the form to the Office of Records and Registration.

The effective date of the drop is the date the slip is filed in the Records Office. The dropped course will appear on the grade report and transcript with a grade of "W" for "Withdrew" (a current Refund Policy statement may be obtained from the Office of Student Accounts to determine the student's financial responsibility for courses dropped during this period).

## **AFTER THE SCHEDULED LAST DAY FOR DROPPING CLASSES AND UP TO THE LAST WEEK OF CLASSES**

- Obtain the Notice of Class Change Form (Drop Slip) from the Academic Department.
- Have Instructors and Advisors/Chairs sign and date the form.
- Students must obtain the signature of the Dean of the School/College.
- Submit form to the Office of Records and Registration. The course will appear on the grade report and transcript with a grade of “WA” for “Administrative Withdrawal.”

The Dean is the only University official who may approve the dropping of a class at this point in the semester. The appropriate Dean shall permit students who officially request to drop specific classes from their academic schedules to do so only in cases involving extraordinary circumstances that are clearly beyond the control of the students making such a request. **In no case shall a student be permitted to drop a class for any reason that relates exclusively to academic performance.**

## **WITHDRAWAL FROM COURSES OR THE UNIVERSITY**

After the last day to drop courses, withdrawal from a course requires a graduate student to obtain the Advisor’s approval and then to petition the Dean of Graduate, Adult and Extended Studies, explaining that he is she is interested in withdrawing from the course due to extenuating circumstances beyond control. Such a petition must contain conclusive evidence, properly documented, of the situation that prevents completion of the course. Acceptable reasons do not include dissatisfaction with performance in a course, with instruction, or with an expected grade. If the petition is approved, the graduate student will receive a grade of “WA” (Administrative Withdrawal) in the course.

A graduate student who wishes to withdraw from all courses or the Graduate Program must obtain and complete a Withdrawal Form from the Office of Records and Registration. Withdrawal is complete when all necessary signatures have been obtained and the form has been received in and processed by the Office of Records and Registration. A student who withdraws from the University will receive a grade of “W” in each course enrolled that term. All withdrawals must be completed on or before the last day to withdraw from the University as indicated on the Academic Calendar for the term.

For graduate courses offered on a schedule different from the standard academic terms, the last day to withdraw from a course is prior to completion of 60 percent of the instructional time. The last day to withdraw from the University is prior to the final week of the student’s classes.

**To re-enter the Graduate Program after withdrawing from the University, a graduate student must reapply for admission.**

## **ADMINISTRATIVE WITHDRAWAL FROM THE UNIVERSITY**

A student with a compelling reason (such as documented extreme personal difficulty or documented medical reason) may request to be administratively withdrawn from the University for a previous term. Administrative withdrawal is rarely granted, but it may be warranted in some circumstances. Only the Provost and Vice President for Academic Affairs may authorize such withdrawal, and the following procedure must be followed.

- The student must submit a written request for administrative withdrawal from the University to the Dean of Graduate, Adult and Extended Studies. The request must state the compelling reason, specify the term to be withdrawn, and be accompanied by documentation of the validity of the reason.
- The Dean of Graduate, Adult and Extended Studies reviews the request and submits his or her recommendation in writing to the Provost and Vice President for Academic Affairs, along with the request and documentation from the student.

If the Provost and Vice President for Academic Affairs approves the request, the student is reported to the Office of Records and Registration as “Administratively Withdrawn,” and a grade of “WA” is assigned for all courses taken during that semester. The Provost and Vice President for Academic Affairs also informs the student in writing of the decision

**Please Note: If a student has received financial aid, including a refund, from Title IV funds and completed less than 60 percent of the semester from which he/she wishes to withdraw, then that student must refund the percentage of financial aid corresponding to the percentage of the semester the student has not completed.**

## ACADEMIC PROBATION, SUSPENSION AND DISMISSAL

Graduate students who receive a grade of “U” in a graduate course or thesis/dissertation or do not achieve a cumulative grade point average of or greater at the end of their second semester are placed on academic probation for the following term.

## DISMISSAL

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

1. Receiving a grade of “D” or “F” in a graduate course;
2. Failure to achieve a term grade point average of 3.0 or greater while on academic probation;
3. Being placed on academic probation for more than two (2) terms; or
4. Receiving three (3) grades of “C.”

## TRANSCRIPT REQUESTS

A transcript of a student’s academic record is released to a third party upon the written and signed request of the student. In accordance with the Family Educational Rights & Privacy Act (FERPA), exceptions to this include release of academic records to University officials with legitimate rights, educational interests, and transfer institutions.

An official transcript, one bearing the seal and Registrar’s signature, is sent from the Office of Records and Registration directly to the official or institution specified by the student. There is a fee of \$10.00 for each transcript requested. A request for a transcript will normally be processed within 5-7 business days (**subject to change**) except during peak work periods such as registration, pre-registration, final examinations, and Commencement. An official transcript includes all academic coursework at Delaware State University.

Transcripts submitted by the student from other institutions become the property of Delaware State University and are not reissued or copied for release. Requests for other institutions’ transcripts must be made directly to the respective institutions.

## NOTIFICATION OF RIGHTS UNDER FERPA FOR DELAWARE STATE UNIVERSITY STUDENTS

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

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

- The right to request the amendment of the student's education records that the student believes are inaccurate or misleading. Students may ask the University to amend a record that they believe is inaccurate or misleading. They should write the University official responsible for the record, clearly identify the part of the record they want changed, and specify why it is inaccurate or misleading. If the University decides not to amend the record as requested by the student, the University will notify the student of the decision, and advise the student of his or her right to a hearing regarding the request for amendment. Additional information regarding the hearing procedures will be provided to the student when notified of the right to a hearing.
- The right to consent to disclosures of personally identifiable information contained in the student's education records, except to the extent that FERPA authorizes disclosure without consent. **One exception**, which permits disclosure without consent, is disclosure to school officials with legitimate educational interests. A school official is a person employed by the University in an administrative, supervisory, academic or research, or support staff position (including law enforcement unit personnel and health staff); a person or company with whom the University has contracted (such as an attorney, auditor, or collection agent); a person serving on the Board of Trustees; or a student serving on an official committee, such as a disciplinary or grievance committee, or assisting another school official in performing his or her tasks. A school official has a legitimate educational interest if the official needs to review an education record in order to fulfill his or her professional responsibility. Upon request, the University discloses education records without consent to officials of another school in which a student seeks or intends to enroll.
- The student has the right to file a complaint with the U.S. Department of Education concerning alleged failures by Delaware State University to comply with the requirements of FERPA. The name and address of the Office that administers FERPA is:  
Family Policy Compliance Office | U.S. Department of Education  
400 Maryland Avenue, SW Washington, D.C. 20202- 4605

## DIRECTORY INFORMATION

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

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

- Name
- Address (including email address)
- Telephone number
- College/School
- Classification
- Major field of study
- Dates of attendance
- Enrollment status
- Academic honors
- Degree(s) conferred (including dates)

Graduate students who do not wish to have the above information released should complete an information exclusion card available at the Office of Records and Registration.

**Please Note:** While the withholding request may be made at any time, students wishing to have directory information withheld from the student directory should submit their requests no later than three weeks prior to the first day of fall semester classes.

## MATRICULATION DOCUMENTS/PROCESSES

Effective October 1, 2019, all matriculation forms must be submitted via DocuSign. DocuSign is an electronic platform that electronically routes documents through the signature process. Initiators of a particular form are responsible for providing the contact information of each person required to sign each form. Forms and directions for using DocuSign are located on the Graduate Studies and Research website.

**Change of Admission Status:** All provisionally admitted students must be fully admitted by the end of the first year of enrollment or as noted on their offer of admission in order to continue with their Program of Study. **Only fully admitted students are eligible to receive federally funded financial aid.** Once the change of status is approved, fully admitting the student to his or her Graduate Program, this information is forwarded to the Office of the Records and Registration and the Office of Financial Aid.

**Plan of Study:** The Program Director or assigned Advisor should review the general Program of Study with each student. An individual plan should be submitted to Graduate Studies and Research by the end of the student's first semester of enrollment. This document should be signed by the student, Program Advisor, Program Director and Chairperson prior to submission to the Dean of Graduate, Adult and Extended Studies for approval. This process signifies that the student has been advised and is aware of all requirements for successful matriculation. This document will be used for audit purposes as the student matriculates through the Program of Study. Any revisions to the plan should be submitted to Graduate Studies and Research. Requests for **transfer of credit** should be noted on this form as well and accompanied with an official transcript. This information once approved by Graduate Studies and Research is forwarded to the Office of Records and Registration and noted on the student's Delaware State University transcript.

**Advisory Committee:** For all thesis and dissertation programs, the Program Director (or designated Advisor) is responsible for fostering the committee appointment process. The committee should be formulated no later than the end of the second semester of enrollment for master's programs, the end of the third semester of enrollment for the Doctor of Education program, or the fifth semester of enrollment for Doctor of Philosophy programs. The Program Director (or designee) will schedule an initial meeting with the student during the first semester of enrollment to develop a Plan of Study, at which time the process for establishment of an Advisory Committee will be discussed. A meeting will be called in which all committee members will assemble to discuss the responsibilities of the committee, the student's Capstone project, and frequency (and mode) of meeting. The Chair of the Advisory Committee should hold faculty rank in the same Department/Program of the student. All committee signatures are gathered at this meeting; a copy will be submitted to the Graduate Studies and Research Office, one retained by the student, and one copy retained in the Department Office. The Program Director will monitor student progress via this committee once established. Programs not requiring a thesis or dissertation but require a culminating activity requiring committee approval should forward this document to Graduate Studies and Research, or the Program Director may submit a memorandum noting the decision process for their program. Please note that a copy of the Curriculum Vitae (CV) of the External Committee member must accompany every Advisory Committee form. CVs will remain on file for five years and will need to be updated and resubmitted at the end of the five year period.

**Application for Advancement to Candidacy:** All graduate students **must petition** their program administrators for **permission** to advance to candidacy status. Students must be fully admitted and in good standing academically in order to meet this milestone. Students enrolled in master's programs requiring a thesis must complete the candidacy application following successful completion of the required curriculum and approval of a research proposal or prospectus (as well as successful defense for some programs) by their Advisory Committee (per the Delaware State University Graduate Catalog). For students enrolled in non-thesis programs, candidacy admission is based upon successful completion of the required or core curriculum. Completion of a Capstone or culminating activity will be noted on the Plan of Study. Outcomes reports along with rubrics will be submitted prior to graduation. Doctoral students are admitted to candidacy following successful completion of qualifier or comprehensive examinations. Successful submission and defense of a dissertation is a requirement for all Ph.D. programs as well as the dissertation track for the Ed.D. program, and therefore the proposal defense is a requirement for the dissertation (per the Delaware State University Graduate Catalog). If the research project requires IRB approval, this should be acquired following the proposal defense and prior to beginning the research project. This documentation is also required with the candidacy application. All master's students should complete this requirement along with any supporting documentation no later than the semester prior to graduation, while doctoral students must do so no later than two semesters prior to graduation.

## THESIS SUBMISSION PROCESSES

A master's degree student who elects or is required to complete a thesis must have a Thesis Committee established no later than the end of the second semester of full-time residency (as previously noted). The committee shall consist of a minimum of four members' equivalent to the rank of Assistant Professor or above, at least one of whom shall be from outside the Department (some programs have more stringent requirements). The external member is prohibited from serving as chair. The Committee membership must be approved by the Research Advisor, Department Chairperson or designee, College Dean, and Dean of Graduate Studies and Research.

A graduate student initiating a thesis project should select a topic in consultation with the Research Advisor and the Graduate Program Director. The graduate student must file for and receive approval from the Thesis Committee during the semester prior to beginning work on the thesis. At a minimum this request will require the student to submit a brief written thesis proposal to the committee for its approval. Graduate programs may have additional requirements, including but not limited to oral presentation of the project proposal. This document is submitted with the candidacy application as noted.

Due to the nature of research and creative work at the graduate level, it is expected that the thesis project may evolve in unanticipated ways. Graduate students are strongly advised to consult frequently with their Research Advisor and to keep their Thesis Committee members apprised of progress. In the event that the student and the Advisor decide to make substantive changes in the project's goals, aims, or scope, a revised thesis proposal should be submitted, reviewed, and approved in the same manner as the initial proposal.

A graduate student preparing a thesis must present and satisfactorily defend the thesis in an oral presentation and examination to the Thesis Committee during the student's final semester. All members of the committee shall be given a copy of the final draft of the thesis at least one week (7 days) prior to the examination for master's theses. The **completed** thesis should be submitted to the respective committee for review and if deemed acceptable, an oral examination consisting principally of a defense of the thesis will be scheduled. **Only students admitted to candidacy are eligible to schedule a defense.** The [Defense Scheduling Form](#) is used for this purpose. The document must be submitted to Graduate Studies and Research no later than **four weeks** prior to the requested date. It is the responsibility of **Graduate Studies and Research** to inform the University community of the pending defense via publication in The Buzz so that interested persons can attend the presentation portion.

The thesis defense has four components:

- Presentation of the work by the student;
- Defense of the thesis by the student through questioning in an open session by the committee members and others in attendance and, if requested by the committee, at a closed session for the committee and the student only;
- Discussion by the committee in a closed session to determine whether or not the thesis, including its defense, is satisfactory; and
- Communication to the student by the Committee Chairperson the outcome of the defense.

The committee has five alternatives:

- Accept the thesis without any recommended changes, and for all members to sign the approval page;
- Accept the thesis, subject to the student making the recommended changes, with all committee members, except the Chairperson signing the approval page, and the Chairperson responsible for checking the revised thesis to ensure the changes were made, and signing approval at that time;
- Recommend revision to the thesis, but not to sign until the revised thesis has been submitted to and reviewed and approved by the committee members;
- Recommend revision of the thesis and a second meeting of the committee with the student to review the thesis and complete the defense; or
- The thesis, including its defense, is determined to be unsatisfactory, and therefore the student fails.

The **Defense Outcomes Form** is a report to Graduate Studies and Research on the candidate's performance (as the oral examination is in partial fulfillment of the degree) and is expected within five business days following the defense. No thesis will be reviewed by Graduate Studies and Research without receipt of this documentation. With the exception of accepting the document without any changes, the Chairperson will attach a summary of expectations and/or processes required for completion of all revisions/corrections as well as the expected timeline for completion. If the candidate fails the defense, the Chairperson will attach a summary and if/when a second examination (defense) will be scheduled. A document approved by the committee is submitted to the Dean of the College and finally to the Dean of Graduate, Adult and Extended Studies for final approval. Graduate Studies and Research is not responsible and will not provide editorial services for candidates. Documents not adhering to general guidelines will be sent back to the Academic College for review. Graduate Studies and Research reviews general formatting and the following content areas:

- Introduction including background, significance and scope of the study undertaken;
- Review of the literature;
- Research methodology or experimental procedure;
- Discussion of research findings;
- Conclusion(s) and suggested future work.

**An extensive review is provided in the Thesis/Dissertation Handbook found at the following link:**

[https://sgaes.desu.edu/sites/sgsr/files/document/6/thesis\\_and\\_dissertation\\_handbook.pdf](https://sgaes.desu.edu/sites/sgsr/files/document/6/thesis_and_dissertation_handbook.pdf)

Graduate students must have the thesis completed, defended, approved, and submitted to ProQuest for binding prior to the date noted in the Academic Calendar. Students whose final signed theses/dissertations are not submitted to ProQuest before the noted deadline will not be eligible to participate in Commencement ceremonies.

The thesis and all related procedures must be completed as noted in the Academic Calendar for those planning to graduate at the conclusion of the fall or spring semester. The finished thesis, which includes changes resulting from the oral examination along with a completed approval form, must comply with criteria described in the Thesis Handbook. The finished document must be submitted online to ProQuest at <http://www.etsdadmin.com/cgi-bin/school?siteid=801>. Prior to submission, all students will be required to view the ProQuest Submission Tutorial. The distribution of bound copies will be as follows at the expense of the student:

- One bound original (8.5" x 11.0") to the University Library;
- Personal copy(ies) at the student's discretion.

A graduate student who requires more than one semester to complete the thesis will receive the symbol "Q" (thesis incomplete) for each semester in which progress is satisfactory, until the thesis is satisfactorily completed. A graduate student who has previously registered for thesis and completed all course and research requirements may choose not to register for, or work on the thesis, but must pay the current Sustaining Fee (all other fees waived) for each semester until the degree is completed. Semesters not registered will count toward the time limit allotted to complete the degree. The Department Chairperson (or designee) must recommend to the Dean of Graduate, Adult and Extended Studies approval of all registrations for the sustaining thesis beyond one semester.

## **NON-THESIS OUTCOMES REPORTING**

Capstone or culminating activities reports along with rubrics are due as noted for all graduating students as noted on the Academic Calendar (but no later than the date for submission of grades to the Office of the Records and Registration). The outcome may be summarized on the defense outcomes report the same form as the thesis defense noting the activity and the selection of the outcome as previously noted.

## DISSERTATION SUBMISSION PROCESSES

A doctoral degree student must have a Dissertation Committee established not later than the end of the third semester of full-time residency or before his or her dissertation project begins. For a doctoral dissertation, the committee will be augmented by an additional expert member from outside the University at the time of dissertation defense. The committee shall consist of five members equivalent to the rank of Assistant Professor or above, at least one of whom shall be from outside the Department. The external member is prohibited from serving as chair. The committee membership must be approved by the Research Advisor, Department Chairperson (or designee), College Dean, and Dean of Graduate Studies and Research.

A doctoral student initiating a dissertation project should select a topic in consultation with the Research Advisor and the Graduate Program Director. The graduate student must file for and receive approval from the Dissertation Committee during the semester prior to beginning work on the dissertation. At a minimum this request will require the student to submit a brief written dissertation proposal to the committee for its approval. Graduate programs may have additional requirements, including but not limited to oral presentation of the project proposal. This document is submitted along with the application for candidacy. Students engaged in research requiring Institutional Review Board (IRB) approval must do so prior to beginning the research project and should provide this documentation as noted on the candidacy application.

Due to the nature of research and creative work at the graduate level, it is expected that the dissertation project may evolve in unanticipated ways. Graduate students are strongly advised to consult frequently with their Research Advisor and to keep their Dissertation Committee members apprised of progress. In the event that the student and the Advisor decide to make substantive changes in the project's goals, aims, or scope, a revised dissertation proposal should be submitted, reviewed, and approved in the same manner as the original proposal.

A doctoral student preparing a dissertation must present and satisfactorily defend the dissertation in an oral presentation and examination by the Dissertation Committee during the student's final semester. The **completed** dissertation should be submitted to the respective committee for review and if deemed acceptable, an oral examination consisting principally of a defense of the dissertation will be scheduled. All members of the committee shall be given a copy of the final draft of the dissertation three weeks (15 business days) prior to the examination for a doctoral dissertation. Defense will be conducted with a maximum of two presentations -- one, open to the general public and one, closed session. Number of question(s) will be determined by the Program Director. **Only students admitted to candidacy are eligible to schedule a defense.** The [Defense Scheduling Form](#) is used for this purpose. The document must be submitted to Graduate Studies and Research no later than **four weeks** prior to the requested date. It is the responsibility of **Graduate Studies and Research** to inform the University community of the pending defense via publication in The Buzz so that interested persons can attend the presentation portion.

The dissertation defense has four components:

- Presentation of the work by the student;
- Defense of the dissertation by the student through questioning in an open session by the committee members and others in attendance and, if requested by the committee, at a closed session for the committee and the student only;
- Discussion by the committee in a closed session to determine whether or not the dissertation, including its defense, is satisfactory; and
- Communication to the student by the Committee Chairperson the outcome of the defense.

The committee has five alternatives:

- Accept the dissertation without any recommended changes, and for all members to sign the approval page;
- Accept the dissertation, subject to the student making the recommended changes, with all committee members except the Chairperson signing the approval page, and the Chairperson responsible for checking the revised dissertation to ensure the changes were made, and signing approval at that time;

- Recommend revision to the dissertation, but not to sign until the revised dissertation has been submitted to and reviewed and approved by the committee members;
- Recommend revision of the dissertation and a second meeting of the committee with the student to review the dissertation and complete the defense; or
- The dissertation, including its defense, is determined to be unsatisfactory, and therefore the student fails.

The **Defense Outcomes Form** is a report to Graduate Studies and Research on the candidate's performance (as the oral examination is in partial fulfillment of the degree) and is expected within 5 business days following the defense. No dissertation will be reviewed by Graduate Studies and Research without receipt of this documentation. With the exception of accepting the document without any changes, the Chairperson will attach a summary of expectations and/or processes required for completion of all revisions/corrections as well as the expected timeline for completion. If the candidate fails the defense, the Chairperson will attach a summary and if/when a second examination (defense) will be scheduled. A document approved by the committee is submitted to the Dean of the College and finally to the Dean of Graduate, Adult and Extended Studies for final approval. Graduate Studies and Research is not responsible and will not provide editorial services for candidates. Documents not adhering to general guidelines will be sent back to the Academic College for review. Graduate Studies and Research reviews general formatting and the following content areas:

- Introduction including background, significance and scope of the study undertaken;
- Review of the literature;
- Research methodology or experimental procedure;
- Discussion of research findings;
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Doctoral students must have the dissertation completed, defended, approved, and submitted to ProQuest for binding prior to the date noted in the Academic Calendar. Students whose final signed dissertations are not submitted to ProQuest before the noted deadline will not be eligible to participate in Commencement ceremonies.

The dissertation and all related procedures must be completed as noted in the Academic Calendar for those planning to graduate at the conclusion of the fall or spring semester. The finished dissertation, which includes changes resulting from the oral examination along with a completed approval form, must comply with criteria described in the Thesis/Dissertation Handbook. The finished document must be submitted online to ProQuest at <http://www.etsadmin.com/cgi-bin/school?sitelid=801>. Prior to submission, all students will be required to view the ProQuest Submission Tutorial. The distribution of bound copies will be as follows at the expense of the student:

- One bound original (8.5" x 11.0") to the University Library;
- Personal copy(ies) at the student's discretion.

A doctoral student who requires more than one semester to complete the dissertation will receive the symbol "Q" (dissertation incomplete) for each semester in which progress is satisfactory, until the dissertation is satisfactorily completed. A doctoral student who has previously registered for dissertation research credit and completed all course and research requirements may choose not to register for, or work on the dissertation, but must pay the current Sustaining Fee (all other fees waived) for each semester until the degree is completed. Semesters not registered will count toward the time limit allotted to complete the degree. The Graduate Program Director must recommend to the Dean of Graduate, Adult and Extended Studies approval of all registrations for the sustaining dissertation beyond one semester.

A graduate student who requires more than one semester to complete the dissertation will receive the symbol "Q" (dissertation incomplete) for each semester in which progress is satisfactory, until the dissertation is satisfactorily completed. A graduate student who has previously registered for dissertation and completed all course and research

requirements may choose not to register for, or work on the dissertation, but must pay the current Sustaining Fee (all other fees waived) for each semester until the degree is completed. Semesters not registered will count toward the time limit allotted to complete the degree. The Graduate Program Director and Dean of Graduate Studies and Research must approve all registrations for the Sustaining Dissertation beyond one semester.

## **DEGREE REQUIREMENTS AND APPLICATION FOR GRADUATION**

In order to earn a master's or a doctorate degree, graduate students must satisfy all of the institutional requirements as well as the specified requirements of the program in which they are enrolled. At a minimum to earn a master's degree, a student must have earned at least 30 graduate credits, of which no more than 6 may be thesis, internship, or other special project. At a minimum to earn a doctoral degree, a student must have earned at least 60 graduate credits (including those previously applied toward a master's degree and accepted as part of the doctoral curriculum), of which not more than 18 may be for the dissertation. Students may take additional thesis or dissertation credits, as needed, for the duration of their project. In no cases may additional thesis/dissertation credits be substituted for core or elective courses in determining qualification for the degree.

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

Graduate students who expect to graduate in December or May must file an application and a copy of their DegreeWorks Audit for Graduation with Graduate Studies and Research for review as noted in the Academic Calendar. Upon review and approval from the Dean of Graduate, Adult and Extended Studies, the application and audit will be forwarded to the Office of Records and Registration by its noted deadline.

Graduate audits require submission and approval of all required documentation in order to remain in good standing:

- Plan of Study (with any requested transfers of credit) by the end of the first semester of enrollment;
- Thesis/Dissertation Programs - Advisory Committee prior to beginning culminating activity requirement; and
- Thesis/Dissertation Programs - Candidacy Application no later than 1 semester prior to graduation for graduate students; 2 semesters prior to graduation for doctoral students.

## **PARTICIPATION IN GRADUATION EXERCISES**

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

- File the application and audit for graduation and all supporting documents as previously noted;
- Enroll in all courses required to complete degree requirements;
- Successfully complete those courses of current enrollment and satisfy all degree program requirements;
- Submit any required thesis or dissertation to the library for binding as noted in the Academic Calendar;
- Satisfy all financial obligations to the University.

Graduate degree recipients interested in participating in Commencement ceremonies must submit the Application for Graduation according to the procedures and deadlines in place, even if they completed the requirements the previous August or December.

## **SUBMITTING AN APPEAL**

Appeals concerning reevaluation of a final course grade should be submitted as follows:

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

- If the disposition is not favorable, the graduate student may appeal to the respective College Dean, by submitting the previous appeal documents, the Graduate Program Director's response, and any additional relevant information. The Dean shall reply to the student within 10 business days.
- If the disposition is not favorable, the final appeal may be brought in writing to the Dean of Graduate, Adult and Extended Studies. All prior documents plus additional information must be submitted.
- The Dean of Graduate, Adult and Extended Studies shall reply to the student within 10 business days.

Appeals concerning reinstatement from dismissal from a Graduate Program must be submitted to the Dean of Graduate, Adult and Extended Studies. The appeal must be in writing, include documented support from the Graduate Program Director and College Dean, and provide an explanation from the student describing how he or she will complete the degree program successfully, if reinstated.

# 2021-22<sup>^</sup> Tuition and Fees

## DOCTORAL & GRADUATE FEES | DOVER

	IN-STATE	OUT-OF-STATE	DOCTORAL
Per Credit Hour	\$430.00	\$948.00	\$544.00
Registration Fee	\$60.00	\$60.00	\$60.00
Technology Fee	\$55.00	\$55.00	\$55.00
Student Activity Fee	\$60.00 <i>(Pro-rated based on credit hours)</i>	\$60.00 <i>(Pro-rated based on credit hours)</i>	\$60.00 <i>(Pro-rated based on credit hours)</i>
Totals <i>(with one credit hour)</i>	\$605.00	\$1,123.00	\$719.00

## GRADUATE FEES | WILMINGTON AND ONLINE

	MBA	MSN <i>(online only)</i>	Public Administration	Social Work, Sport Administration
Per Credit Hour	\$515.00	\$450.00	\$464.00	\$438.00
Registration Fee	\$60.00	\$60.00	\$60.00	\$60.00
Technology Fee	\$55.00	\$55.00	\$55.00	\$55.00
Student Activity Fee	\$60.00 <i>(Pro-rated based on credit hours)</i>			
Totals <i>(with one credit hour)</i>	\$690.00	\$625.00	\$639.00	\$613.00

## GRADUATE FEES | MASTER OF OCCUPATIONAL THERAPY

Current Cost	MOT Program 2021 Fall I Semester	MOT Program 2022 Spring I Semester	MOT Program 2021-2022 Academic Year	Total Program Cost (2 year program 2021-2023)
Tuition	\$15,400	\$17,600	\$39,600	\$69,300
Student Fees	\$1,125	\$1,350	\$2,700	\$5,175
Books & Supplies	\$1,100	\$1,250	\$2,350	\$5,050
Total	\$17,625	\$20,200	\$44,650	\$79,525

\* Tuition & Fees also includes Summer Sessions of Level III and IIb Fieldwork.

\* Tuition & Fees subject to change.

## STUDENT HEALTH INSURANCE FEE\*\*

FALL	SPRING	YEARLY TOTAL
\$399.50	\$399.50	\$799.00

\*\* 12 or more credit hours. Students with adequate health insurance coverage may opt/waive out of this fee. For more information on opting out or activating student health insurance coverage, visit [www.desu.edu/student-life/campus-health-services](http://www.desu.edu/student-life/campus-health-services).

**LAB FEES:** Laboratory fees are assessed for some courses to cover the cost of supplies and special facilities. Labs may vary from \$10.00 to \$20,000.00. The Aviation labs vary from \$5,000.00 to \$20,000.00 per related course.

## STUDENT MEAL PLANS

*(Dormitory students MUST select one option from below.)*

	FALL	SPRING	YEARLY TOTAL
19 Meal (\$200 Flex)	\$2,184.45	\$2,184.45	\$4,368.90
200 Block (\$225 Flex)	\$2,110.10	\$2,110.10	\$4,220.20
125 Block (\$150 Flex)	\$2,043.90	\$2,043.90	\$4,087.80
Hornet Dollars*	\$1,000.00	\$1,000.00	\$2,000.00
75 Block PLUS** (\$150 Flex)	\$649.28	\$649.28	\$1,298.56
50 Block PLUS** (\$150 Flex)	\$446.37	\$446.37	\$892.74

Meal plan yearly totals do NOT include summer sessions.

\*Only for commuters | \*\* Option available only to off-campus, commuters, faculty and staff

## STUDENT HOUSING

All students who reside in University housing are required to be enrolled in at least 12 credit hours per semester. Students who are enrolled in less than 12 credit hours per semester will be assessed a part-time boarder fee to adjust the student's account to reflect full-time charges.

**HOUSING DEPOSIT:** A \$200.00 housing deposit is required to secure your housing assignment for the academic year. Housing is available on a first-come, first-served basis. The housing deposit is non-refundable if not received by June 30.

**SECURITY DEPOSIT:** A \$300.00 security deposit and a \$100.00 application fee are required to secure your housing assignment in the University Courtyard or the University Village apartment complexes.

### Living and Learning Commons

	FALL	SPRING	YEARLY TOTAL
Double Residence	\$3,995.00	\$3,995.00	\$7,990.00
Single Residence	\$4,995.00	\$4,995.00	\$9,990.00

### Tubman Laws Hall

	FALL	SPRING	YEARLY TOTAL
Four Bedroom Suite	\$4,370.00	\$4,370.00	\$8,740.00
Two Bedroom Suite	\$4,609.00	\$4,609.00	\$9,218.00
Four Bedrooms/Two Baths with Kitchen	\$4,769.00	\$4,769.00	\$9,538.00

### University Courtyard – 12-month lease

	PER MONTH	PER SEMESTER	PER YEAR
Single Residence	\$874.00	\$5,244.00	\$10,488.00
Double Residence	\$750.00	\$4,500.00	\$9,000.00

### University Village Apartments – 12-month lease

	PER MONTH	PER SEMESTER	PER YEAR
One Bedroom/One Bath	\$1,064.00	\$6,384.00	\$12,768.00
Two Bedrooms/Two Baths	\$874.00	\$5,244.00	\$10,488.00
Two Bedrooms/One Bath	\$787.00	\$4,722.00	\$9,444.00
Four Bedrooms/Two Baths	\$757.00	\$4,542.00	\$9,084.00
Two Bedrooms/One Bath Suite	\$720.00	\$4,320.00	\$8,640.00

## ITEMIZED FEES FOR THE ACADEMIC YEAR

\* Fees can be applied per semester

Application Fee *(Graduate/Doctoral)* — **\$50.00**

Distance Education Fee *(Per Course)* — **\$50.00**

Drop Fee *(Per Drop Slip)* — **\$10.00**

Failure to Pre-Register\* — **\$50.00**

Graduate Activity Fees Full-time\* *(4 credits or more)*

— **\$60.00**

Graduate Activity Fees Part-time\* *(Less than 4 credits)*

— **\$30.00**

Graduate Sustaining Fee *(Master's)\** — Equivalent

of one in-state credit hour of tuition per semester

Graduate Sustaining Fee *(Doctoral)\** — Equivalent

of one credit hour of enrollment per semester

Graduation Fee — **\$175.00**

Late Payment Fee\* — **\$100.00**

Late Registration Fee\* — **\$50.00**

Living and Learning Commons Deposit —

**\$200.00**

NBS Tuition Payment Plan Enrollment Fee\* —

**\$35.00**

NBS Tuition Payment Plan Enrollment Fee-Past Due

Balances\* — **\$30.00** - 4-6 months/

**\$50.00** - 8-10 months

NBS Tuition Payment Plan Late Fee — **\$35.00**

NBS Tuition Payment Plan Return Payment Fee —

**\$30.00**

Overdue Library Fee *(Per Day)* — **\$1.00**

Registration Fee\* *(Doctoral and Graduate)* —

**\$60.00**

Returned Check Fee — **\$35.00**

SMARTCARD ID Damage Fee — **\$25.00**

SMARTCARD ID Replacement Fee — **\$50.00**

Student Health Insurance Fee\* *(Per Semester)* —

**\$399.50**

Student Teaching Fee\* — **\$150.00**

Technology Fee\* — **\$55.00**

Technology Fee\* *(Summer Sessions)* — **\$35.00**

Traditional Housing Deposit — **\$200.00**

Transcript Fee — **\$10.00**

University Courtyard Application Fee — **\$100.00**

University Courtyard Deposit — **\$300.00**

University Village Application Fee — **\$100.00**

University Village Deposit — **\$300.00**

Vehicle Registration Fee *(Per Semester)* — **\$40.00**

Vehicle Registration Fee *(Per Year)* — **\$70.00**

Vehicle Registration Fee *(Summer)* — **\$30.00**

<sup>^</sup> Please note that these charges are subject to change. Typically, there is a modest increase to tuition and fees each year. See [www.desu.edu/tuition](http://www.desu.edu/tuition) or current pricing.

Not responsible for typographical errors.

All of the fees and charges shown in this section are for the 2021-2022 academic year and are subject to change. New fees and charges may be established at any time by the action of the Board of Trustees. A notice of all changes in fees will be mailed to all persons who have applied for admission. This information, which will include the current fees, tuition, room and board, and any special instructional fees, can be [viewed online](#) and/or by contacting the Office of Student Accounts. This information is provided as a guide only and is not considered by the University to be a contract or binding.

## PAYMENT OF FEES

Per the Graduate Calendar, all fees, tuition, and room and board charges must be paid by the payment due dates, as follows: **Fall 2021 University Billing Date – July 16; Spring 2022 University Billing Date -- December 10; Summer 2022 University Billing Date -- May 6.** Credits for scholarships, grants and loans will only be considered when the awards have been approved by the Financial Aid Office in advance or at registration. Applications for financial aid should be completed at least four months before registration each school year.

Payments made by Visa, MasterCard, debit card (including MAC) and check should be submitted online via your [my.desu.edu](http://my.desu.edu) portal and selecting the Student Services tab -- Nelnet Payment Portal. Payments in cash or Discover card must be made in person to the University Cashier's Office. **DO NOT SEND CASH IN THE MAIL.**

Certified/cashier's check or money order payments can be made in person to the University Cashier's Office or made payable and mailed to:

### DELAWARE STATE UNIVERSITY

**ATTN: Cashier**

**1200 North DuPont Highway, Dover, DE 19901**

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

Make online payments in real time using the NelNet Enterprise Student Portal:

- Go to [my.desu.edu](http://my.desu.edu)
- Click "Banner Self Service" icon
- Enter User ID (With an Uppercase "D") & PIN number (First-time users enter the student's 6-digit mm/dd/yr birthdate. Forget the PIN? Please select "Forgot PIN")
- Click "Login"
- Click "Student Services" tab
- Click "NelNet Payment Portal" link  
(First-time users must verify personal information and answer security questions.)
- Select "Make a Payment"

All authorized third-party documentation such as Military Tuition Assistance, Vocational Rehabilitation, Veterans Rehabilitation Assistance, Tuition Exchange and other programs must be submitted and approved by Student Accounts Compliance Administrators.

Boarding students must satisfy all financial obligations before returning for the fall and/or spring semester. All students who have not satisfied all financial obligations before the final billing date of the semester as listed in the school calendar will be assessed 2 separate late fees of \$100.00 each for a total of \$200.00.

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

## TECHNOLOGY FEE

A fee is charged to all doctorate, graduate and undergraduate students. This is for the support of campus computing labs and technological equipment.

## LABORATORY FEES

Laboratory fees are assessed for some courses to cover the cost of supplies and special facilities. Labs may vary from \$10.00 to \$20,000.00. Aviation labs range from \$5,000.00 to \$20,000.00 per related course\*

Students are fully responsible for the use of laboratory equipment. Excessive breakage of equipment or items returned in an unacceptable condition will be charged to the student.

The University reserves the right to assess a special fee to cover the cost of using off-campus facilities when required in connection with any course offering.

*\*Additional fees will be paid to the Federal Aviation Association (FAA) Examiner for flight physicals, written examinations and all flight examinations.*

## DROP FEE

To drop a course, students may obtain approval from their Advisor or Department Chair and go online to adjust their schedule or obtain a DROP/ADD form from the Department Chair. The form is to be turned into the Academic Department through the late registration period and to the Office of Records and Registration thereafter, bearing the required signatures. Students may drop courses as indicated on the Academic Calendar. **A drop fee of \$10 per course** will be assessed after late registration. Students who DROP courses which results in a credit on their student account will receive a refund in accordance with University and federal regulations/policies. **Students requesting to drop classes after the last day to drop or add courses must obtain the signature of the Academic Dean as well as their Instructor and Advisor/Chair.** The change in registration is effective on the date the form is submitted to the Office of Records and Registration.

## NELNET BUSINESS SOLUTIONS® TUITION PAYMENT PLAN

Delaware State University is pleased to offer students the Tuition Payment Plan, administered by NelNet Business Solutions®. The Tuition Payment plan is an interest-free alternative to paying each semester's (Fall, Spring, Summer I or Summer II) tuition and expenses in full prior to each term. Per the Graduate Calendar, all fees, tuition, and room and board charges must be paid by the payment due dates. **The payments for the Nelnet payment plan are processed on the 5<sup>th</sup> of each month. The payment will start pending against your account 2 to 3 business days prior to the 5<sup>th</sup> of each month.**

**Enroll in the Tuition Payment plan for each semester and get these great benefits:**

- Manageable Payments – Payments can be spread over time. Please visit <https://www.desu.edu/admissions/tuition-financial-aid/tuition-fees> for additional information.
- No Interest Payments – The Tuition Payment plan is interest free. It can be used on its own or in conjunction with loans, grants and/or scholarships.
- MyFacts – The plan offers 24-hour access to manage the account via the Web.
- Convenient Online Statements – Statements will be delivered via email each month
- Automatic reoccurring monthly payments via ACH or credit card (includes debit cards) are processed on the 5<sup>th</sup> of every month.

To set up a Tuition Payment Plan:

- Go to [my.desu.edu](http://my.desu.edu)
- Click “Banner Self Service” icon
- Enter User ID (With an Uppercase “D”) & PIN number (First-time users enter the student’s 6-digit mm/dd/yr birthdate. Forget the PIN? Please select “Forgot PIN”)
- Click “Login”
- Click “Student Services” tab
- Click “NelNet Payment Portal” link  
(First-time users must verify personal information and answer security questions.)
- Select “Set Up a Payment Plan”

## **DELINQUENT ACCOUNTS**

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

Students who have not paid all financial obligations by the final billing due date of the semester will have a hold placed on their account and will not be permitted to pre-register for classes for the next term.

Past due accounts will be referred to the University Credit and Collections Department for a resolution. If the balance is not resolved, the student’s account will be reported to an outside collection agency including the Department of Revenue.

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

## **BILLING**

The University will send paper and electronic statements on a monthly basis to students’ Delaware State University-issued email address who have an outstanding balance or have activity on their accounts. The statement will show the balance from the prior month, detail activity of the current month and the ending balance. Although the University regularly emails bills to students, it cannot assume responsibility for their receipt. Students are reminded that it is their responsibility to review their student account and email account for billing and its accuracy.

If a bill is not received on or before the beginning of each semester, it is the student’s responsibility to obtain a copy of the bill from Banner Self Service by logging into [my.desu.edu](http://my.desu.edu).

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

Payments and financial aid awards applied to accounts will be listed in the credit column. Payments and financial aid awards in the anticipated credits column have not been physically applied to the accounts, but will reduce the outstanding balance. Questions pertaining to bills should be directed to the Office of Student Accounts at 302.857.6240.

Questions pertaining to financial aid credits or adjustments on monthly statements should be directed to the Office of Financial Aid at 302.857.6250.

## CASHIER SERVICES

The Cashier's Office is located in the Administration Building, first floor. The hours of operation are 8:30 a.m.-4 p.m. Monday through Friday.

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

- Payment can be made on a student's account by cash, certified/cashier's check or Discover card.
- All student paychecks can be obtained from the Cashier's Office between the hours of 10 a.m. and 3 p.m. on payday.
- All payments, except for cash and Discover card payments, can be made online at [my.desu.edu](http://my.desu.edu) through Banner Self Service.

The University recommends that students use one of the local banks for their banking needs. An automatic teller machine is located on the campus in the Martin Luther King Jr. Student Center and in the William C. Jason Library Building. Please note: Any check made payable to Delaware State University and the student must be applied to the student's account. Any amount that exceeds what the student owes may be refunded to the student.

## ADVANCE ROOM DEPOSITS

All students must pay an Advance Room Deposit as designated and submit a Residence Hall Application and Contract to reside in the residential facilities as designated:

Living and Learning Commons	\$200.00
Traditional Halls	\$200.00
University Village and Courtyard Apartments	\$400.00

Returning students must pay the Advance Room Deposit at the time that they pre-register for the fall semester, no later than May 1. **Failure to submit the Residential Contract and pay the Advance Room Deposit by the deadline will result in the student being placed on a waiting list and receiving a room upon availability.**

Students with a room assignment who do not plan to reside on campus must cancel the space by August 1 for the fall semester and December 1 for the spring semester. Failure to cancel the reserved space may result in reservation charges being assessed for the room if the University is unable to fill the vacancy.

Students are urged to read the housing contract and/or lease for Terms and Conditions of Occupancy. The Advance Room Deposit is a **NON-REFUNDABLE FEE**, with the exception of when the University is unable to provide a room. The Advance Room Deposit will be credited to the student's account during the spring semester of the academic year. **This fee is non-refundable if the student decides not to attend the University.** An additional residence hall damage fee may be assessed at the end of each term.

The University cannot guarantee availability of campus housing, and it is recommended that students submit the application for housing early.

## CONTRACTUAL OBLIGATION TO ROOM AND BOARD

A student's assigned housing in the traditional residence hall setting will be required to participate in a meal plan offered by the University. In order to provide boarding service for all students at the lowest possible cost, certain rules of conduct must be followed and will be strictly enforced. Those who wish to live at Delaware State University must have their bills paid by the published due dates or must have made satisfactory financial arrangements with the Office of Student Accounts (by enrolling in the Tuition Payment Plan).

Students who do not submit payments by the due date must obtain financial clearance by reporting to the Office of Student Accounts for their room key. Identification cards are validated for room and board after all financial obligations have been satisfied. Students must show their validated identification card to be admitted to the dining hall for all meals. Should any student be found guilty of breaking any rules in the Student Handbook, their privilege to room and board on campus will be terminated by the action of the Vice President for Student Affairs and charges paid in advance will be refunded in accordance with University policy for withdrawals. No credit is given for meals which a student fails to take while in a boarding status.

No adjustments in the charge for room and board will be made for late registration of 10 days or less, or for absences of less than 14 days. **Students must be enrolled at least full-time (12 or more credit hours) per semester in order to live in the residence halls.** Dropped courses or failure to attend class (no show), which reduces credit hours to less than full-time, may result in cancellation of the housing contract. Students will be required to make necessary schedule adjustments and accounts will be adjusted to reflect full-time charges.

**Commuter Meal Plans:** Commuter meal plans are available for non-resident students who wish to eat meals in the dining hall or canteen. Commuter students may request a meal plan through the commuter meal plan website via [my.desu.edu](http://my.desu.edu). Please refer to the Tuition and Fees sheet for an updated commuter fee schedule. Fees are subject to change.

- Go to [my.desu.edu](http://my.desu.edu)
- Click "Commuter Meal Plan"
- Click "Request"
- Select Correct Term
- Enter ID & PIN Number (Uppercase "D")
- Select the appropriate meal plan
- Click Login

## REFUNDS OF CREDIT BALANCES

Refunds for overpayments or credit balances as a result of dropping a course will be processed within 30 calendar days for non-Title IV aid and within 14 calendar days for Title IV aid. Refunds cannot be issued if paid by a credit card; the refund will be processed in the form of ACH by Bank Mobile. All charges and payments must be stated on the account before a refund will be processed. After the refund is processed, students are liable for any additional charges that may result from reductions in financial aid awards and/or other adjustments to tuition and fees. Student refunds will be sent as direct deposit once the student successfully enrolls in direct deposit by following the steps below:

- Go to [refundselection.com](http://refundselection.com)
- Enter the student's personal code; if the student does not have a code, select "Need a Code."
- Select an option for how to have the money deposited.
- Select "Deposit to an Existing Account" to have the refund sent to a current bank account

- Select “Deposit to a Bank Mobile Vibe Account” if opening an account with Bank Mobile is desired.
  - \* Bank Mobile will mail the student a debit card.
  - \* The refund will be deposited in 24 hours from the time the University makes the funds available.

Students who drop courses must obtain a Drop Slip and return the completed form to the Office of Records and Registration. The effective date of the change in registration is the date the Drop Slip(s) is filed in the Office of Records and Registration.

Students who officially change their enrollment from full-time to part-time (less than 6 hours) by dropping a course or courses will be eligible for a refund in accordance with the following policy:

**Period from the first day of instruction for fall/spring semester(s)**

Period from the First Day of Instruction	Refundable Tuition	Percentage Fees
Pre-registration to Last Day to Add Classes	100%	100%
Second Week	80%	0%
Third Week	60%	0%
After Three Weeks	0%	0%

**Period from the first day of instruction for summer session(s)**

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

**WITHDRAWAL REFUNDS**

Students should secure a Withdrawal Form from the Office of Records and Registration located on the first floor in the Administration Building. Recipients of Title IV funds must complete an exit interview. To withdraw from the University, students must follow the steps listed below:

**Official Withdrawal from the University**

1. All withdrawals from the University are initiated in the Office of Records and Registration.
  - Students who are unable to physically obtain a *Withdrawal Form from the Office of Records and Registration* can send a written request via fax or email requesting a withdrawal for the current term.
2. Once the student has completed the form in the Office of Records and Registration, the student has a 5-day grace period to stop the withdrawal process.
  - After the 5-day grace period, if the student has not requested to stop the withdrawal process, the Registrar will remove all classes effective the date the withdrawal paperwork was submitted.
3. Housing, Student Accounts and Financial Aid sign off on the withdrawal once they have reviewed the account.

## Administrative Withdrawal from the University

If a student, for some compelling reason (such as a documented extreme personal difficulty or documented medical reason), requests to be administratively withdrawn from the University beyond the official withdrawal deadline for a given semester, then that student must follow the procedure listed below.

Administrative withdrawal from the University is rarely granted, but some students' circumstances may require it. The Provost and Vice President for Academic Affairs confirm the approval for administrative withdrawal from the University.

A student must submit in writing the request for administrative withdrawal from the University, along with documentation, to the appropriate Academic Dean. The request must state the reason(s) for the request and specify the semester to be withdrawn.

The Dean submits his or her recommendation to the Provost and Vice President for Academic Affairs. If the Provost and Vice President for Academic Affairs approves the request, then the student is reported to the Office of Records and Registration as "Administratively Withdrawn" and a grade of "**WA**" is assigned for all courses taken during that semester. The Provost and Vice President for Academic Affairs will also inform the student in writing of his or her decision.

A student who withdraws from the University on or prior to the last day to withdraw from the University will receive a grade of "W" in each course for which he or she is enrolled at that time. A student who officially withdraws from the University at any time after the last publicized date for withdrawal from the University will receive a "**WA**" grade in all courses for that semester.

**Note:** If a student has received financial aid, including a refund, from Title IV funds and completed less than 60% percent of the semester from which he or she wishes to withdraw, then that student must refund the percentage of financial aid corresponding to the percentage of the semester the student has not completed.

Please log on to [myDESU](#) and click on "Exit Interview." The student mailbox key and Smart Card (I.D.) must be returned to the Office of Student Accounts. Students who do not adhere to the withdrawal process will forfeit their right to a refund. Stop payment on a check, failure to pay the semester bill, or failure to attend classes does not constitute official withdrawal from the University.

Students withdrawing from the University will be credited for tuition only, if applicable. Other fees, with the exception of application fees and advance deposit, are to be credited in accordance with the following schedule:

### Period from the first day of instruction for fall/spring semester(s)

Period from the First Day of Instruction	Refundable Tuition	Percentage Fees
Pre-registration to Last Day to Add Classes	100%	100%
Second Week	80%	0%
Third Week	60%	0%
After Three Weeks	0%	0%

### Period from the first day of instruction for summer session(s)

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

\*Student accident and health insurance will be canceled retroactively and any claim filed will not be honored.

Room and boarding charges are refunded on a prorated weekly basis when student withdraws from the University or from residence halls after classes begin.

## TITLE IV RECIPIENTS

The 1998 Reauthorization of the Higher Education Act requires Delaware State University to calculate the Return of Title IV funds on all federal financial aid recipients who withdraw (OFFICIALLY OR UNOFFICIALLY) from classes on or before the 60 percent attendance point in the semester.

The federal formula requires a return of Title IV Aid, if the student received federal financial assistance in the form of a Pell Grant, Supplemental Educational Opportunity Grant (SEOG), Federal Plus Loan, Perkins Loan, Direct Subsidized Stafford Loan, or a Direct Unsubsidized Stafford Loan, if a student withdraws on or before completing 60 percent of the semester. The percentage of Title IV Aid to be returned is equal to the number of calendar days remaining in the semester divided by the number of calendar days in the semester. Scheduled breaks of more than five consecutive days are excluded.

If funds are to be returned after completing the return of Title IV Aid calculation, Delaware State University is required to return its portion of unearned Title IV Aid to the appropriate federal programs within 30 days from the date the student withdraws from classes. A hold will be placed on the account and all University services will be withheld if the account reflects a balance. Delaware State University will not return any funds required by the student.

**STUDENTS WHO STOP ATTENDING CLASSES WITHOUT OFFICIALLY WITHDRAWING WILL BE SUBJECT TO THE RETURN OF TITLE IV FUNDS AT THE END OF THE SEMESTER, BASED ON WITHDRAWAL DATES/LAST DOCUMENTED DATE OF ATTENDANCE AS DETERMINED BY DELAWARE STATE UNIVERSITY.**

# FINANCIAL AID AND SCHOLARSHIPS

The Office of Financial Aid is dedicated to educating students regarding the various aid programs that make attending college affordable for all. We offer flexible hours of service, and our financial aid counselors are available to assist students with the financial aid process.

## FUNDING RESOURCES

The Cost of Attendance (COA) includes: tuition and fees, room and board, books and supplies, transportation and personal/miscellaneous expenses. COA is divided into two types of costs: direct and indirect costs. Direct costs include tuition and fees, room and board. Indirect costs include books and supplies, transportation and personal/miscellaneous expenses.

## TYPES OF AID

Delaware State University applicants for financial aid must complete the Free Application for Federal Student Aid (FAFSA), which is used to determine the need for financial assistance. The FAFSA is filed online at [studentaid.gov](http://studentaid.gov) beginning October 1 for the following academic year. The FAFSA priority filing deadline is March 15 of each year. Applicants must include Delaware State University's school code 001428 when completing the FAFSA.

Financial assistance at the University is made available through scholarships, loans, and part-time employment opportunities. A limited number of research fellowships or teaching assistantships are awarded through the graduate programs. Part-time employment opportunities are managed through the Career Services Office.

## WILLIAM D. FORD FEDERAL DIRECT LOAN PROGRAM

The Federal Direct Stafford program allows eligible students to borrow funds directly from the Federal government with no credit check involved. Students must be enrolled at least half-time (3 credits for graduates) each semester to be eligible.

Unsubsidized Direct Loans are non-need-based loans awarded to graduate and undergraduate students. Accrued interest is the responsibility of the student during enrollment and grace period; it can be paid quarterly during enrollment or capitalized, i.e. added to the principal amount.

First-time Direct Stafford Loan borrowers are required to complete an Entrance Counseling session and a Master Promissory Note (MPN) before loan funds can be disbursed. Both can be completed online at [studentaid.gov](http://studentaid.gov).

Students generally begin repaying principal loan funds six months after graduating, withdrawing or ceasing half-time enrollment. While most borrowers repay their loans within the standard ten-year repayment period, various repayment options exist.

- A financial need as determined by the student's FAFSA is not a requirement. However, the borrower must have a filed FAFSA. Graduate student debt includes loans accrued as an undergraduate in addition to those accrued while pursuing graduate studies. Graduate students may request up to \$20,500 in unsubsidized loans annually; however, they may not receive more than \$138,500 subsidized/unsubsidized loans throughout the entire graduate matriculation. For an in-depth explanation of financial aid awards and the financial aid process, please visit [www.desu.edu/financialaid](http://www.desu.edu/financialaid).

## Federal Direct PLUS Loan (Graduate/Professional)

Graduate/professional students can also borrow a Graduate PLUS Loan to supplement their financial resources. While Direct Stafford Loans have annual and aggregate limits, creditworthy borrowers may borrow a PLUS for up to the student's cost of attendance minus estimated financial assistance. As with Direct Stafford Loan borrowers, the student must be enrolled at least half-time in order for the borrower to receive a PLUS Loan. Additionally, the student must file the FAFSA.

Prospective PLUS borrowers must complete the online PLUS Application at [studentaid.gov](http://studentaid.gov).

\*\*\* If the applicant is not approved for a PLUS due to adverse credit, he or she can obtain a creditworthy endorser (excluding the student for parent borrowers) to receive the loan. Once approved (with or without an Endorser), the borrower must complete a Direct PLUS Master Promissory Note (MPN), also at [studentaid.gov](http://studentaid.gov).

### Graduate PLUS Borrowers

- Independent students enrolled in an eligible certification program are ineligible for a Graduate PLUS Loan, which is made available to students enrolled in a program leading to a master's or doctoral degree.
- When [logging in](#) to sign the MPN, select "PLUS MPN for Graduate/Professional Students," which is *separate* from the MPN for Subsidized/Unsubsidized Loans.

### Private or Alternative Loans

Alternative and private loans are funds offered through a lending institution and are not a part of the above-listed Federal loan programs. Alternative loan interest rates vary between lenders, and eligibility is based on the creditworthiness of the borrower and/or co-signer. Students can view and compare some private loan products at the [ELM Select Website](#); they also have the right to select the education loan provider of their choice. Contact the lender directly with any questions related to a loan program's specific terms and conditions.

The Higher Education Opportunity Act of 2008 amended the Federal Truth-in-Lending Act to include new disclosure requirements and to prohibit certain practices for creditors making private education loans.

What does this mean for a student?

- Lenders will be required to send the student standardized disclosures.
- The student will be required to complete a "self-certification" with the lender (see below).
- The student will be given a 30-day approval window to accept the loans offered.
- The student will have the right to rescind the loan within three days.

*Self-Certification Form* — Students will be asked to provide the cost of attendance based on the number of registered credits, and the financial assistance they are eligible for when applying for a private loan. \*\*\* Students can view their cost of attendance on the Financial Aid Shopping Sheet, and the estimated financial assistance can be found under the student's financial aid forms. An example of how to complete the self-certification is listed below:

(A) Student's cost of attendance for the period of enrollment covered by loan	\$18,000
(B) Estimated financial assistance	\$5,500
Difference between amounts A and B	\$12,500

The completed Self-Certification Form must be received by the lender before the loan can be presented to the Office of Financial Aid for official certification.

### \*\*\* Loan Periods\*\*\*

If a student is applying for a PLUS or private loan, the applicant must specify the *loan period* (or enrollment period) for which the funds are needed. For example: Summer session(s) 2021 would be *05/2021-08/2021*, the 2021-2022 school year (Fall + Spring) is *08/2021-05/2022*, and Fall only is *08/2021-12/2021*.

Graduate PLUS borrowers must also select the *award year* on their application: *2020-2021* for Summer 2021; *2021-2022* for Fall 2020, Spring 2022 or Summer 2022.

Borrowers must apply for summer session loans *separately* from the academic year (fall/spring). Similarly, loans for winter session (private loans only) must be separate from the fall and spring semesters.

### Financial Aid Disbursements

Before aid can be disbursed to student accounts each semester, the Office of Financial Aid is required to confirm students' enrollment statuses and cost of attendance for the academic year or term. Additionally, students must establish eligibility, i.e., begin attendance in all classes within the first three weeks of the term.

Students selected for Verification must submit all requested documents before aid can be disbursed. Documents are reviewed on a rolling basis and in the date order that they are received by this office.

First-time Federal Direct Stafford Loan borrowers at Delaware State University must complete an Entrance Counseling Session and sign a Direct Loan Master Promissory Note (MPN) before loan funds can be disbursed. The Entrance and MPN can both be completed online by logging in at [studentaid.gov](http://studentaid.gov).

Annual financial aid awards are generally disbursed in two payments: at the beginning of the Fall and Spring semesters (and after enrollment is confirmed, as mentioned earlier. Students attending only one semester will receive one disbursement during that term of enrollment.

Disbursed aid is first applied toward outstanding balances from tuition and fees, room and board (if applicable), and other direct charges. Any overpayments from financial aid and/or cash payments are refunded to the student by check or direct deposit, to be used for other educational expenses. The Office of Student Accounts will contact eligible students when a refund is available, or a balance is due.

### FINANCIAL AID ADJUSTMENTS

Awarded aid is subject to change, for several reasons:

**Change in Enrollment Status.** Financial aid is initially awarded assuming full-time enrollment (six or more for graduates). Dropping and/or adding courses during the registration period and the first week of class can change a student's enrollment status from full-time to part-time, and this can affect aid eligibility.

- Federal Direct Loan borrowers must be enrolled at least half-time (3 or more for graduates).
- Certain scholarships (Delaware State University and external) require continuous full-time enrollment.

**No-Show.** The University adopted a policy to monitor the enrollment of students receiving financial aid. Students who are not attending a class for which they are registered during the first three weeks of the semester will have their aid reduced. Registration credits and tuition charges are adjusted to reflect non-attendance. ,.

**Second Half-Term Courses.** For students whose full-time or half-time enrollment is based -- in part -- on registration for one or more second half-term courses, Federal and State aid disbursements are delayed until the second half of the semester. If a course(s) is dropped prior to the start of the second half-term, awards will be reduced or canceled accordingly.

**Withdrawal from All Classes.** The University is required by Federal regulations to recalculate awards when a student withdraws, is dismissed or takes a leave of absence before the end of the term. This includes unofficially withdrawn students, i.e., earned no passing grades at the end of a term. Withdrawn students are notified of their adjusted aid eligibility within 30 days of their withdrawal.

**Additional Aid.** Students' resources (scholarships, grants, loans and work-study) cannot exceed their cost of attendance for the academic year or term. While the Office of Financial Aid initially awards students within their financial need, additional resources (such as an external scholarship) may be added later, resulting in an over award of assistance. In such cases, total aid will be reduced to need in the following order: loans, work-study, scholarships, grants.

**Request for Aid Decrease.** A student may choose to decline or decrease a financial aid award (such as a loan or work-study) offered by Delaware State University. Students can cancel or reduce aid by requesting a form from the Office of Financial Aid, and then complete and return the form. Offered loans can also be declined (but not decreased) online.

Any or all of the above situations can change a student's semester or academic-year aid eligibility at any time prior to enrollment or after aid has already been disbursed. In either case, please contact the Office of Financial Aid for assistance in reviewing options for financing a student's education.

## **PROVISIONAL / CONDITIONAL GRADUATE ADMISSION**

Students who are not fully admitted to a graduate program may be offered **provisional** admission to the program. The Academic Department sets certain conditions that the student must meet, such as completing three courses with a GPA of 3.0 or above, before the student will be admitted to the degree program.

Students who are provisionally admitted to a degree program are not eligible for Federal or State financial aid, although they may be eligible for private student loans. This policy is based upon Federal regulations requiring a student to be fully admitted to a degree program as a condition of receiving financial aid.

If a student is required to do preparatory coursework, i.e. conditional admission before being admitted to a graduate degree program, s/he may be eligible for Federal loans. The student must file a FAFSA and submit documentation from his or her Academic Advisor to the Office of Financial Aid to be considered for this exception. The student must be enrolled at least half time, and eligibility is limited to a single, consecutive 12-month period.

## FINANCIAL AID / RETURN OF TITLE IV FUNDS

The Higher Education Amendment of 1998 required schools to implement a Return of Title IV Refund Funds Policy when a Title IV (Federal Student Aid) recipient withdraws from school. A Federal financial aid recipient is defined as a student who has received Title IV funds such as but not limited to: Federal Pell Grant, Federal Supplement Educational Opportunity Grant, Federal Direct Loans, and Federal Direct PLUS Loan.

Title IV funds are awarded to students under the assumption that they will attend school for the entire term or payment period. As a Federal financial aid recipient, it is important to understand that there is a unique refund schedule for financial aid that differs from the University tuition and fee refund schedule. Students who completely withdraw from classes (dropping of all courses) or students who began attendance and failed to earn a passing grade in at least one course offered over an entire term or payment period (known as an Unofficial Withdrawal) are subject to the Return of Title IV refund calculation as dictated by Federal regulations.

If funds are to be returned after completing the Return of Title IV Aid calculation, Delaware State University is required to return its portion of unearned Title IV Aid to the appropriate Federal programs within 45 days of the date the student withdraws from classes. Delaware State University reserves the right to return the student's portion of unearned Title IV Aid to the appropriate Federal programs as well. A hold will be placed on the account and all University services will be withheld if the account reflects a balance.

**STUDENTS WHO STOP ATTENDING CLASSES WITHOUT OFFICIALLY WITHDRAWING WILL BE SUBJECT TO THE RETURN OF TITLE IV FUNDS AT THE END OF THE SEMESTER, BASED ON WITHDRAWAL DATES/LAST DOCUMENTED DATE OF ATTENDANCE AS DETERMINED BY DELAWARE STATE UNIVERSITY.**

## DETERMINATION OF FEDERAL AID EARNED

Earned aid is determined based on the number of calendar days the student attended classes divided by the total number of calendar days in the term. The result is a percentage of Federal aid funds that the student is entitled to keep.

For example, a student who attends 20% of the term has earned 20% of the total aid value that was disbursed to his or her student account.

## RETURN OF UNEARNED FEDERAL AID

The total Federal aid disbursed at the point of withdrawal less the earned amount constitutes the unearned aid that must be returned to the Federal government. The school will initiate a return of unearned aid in the following order:

1. Federal Unsubsidized Loan;
2. Federal Parent or Graduate PLUS Loan;
3. TEACH Grant.

Once the school initiates the return of funds to the Federal government, students will see these entries on their online student account. The total amount returned may result in the student owing the school. If a balance due is created, the student now has a financial obligation with the school. A financial obligation will prohibit the student from all registration activities, receiving academic transcripts, diplomas, and/or other entitlements until it is paid. In addition, the student may be required to directly repay a portion of the Title IV funds that were received. Any repayment outstanding or unpaid will be referred to the U.S. Department of Education for collection and legal disposition.

## FEDERAL WORK STUDY PROGRAM (FWS)

A work-study job can be a source of valuable work experience as well as financial aid. Under the work-study program, the employer pays a small part of the student's wages, and the government pays the rest. Work-study positions are on campus. Students can work part-time while they are in school, and they can work up to 35 hours a week during the summer and other vacation periods. However, the student must be enrolled at least half time and meet GPA requirements in order to participate in any work study program. The basic pay rate is usually the current minimum wage. This may vary, depending on the skill and experience needed for the job.

## FELLOWSHIP/SCHOLARSHIP OPPORTUNITIES

Information on scholarships may be obtained through the Delaware State website, or if majoring in a specific field, from the Dean of the College.

## SATISFACTORY ACADEMIC PROGRESS (SAP)

The Delaware State University Academic Progress Policy conforms to Federal regulations (Sections 668.16(e), 668.32(f) and 668.34) and State regulations that govern financial aid programs and require all financial aid recipients to (1) be in good academic standing and (2) be making academic progression (pace) toward a degree in a reasonable amount of time before Federal funds are disbursed for the subsequent semester.

Satisfactory Academic Progress (SAP) is the standard college students must meet to remain eligible for Title IV Federal Student Aid (FSA) as well as some state, institutional, and private financial aid funds. To remain eligible for Federal financial aid money — grants, work-study funds and student loans — college students must meet certain standards in the classroom. In financial aid speak, those standards are called Satisfactory Academic Progress.

At Delaware State University SAP is monitored at the end of each fall, spring and summer semesters. Students **MUST** meet both components of SAP as stated in the criteria below. This requirement is different from a non-Title IV recipient who may enroll in the next summer session or semester without intervention of an appeal.

### SAP GPA Criteria

Graduate students must meet the minimum cumulative Delaware State University grade point average (excludes transfer work) requirement of 3.00 by the end of their first semester. **In addition, all graduate students must earn 66.67% of their hours attempted and must not exceed 100% of the hours required for degree completion.** There is an appeal procedure for the graduate student. The following types of grades **cannot** be used to fulfill financial aid probation, suspension, or re-matriculation requirements:

- credits by audit or special examination;
- grades earned from advanced placement or CLEP exams for which prior approval was not obtained;
- withdrawal or incomplete grades;
- and grades earned with zero credit.

Each Title IV Federal Student Aid (FSA) recipient's record will be evaluated at the end of each semester to determine if the student is meeting the standards described above. If the student has reached the maximum number of credits or completed all degree requirements without earning a degree, the student must be excluded from further participation in Federal financial aid programs. In addition, if the student has reached or exceeded 150% (UG) or 100% (GR) in total attempted credit hours for their degree program without earning a degree, the student must be excluded from further participation in Federal financial aid programs.

**\*NOTE:** Federal regulations require that these standards apply to all students, even to first-time aid applicants who have previously enrolled at Delaware State University, or to those who have not been formally placed on probation.

Students initially deemed not to be making Satisfactory Academic Progress will be notified through their Delaware State University email. Students identified as not meeting SAP requirements are initially placed in a “Warning” status in which they remain eligible to receive Title IV funding for the following semester in which they enroll. Students receiving a “Warning” status email are not required to complete any necessary action. If a student is identified as not meeting SAP requirements at the end of the “Warning” status semester, the student is then placed in a “Unsatisfactory” category and the student loses financial aid eligibility until an appeal is submitted and approved or the student opts to attend without receiving Federal or institutional financial aid while completing courses to meet SAP cumulative requirements and regain their SAP standing. The mere passage of time will not ordinarily restore eligibility to a student who has lost eligibility for failure to make satisfactory academic progress.

### **SAP Appeal Procedure**

Students may appeal the SAP decision regarding financial aid probation or suspension status by submitting a completed Petition for Reinstatement of Financial Aid Eligibility to the Office of Financial Aid. Graduate students may appeal once during the course of completing their degree.

Students placed on financial aid suspension have the right to appeal a decision of ineligibility to continue to receive financial assistance. Appeals must be filed prior to the published deadline in order to be considered. The appeal may NOT be based upon need for the assistance OR lack of knowledge that the assistance was in jeopardy. An appeal must be based upon some extenuating circumstance which prevented a student from passing most of their courses, or which necessitated withdrawing from classes. The situation/condition must have taken place within the semester(s) the student did not meet Satisfactory Academic Progress. Examples of possible situations include documented serious illness, severe injury or death of an immediate family member or family crisis. \*\*Extenuating circumstances would include extreme illness or injury, family crisis or additional credits earned from incomplete courses.

**Note: Students may only submit an appeal two (2) times within their Academic Program timeframe. All appeals after will be automatically denied, with the exception of special extenuating circumstances.**

# CENTER FOR DISABILITY RESOURCES

Delaware State University complies with the Americans with Disabilities Act as amended (ADAAA) and other current state and federal legislation, which prohibits discrimination and protects the rights of people with disabilities. The Center for Disability Resources ensures equal opportunities and equal access to education, programs, and activities for all students with disabilities at Delaware State University. The CDR works collaboratively with University partners to foster a welcoming, diverse, and inclusive University community.

In achieving this, the CDR collaborates with and empowers students who have documented disabilities by working together proactively. The CDR determines reasonable and appropriate accommodative measures and provides institution-wide advisement, consultation, and training on disability-related topics, including legal and regulatory compliance, universal design, and disability scholarship.

Students with disabilities who are interested in requesting reasonable accommodations must submit appropriate documentation to the CDR Director before requesting accommodations. Documentation from a licensed medical or mental health professional – including but not limited to a physician, clinical/school psychologist, licensed counselor, nurse practitioner, specialist, clinical social worker, or psychiatrist – is required.

Further information regarding support services for students with disabilities including Documentation Requirements, the Student Request for Accommodations Form, and the process for renewing Accommodation Letters can be found on the [CDR website](#) or by contacting the office directly.

Center for Disability Resources  
Dr. Ann Knetter – Director  
ADA & 504 Compliance Officer  
Office Phone: 302-857-7042  
Work Cell: 302-922-7841  
Email: [aksmith@desu.edu](mailto:aksmith@desu.edu)  
Fax: 302-857-7202  
Office: William C. Jason Library, Room 204

## TESTING SERVICES AND PROGRAMS

Delaware State University's Testing Services and Programs (TSP) unit assists students and the surrounding community in the assessment of knowledge, skills and abilities through the use of written and computerized assessments, testing instruments and other programming outlets. TSP services and program components support students and all University departments by providing resources that promote *academic success* and *career readiness*.

Testing Services and Programs is committed to promoting an innovative and diverse environment that encourages student and stakeholder growth and development by providing quality services to our University community and surrounding areas of the Delmarva and Mid-Atlantic regions. TSP offers a variety of credentialing certification exams and customized career readiness platforms facilitated through vendor and strategic partnerships that enable participants to meet challenges of a rapidly changing and highly competitive global workforce economy.

TSP has over 150 vendors and offers 78,000 credentialing exams. TSP subscribes to the testing guidelines, standards and procedures of the National College Testing Association. (NCTA) and is part of the Consortium of College Testing Centers (CTCC). TSP is an international/national certified testing center. [www.desu.edu/testing](http://www.desu.edu/testing)

# COUNSELING SERVICES DEPARTMENT

Under the auspices of the Vice President of Student Affairs, Counseling Services are designed to provide counseling and a wide range of personal development opportunities to help students maintain good mental health. These services are structured to assist students in utilizing the resources of the institution in order to maximize educational opportunities. Counselors are involved in helping students explore their needs, feelings, interpersonal relationship, and life goals.

**Confidentiality** | Counseling services are offered in private and the information discussed during counseling is held in confidence unless the information reveals an imminent threat of violent harm to self or others.

**Group Counseling** | Counseling groups are available to students on an ongoing basis. Meetings may be weekly or bimonthly. Counselors facilitate the group activities and monitor the group's growth process. Groups may be formed in any area of the student's interest for therapeutic or educational purposes, or for a combination of the two.

**Individual Counseling** | Students have the opportunity to meet with a professional counselor and define individual concerns. Counselors work with students in terms of personal assessment, social development, and academic achievement. Counselors are helpful for students in active listening, exploring feelings, weighing alternatives, as well as making any appropriate referrals to on- and off-campus resources.

**Peer Counseling Program** | The Peer Counseling Program is a student staffed outreach component of the Counseling Services that provides support, information, and makes referrals to the professional counseling staff.

**Substance Use/Abuse Counseling** | Substance Abuse Counseling is provided by trained professional staff to help students examine their attitudes about alcohol and other drugs, and to help them privately assess how and why they use chemicals. Various strategies for successful rehabilitation are explored, and referrals to off-campus resources are available.

**Sexual Assault Response Advocate Program (S.A.R.A.)** | The prevention program provides on-call support for student victims of sexual assault and domestic violence, educational workshops, and campus-wide awareness events. The goal is to foster the development of healthy, respectful relationships among students.

Crisis Intervention Counselors may be utilized for any occurrence on the campus that is highly volatile, and/or an emergency situation requiring immediate action where counseling skills are appropriate. Additionally, Delaware Crisis Intervention Service (DCIS) is available 24/7 by contacting the Campus Police Department at (302) 857-7911.

**Student Personal Development Workshops** | Workshops are designed to address student's developmental needs and issues. They focus on non-academic factors that affect retention, and are intended to acquaint students with various topics which are related to "college survival." Personality Inventories Counseling Services provides personality and interest inventories utilizing the Myers Briggs Type Indicator (MBTIs). The MBTI has a high rate of validity when used to assess variations in personality.

**Consultation** | The Counseling Staff provides consultation and coordination with faculty and staff members within the guidelines of the American Counseling Association (ACA) and National Association of Social Workers (NASW) Code of Ethics. Additionally, Counselors adhere to the guidelines of FERPA and HIPAA Federal Regulations where applicable.

## **Office of Counseling Services Hours:**

Monday – Friday, 8:30 a.m. – 4:30 p.m. | Office: (302) 857-7381 | Fax: (302) 857- 7382

Appointment Link: <http://baseline.campuslabs.com/dsu/counselorintake>

Location: Cottage 504 (across the street from Warren Franklin residence hall)

<https://www.desu.edu/student-life/student-health-services/counseling-services>

# CAREER SERVICES AND STUDENT EMPLOYMENT

[Career Services](#)  
[Student Employment](#)

Career Services supports the mission and advancement of Delaware State University as a premier institution of higher learning. The office creatively coordinates career-related programs and services to connect students to internship and employment opportunities, including on-campus jobs.

Our staff of career development professionals shares knowledge of labor market trends and employment requirements using technological and practical resources to provide students with the talent to conduct job searches, become proficient in effective interviewing and presentation, and understand the fit between their competencies and occupational requirements.

During the academic year, we bring in hundreds of representatives from business and industry, government, not-for-profit organizations, graduate schools, and public/private school systems to interview prospective graduates and underclassmen for permanent and seasonal positions. Career Services also maintains many online resources with the necessary tools to conduct job searches, explore career options, and much more.

Normal hours of operation are Monday through Friday 8:30 a.m. to 4:30 p.m. However, office hours are flexible to meet the needs of Delaware State University customers. Career Services and Student Employment are located in the Martin Luther King Jr. Student Center, Suite 333. Career Services' contact number is 302.857.6120. Student Employment's contact number is 302.857.6138. The fax for both offices is 302.857.6123; general email: [careerservices@desu.edu](mailto:careerservices@desu.edu) and [studentemployment@desu.edu](mailto:studentemployment@desu.edu).

## OFFICE OF VETERANS AFFAIRS

The Office of Veterans Affairs is designed to provide the veteran student and military dependent with educational, personal, psychosocial, and all other administrative services and counseling assistance as needed, including case management and files maintenance. Our office is the infrastructure on campus to support the active duty service members, student veterans and their eligible student dependents.

We intervene in their key areas of life functioning to ensure positive social interaction, academic success, and overall enhancement of each student's University experience. We advocate on and off campus for our military students and assist the University in providing necessary resources, referrals and services in compliance with specific Veterans Affairs and related state and federal statutes.

We are the liaison with the Department of Veterans Affairs (DVA), Department of Higher Education (DHEC), and the State Approval Agency (SAA), Department of Education, and military units as it relates to our military students' approved academic programs and related affairs.

Vocational, educational and professional counseling, evaluation of abilities and aptitudes, tutoring and rehabilitative services, and VA Work-Study are available to our eligible military students and/or their dependents from the Department of Veterans Affairs.

# NEW CASTLE COUNTY LOCATION

## Delaware State University at Wilmington – 3931 Kirkwood Highway

Since 1990, Delaware State University has provided adult learners with career-enhancing programs in New Castle County. The Wilmington location offers evening and accelerated graduate degree programs in collaboration with the following academic colleges:

- Master of Business Administration – College of Business
- Master of Sport Administration – College of Business
- Master of Public Administration – College of Humanities, Education and Social Sciences
- Master of Social Work – College of Health and Behavioral Sciences

*\* The Master of Social Work is offered in the evenings in a full-term format. Students admitted to the Master of Social Work program who hold a Bachelor of Social Work degree from an accredited institution and a grade point average of or greater may apply for advanced standing and complete the program in one year.*

Program information including Admission Requirements, Plans of Study, and matriculation requirements may be found via the College section.

### Contact Information

Dr. Patrice Gilliam-Johnson  
Dean of Graduate, Adult and Extended Studies  
302.857.8200  
[pgjohnson@desu.edu](mailto:pgjohnson@desu.edu)

Cheryl Lolley  
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302-857-8002

Jose' Echeverri  
Program Director-MBA  
[jecheverri@desu.edu](mailto:jecheverri@desu.edu)  
302-857-8015

# DELAWARE STATE UNIVERSITY ONLINE

## Delaware State University Online Programs

Delaware State University offers fully online undergraduate and graduate degree programs. Students can get their degree entirely online. Delaware State University Online provides comprehensive services for online students and is designed to meet all of the needs of its student in a responsive, student-centric fashion. Students can expect a high-quality, high-value educational experience.

### **Your time, your place, same high-quality education.**

- Staff is accessible online or over the phone to answer questions, offer guidance, and assist with application and registration.
- Courses are taught by the same high-quality faculty who teach on location in collaboration with associate faculty who are highly placed, well-respected professionals in their fields.
- Master of Social Work (MSW) program is Council on Social Work Education (CSWE)-accredited.
- MBA program is Association to Advance Collegiate Schools of Business (AACSB)-accredited.

Delaware State University Online offers the following online graduate programs:

- Business Administration (MBA)
- Nursing (MSN)
- Public Administration (MPA)
- Social Work (MSW)
- Sport Administration (MSA)

Whether a student's goal is career advancement or a career in academia or research, Delaware State University can help prepare for the road ahead.

### **Contact Information:**

Delaware State University Online  
302-857-7122  
[blackboard@desu.edu](mailto:blackboard@desu.edu)

### **Blackboard 24/7 Services:**

(844)348-3657 (toll-free)  
Online: <http://desu.edusupportcenter.com>

# **CENTER FOR TEACHING & LEARNING**

*“Linking Professional Development to University Improvement”*

The Center for Teaching and Learning (CTL) of Delaware State University, under the unit of Institutional Effectiveness, maintains a focus on linking professional development to University improvement. Its mission is to strengthen and support academic programs that improve teaching and learning across all mediums of education for instructors and students by providing ongoing faculty support services that will help the University achieve its overall goal of student success.

- Goal 1:** Provide opportunities for Delaware State University faculty to strengthen teaching efforts through research-based methodologies, professional development experiences, advanced studies and assessment practices that lead to improved student learning.
- Goal 2:** Support Delaware State University faculty with effective and engaging teaching strategies that influence student success.
- Goal 3:** Encourage and support Delaware State University faculty within the scholarship of teaching and learning.

The CTL is a supportive resource for the faculty, adjunct professors, and teaching assistants of Delaware State University. We offer a variety of services that encourage and support our instructors to be effective and successful within their classrooms.

#### **Services offered:**

- New Faculty Orientation for New Faculty, Adjuncts and TAs (August)
- ACUE Effective Teaching Practices Online Course
- Conference/Professional Meeting Travel Funding
- Mini-Grants for Teaching Innovation and Enrichment Research Competition for Faculty
- Classroom Equipment and Supply Lending
- Online Student Course Evaluations
- Workshops and professional development forums on a variety of topics related to teaching, learning and assessment.
- Collaboration, support and participation in University priorities and efforts.

Services of the Center for Teaching & Learning (CTL) are supported by Title III federal funding.

#### **The Center for Teaching & Learning**

Conwell Hall, 2<sup>nd</sup> Floor

(302) 857-6140 Phone

(302) 857-7536 Fax

[CTL@desu.edu](mailto:CTL@desu.edu)

[CTLCourseEvals@desu.edu](mailto:CTLCourseEvals@desu.edu)

[www.desu.edu/CTL](http://www.desu.edu/CTL)

# OFFICE OF INTERNATIONAL AFFAIRS

As the central office responsible for coordinating the University's international activity, the Office of International Affairs (OIA) has the mission of integrating a global perspective into the teaching, research, and service programs of the institution. A critical part of the mission is to forge mutually beneficial international partnerships with higher education institutions, including a wide range of public and private sector agencies and organizations.

The Office of International Affairs coordinates the Exchange Visitors Program to assist Academic Deans' respective Departmental goals and objectives to build and strengthen niche teaching and research capability in highly specialized areas that are globally significant. The University officially invites J1 Visa research professors, postdoctoral fellows, research scholars, student non-degree and short-term scholars from our international partnering institutions. At the request of the Academic Deans, the Office of International Affairs facilitates, in part, and coordinates Fulbright Programs and other international activities that strengthen the University's research infrastructure and intellectual posture.

The University enrolls international students on F-1 student visas from around the world to our learning community each academic year. The OIA provides information and programs to F-1 international students about the campus and community and provides support, updates, and assistance concerning F-1 visas and related F-1 immigration issues. The OIA is committed to ensuring that international students have a rewarding academic and personal experience as they pursue their degree at Delaware State University. We help international students adapt to Delaware State University and the USA; we are their home away from home.

The OIA provides the following for F-1 students:

- Assistance with financial, academic, social, and personal matters;
- Campus and community activities;
- Cultural concerns;
- Orientation for new international students;
- Assistance to faculty, staff, and student organizations to plan programs, events and forums that speak to international experiences;
- Referral of students to counseling services, if requested;
- Assistance to students who have difficulties with the U.S. education system;
- Dissemination of important information pertaining to international student life;
- Co-sponsoring of programming, events and forums with the International Students Club;
- Assistance to students who plan to study abroad with selection and application procedures; coordination of study abroad programs; and work closely with affiliated study abroad and service-learning providers to ensure that students who seek an international experience at the undergraduate and graduate levels are provided with options to meet their financial, academic and professional goals and objectives. Students who spend time and study in another country are better prepared for graduate school and have gainful employment in the global economy.

Some of the study abroad programs at Delaware State University are:

- 
- China
- South Korea
- Poland
- Semester at Sea

Delaware State University has joint education programs with Changchun University of Technology, Ningbo University of Technology and Sanming University, and the following formal international partnerships:

- Beihua University, China
- Benson Idahosa University, Nigeria
- Changchun Normal University, China
- Changchun University of Sciences and Technology, China
- Chonnam National University, Korea
- Coal City University, Nigeria
- Chungbuk National University, Korea
- College of Jilin Business and Technology, China
- Dalian University of Technology, China
- GE Nigeria, Nigeria
- Ghana Institute of Management and Public Administration, Ghana
- Groupe Sup de Co la Rochelle, la Rochelle Business School, France
- Hunan Normal University, China
- International University of Business Agriculture and Technology, Bangladesh
- Jeju National University, China
- Jilin Huaqiao Foreign Languages Institute, China
- Jishou University, China
- Kyung Kee University, Korea
- Loyola College, India
- Miagi University of Education, Japan
- Ningbo University of Technology, China
- Ningbo University, China
- North-West University, Mafikeng Campus, South Africa
- Sanming University, China
- Shenyang University of Technology, China
- Université de Versailles, Saint-Quentin-en-Yvelines, France
- University of Caen, France
- Vietnam National University, Vietnam
- Yeungnam University College (YUC), South Korea
- Zhaoqing University, China

#### **Staff**

**Dr. Fengshan Liu**, Associate Vice President for International Affairs | 302.857.6421, [fliu@desu.edu](mailto:fliu@desu.edu)

**Mrs. Candace Alphonso-Moore**, Director of International Student Services & Study Abroad Coordinator  
302.857.6474, [cmoore@desu.edu](mailto:cmoore@desu.edu)

**Mrs. Latasha Wilson Daniels**, Manager | 302.857.6421, [ldaniels@desu.edu](mailto:ldaniels@desu.edu)

# MEMBERS OF THE BOARD OF TRUSTEES

## OFFICERS OF THE BOARD

Dr. Devona E. Williams, Chair  
Mr. John Ridgeway, Vice Chair  
Mr. John J. Allen Jr., Vice Chair

Mrs. Margie Lopez-Waite, Board Treasurer  
Ms. Tamara Stoner, Board Secretary

## MEMBERS APPOINTED BY THE GOVERNOR

The Honorable Michael N. Castle	New Castle
Norman Griffiths, Esq.	New Castle
Ms. Lois M. Hobbs	Sussex
Ms. Esthelda R. Selby	Sussex
Ms. Jocelyn Stewart	New Castle
Leroy A. Tice, Esq.	New Castle
Dr. Devona E. Williams	New Castle
Dr. Wilma Mishoe	Kent

## MEMBERS ELECTED BY THE BOARD

Mr. John J. Allen, Jr.	Sussex
Dr. Debbie Harrington	New Castle
The Honorable Jack Markell	New Castle
Mr. John Ridgeway	
Mr. Harold Stafford	Kent
Mrs. Margie Lopez-Waite	New Castle
Ms. Bernadette Dorsey Whatley	New Castle

## EX OFFICIO MEMBERS

The Honorable John Carney  
Governor of the State of Delaware

Dr. Tony Allen  
President of the University

## TRUSTEE EMERITI

Dr. Richard Barros  
Dr. Claibourne D. Smith

# 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

## ***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  
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 2021-2022 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 Graduate Studies and Research. 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.

### **PROGRAM FACULTY**

Richard Barczewski Ph.D., Professor, Animal Sciences, Retired, Professor Emeritus

Cyril Broderick Ph.D., Professor, Plant Science

Sathya Elavarthi Ph.D., Associate Professor, Plant Science

Dewayne Fox Ph.D., Professor, Zoology

Mingxin Guo Ph.D., Professor, Soil Sciences; Interim Chairperson

Christopher Heckscher Ph.D., Professor, Entomology & Wildlife Ecology

Venugopal Kalavacharla Ph.D., Professor, Plant Science

Dennis McIntosh Ph.D., Professor, Soil, Water & Environmental Science

Gulnihal Ozbay Ph.D., Professor, Fisheries & Allied Aquacultures

Kevina Vulinec Ph.D., Professor, Wildlife Ecology  
Sigrid Smith Ph.D., Assistant Professor, Statistics/Ecology  
Kwame Matthews Ph.D., Associate Professor, Animal Science  
Kalpatha Melmaiee Ph.D., Associate Professor, Plant Breeding

## **FACILITIES**

W.W. Baker Building  
Agricultural Annex  
Claude E. Phillips Herbarium  
Research Greenhouse  
Aquaculture Facilities  
Hickory Hill Forage and Livestock Farm  
Smyrna Outreach and Research Farm

## **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.



# 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.

## 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 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 2021-2022 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, 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 Graduate Studies and Research. 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.

## **PROGRAM FACULTY**

Richard Barczewski Ph.D., Professor, Animal Sciences, Retired, Professor Emeritus  
Cyril Broderick Ph.D., Professor, Plant Science  
Sathya Elavarthi Ph.D., Associate Professor, Plant Science  
Dewayne Fox Ph.D., Professor, Zoology  
Mingxin Guo Ph.D., Professor, Soil Sciences  
Christopher Heckscher Ph.D., Professor, Entomology & Wildlife Ecology  
Venugopal Kalavacharla Ph.D., Professor, Plant Science  
Dennis McIntosh Ph.D., Professor, Soil, Water & Environmental Science  
Gulnihal Ozbay Ph.D., Professor, Fisheries & Allied Aquacultures  
Kevina Vulinec Ph.D., Professor, Wildlife Ecology  
Sigrid Smith Ph.D., Assistant Professor, Statistics/Ecology  
Kwame Matthews Ph.D., Associate Professor, Animal Science  
Kalpapatha Melmaiee Ph.D., Associate Professor, Plant Breeding

## **FACILITIES**

W.W. Baker Building Agricultural Annex  
Claude E. Phillips Herbarium  
Research Greenhouse  
Aquaculture Facilities  
Hickory Hill Forage and Livestock Farm  
Smyrna Outreach and Research Farm

## **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/projectwork 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/projectwork 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 <sup>th</sup> 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	
			<b>Total Credits: 31</b>		

- \*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 Graduate Studies and Research
- 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 21<sup>st</sup> 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 2021-2022 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 Ph.D. Program:

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

The potential applicant must communicate with faculty members from the integrated disciplines in which they are interested in pursuing their Ph.D.

## 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, health care, 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 2021-2022 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, health care, 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.

### **PROGRAM 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. Faculty members maintaining active research labs are listed below.

Dr. Melissa Harrington, Professor – Neuroscience  
Dr. Vincent Fondong, Associate Professor – Virology  
Dr. Harbinder Dhillon, Professor – Molecular Biology and Behavior  
Dr. Anthea Aikins, Assistant Professor – Microbiology  
Dr. Michael Gitcho, Assistant Professor – Cellular & Molecular Neuroscience

Dr. Y. Hwan Kim, Associate Professor – Physiological Science  
Dr. Hakeem Lawal, Assistant Professor – Biology  
Dr. Karl Miletti, Associate Professor – Neuroscience  
Dr. Murali Temburni, Associate Professor – Life Sciences  
Dr. Andrew Lloyd, Professor – Microbiology  
Dr. Sabrina McGary, Associate Professor – Biochemistry and Neuroscience  
Dr. Derrick Scott, Assistant Professor – Biological Sciences  
Dr. LaTia Scott, Visiting Assistant Professor, Genomics and Proteomics  
Dr. Anthony Golubski, Visiting Assistant Professor, Ecology, Population Biology, and Mathematical Modeling  
Dr. Cynthia VanGolen, Associate Professor – Neuroscience  
Dr. Clytrice Watson, Professor – Food Science & Technology  
Dr. Charlie Wilson, Associate Professor – Biological Sciences

## **FACILITIES**

The Department of Biological Sciences is housed in the Mishoe Science Center. The Department consists of 11 active research laboratories, a common biotechnology-equipped laboratory, six laboratory classrooms with prep room, faculty offices, a science reading room, an animal room, and a research greenhouse. These facilities provide strong support capabilities in teaching and research areas of modern biology. The faculty has active research programs that are funded by research grants in various areas of biology but especially in plant biotechnology, cancer, and neuroscience.

In addition, the Department is a cosponsor of a vast herbarium collection, and Department faculty have access to state-of-the-art bioimaging facilities at the Delaware Institute of Science and Technology located on campus.

## **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 alterations in cancer, epidemiology, health care 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.

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

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

	<b>Total Credits:</b>	30
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\*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 Graduate Studies and Research

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, health care, 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 2021-2022 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. Faculty members maintaining active research labs are listed below.

Dr. Melissa Harrington, Professor – Neuroscience

Dr. Vincent Fondong, Professor – Plant Virology

Dr. Harbinder Dhillon, Professor – Molecular Biology and Neuroscience

Dr. Anthea Aikins, Assistant Professor – Microbiology

Dr. Michael Gitcho, Associate Professor – Cellular & Molecular Neuroscience

Dr. Y. Hwan Kim, Associate Professor – Neuroscience

Dr. Hakeem Lawal, Associate Professor – Neuroscience

Dr. Karl Miletti, Associate Professor – Cancer Biology & Molecular Genetics

Dr. Murali Temburni, Associate Professor – Molecular Cellular Neuroscience and Biochemistry

Dr. Derrick Scott, Assistant Professor – Bioinformatics

Dr. LaTia Scott, Visiting Assistant Professor – Biotechnology, proteomics and genomics

Dr. Antonio Golubski, Visiting Assistant Professor, Ecology, Population Biology & Mathematical Modeling  
Dr. Cynthia VanGolen, Associate Professor – Neuroscience  
Dr. Krystal Hans, Assistant Professor – Forensic Biology  
Dr. Clytrice Watson, Professor – Food Science & Technology  
Dr. Charlie Wilson, Associate Professor – Biological Sciences

## **FACILITIES**

The Department of Biological Sciences is housed in the Mishoe Science Center. The Department consists of 11 active research laboratories, a common biotechnology-equipped laboratory, six laboratory classrooms with prep rooms, faculty offices, a science reading room, an animal room, and a research greenhouse. These facilities provide strong support capabilities in teaching and research areas of modern biology. The faculty has active research programs that are funded by research grants in various areas of biology but especially in plant biotechnology, cancer, and neuroscience.

In addition, the Department is a cosponsor of the Claude E. Phillips Herbarium. The Herbarium is the largest collection of preserved plant materials at any historically black institution in the country and the only such collection on the Delmarva Peninsula.

## **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, health care 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 Graduate Studies and Research

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 2021-2022 academic year.)
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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. Faculty members maintaining active research labs are listed below.

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The Department of Biological Sciences has a dedicated and well-prepared faculty with diverse backgrounds and areas of specialization. All faculty have published in their respective fields, and they maintain active research involvement. The faculty is serious and talented professors. The small class size insures that students interact closely with faculty in the learning experience. Scholarly involvement in research keeps the faculty current and able to offer exciting research opportunities to the students in a variety of areas.

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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.

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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.

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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, health care 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
	<b>Total Credits</b>	<b>9</b>		<b>Total Credits</b>	<b>10</b>

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
	<b>Total Credits</b>	<b>8</b>		<b>Total Credits</b>	<b>8</b>

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			
	<b>Total Credits</b>	<b>9</b>		<b>Total Credits</b>	<b>6</b>

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			
	<b>Total Credits</b>	<b>6</b>		<b>Total Credits</b>	<b>4</b>

**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 Graduate Studies and Research

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 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 2021-2022 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.

<b>Required Courses:</b>	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
<b>Electives*</b>	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
<b>CHEM 521 Advanced Biochemistry</b>	
<b>Biology Electives:</b>	
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
<b>Physics Electives:</b>	
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.

## **FACULTY AND FACILITIES**

The Chemistry Department currently has 5 research faculty members, including

Dr. Bizuneh Workie, Associate Professor, Analytical/Electro-Chemistry  
Dr. Qiquan Wang, Associate Professor, Environmental Chemistry  
Dr. Cherese Winstead Casson, Associate Professor, Analytical/Polymer Chemistry  
Dr. Young-Gi Kim, Associate Professor, Organic Chemistry  
Dr. Yanfeng Yue, Assistant Professor, Inorganic Chemistry

The Chemistry Department is located in the Mishoe Science Center building, occupying an approximate area of 20,000 ft<sup>2</sup> in the third and first floor of the south side and an approximate area of 4000 ft<sup>2</sup> in the second floor of the north side. It includes nine spacious research laboratories, two instrument rooms, three teaching laboratories, 11 offices, one student lounge, and one seminar room.

The Department has a wide selection of modern instruments and equipment to support teaching and research. Available equipment includes several gas chromatograph with a variety of detectors, a nuclear magnetic resonance spectrometer (400MHz), a flame and flameless atomic absorption, a FTIR, and several ultraviolet-visible spectrophotometers, several high performance liquid chromatograph with data collection system, and an electroanalytical system.

## 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
<b>CHEM 573</b>	*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 2021-2022 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).

## FACULTY AND FACILITIES

The Chemistry Department currently has 5 research faculty members, including

Dr. Bizuneh Workie, Associate Professor, Analytical/Electro-Chemistry  
 Dr. Qiquan Wang, Associate Professor, Environmental Chemistry  
 Dr. Cherese Winstead Casson, Associate Professor, Analytical/Polymer Chemistry  
 Dr. Young-Gi Kim, Assistant Professor, Organic Chemistry  
 Dr. Yanfeng Yue, Assistant Professor, Inorganic Chemistry

The Chemistry Department is located in the Mishoe Science Center, occupying an approximate area of 20,000 ft<sup>2</sup> in the third and first floor of the south side and an approximate area of 4000 ft<sup>2</sup> in the second floor of the north side. It includes nine spacious research laboratories, two instrument rooms, three teaching laboratories, 11 offices, one student lounge, and one seminar room.

The Department has a wide selection of modern instruments and equipment to support teaching and research. Available equipment includes several gas chromatograph with a variety of detectors, a nuclear magnetic resonance spectrometer (400MHz), a flame and flameless atomic absorption, a FTIR, several ultraviolet-visible spectrophotometers, several high performance liquid chromatograph with data collection systems, and electroanalytical systems.

## 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	8		Total Credits	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	9		Total Credits	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	9		Total Credits	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	6		Total Credits	3
			<b>Total Credits: 60</b>		

- \*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 2021-2022 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 Graduate Studies and Research.

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 Graduate Studies and Research. 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.

## **PROGRAM FACULTY**

Samuel A. Besong Ph.D., Professor, Food and Nutrition  
Jung-Lim Lee Ph.D., Associate Professor, Food Microbiology and Safety  
Alberta N. A. Aryee Ph.D., Assistant Professor, Food Chemistry  
Wilbert Long, Ph.D., Senior Research Scientist, Food Safety  
Bertrand B. Hanukoua, Senior Research Scientist, Food Biotechnology

## **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			
	<b>Total Credits</b>	<b>12</b>		<b>Total Credits</b>	<b>9</b>
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			
	<b>Total Credits</b>	<b>7</b>		<b>Total Credits</b>	<b>6</b>
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 Graduate Studies,  
Thesis Defense and Submission of Thesis

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

# 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 65<sup>th</sup> percentile range. Due to COVID-19, GRE scores are not required for the 2021-2022 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 IETLS. 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.

Dr. Marwan Rasamny, Associate Professor, Physics

Dr. Kam Kong, Associate Professor, Mathematical Sciences

Dr. Zhongyan Lin, Associate Professor, Mathematics

Dr. Fatima Boukari, Visiting Assistant Professor, Applied Math

Dr. Gary Holness, Associate Professor, Computer Science

Dr. Tomasz Smolinski, Associate Professor, Computer Science & Engineering

Shilpa Patel, Lecturer, Computer Science

## **FACILITIES**

The Division of Physics, Engineering, Mathematics and Computer Science's Computer Science academic unit is housed in Mishoe Science Center (original) and Grossley Hall. A majority of the faculty is actively engaged in research and maintains research laboratories. Laboratories consist of a combination of physical research laboratory space and virtual laboratory computer resources for research in machine learning, video surveillance and analysis, data mining, image processing, legal reasoning, systems, databases, bioinformatics, robotics, machine perception, mobile systems and cybersecurity. The Department maintains a number of teaching laboratories as well as generally available workstations running Windows and Linux. The Department also maintains high-end printers/print servers available to graduate students. Classrooms are equipped with state-of-the-art Smart TV teaching tools.

## **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 an 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 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.

**PROGRAM: MASTERS IN COMPUTER SCIENCE**

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 2021-2022 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.

## FACULTY

Dr. Marwan Rasamny	Chairperson	Mathematics Education
Dr. Fengshan Liu	Professor	Applied Mathematics
Dr. Dawn Lott	Professor	Applied Mathematics
Dr. Mazen Shahin	Professor	Mathematics
Dr. Xiquan Shi	Professor	Applied Mathematics
Dr. Jinjie Liu	Associate Professor	Computational Applied Mathematics
Dr. Delayne Johnson	Associate Professor	Education
Dr. Sokratis Makrogiannis	Associate Professor	Physics
Dr. Matthew Tanzy	Associate Professor	Applied Mathematics
Dr. O. Yavuz	Assistant Professor	Mathematics
Dr. Sharon Smith	Lecturer	Mathematics
Dr. L. Girgis	Lecturer	Mathematics
Dr. Ellen Carr	Lecturer	Mathematics
Dr. Yanan Xu	Visiting Professor	Applied Mathematics
Dr. Andre Strong	Assistant Professor	Applied Mathematics

## 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

<b>Total Credits: 33</b>
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\*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 Graduate Studies and Research 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

<b>Total Credits: 33</b>
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\*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 Graduate Studies and Research.

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 2021-2022 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 6<sup>th</sup> 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.

## FACULTY

Dr. Nicola Edwards	Chairperson	Mathematics Education
Dr. Fengshan Liu	Professor	Applied Mathematics
Dr. Dawn Lott	Professor	Applied Mathematics
Dr. Mazen Shahin	Professor	Mathematics
Dr. Xiquan Shi	Professor	Applied Mathematics
Dr. Jinjie Liu	Associate Professor	Computational Applied Mathematics
Dr. Delayne Johnson	Associate Professor	Education
Dr. Sokratis Makrogiannis	Associate Professor	Physics
Dr. Matthew Tanzy	Associate Professor	Applied Mathematics
Dr. O. Yavuz	Assistant Professor	Mathematics
Dr. Sharon Smith	Lecturer	Mathematics
Dr. L. Girgis	Lecturer	Mathematics
Dr. Ellen Carr	Lecturer	Mathematics
Dr. Yanan Xu	Visiting Professor	Applied Mathematics
Dr. Andre Strong	Assistant Professor	Applied Mathematics

## 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 <sup>°</sup>
MTSC-521	3	General Topology <sup>°</sup>
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		
<sup>°</sup> 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

<b>Total Credits: 33</b>
--------------------------

\*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 Graduate Studies and Research 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

<b>Total Credits: 33</b>
--------------------------

\*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 Graduate Studies and Research.

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 2021-2022 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.

### FACULTY

Dr. Marwan Rasamny	Chairperson	Computer Science
Dr. Dawn Lott	Professor	Computational Applied Mathematics
Dr. Mazen Shahin	Professor	Mathematics
Dr. Xiquan Shi	Professor	Applied Mathematics
Dr. Nicola Edwards	Associate Professor	Mathematics Education
Dr. Delayne Johnson	Associate Professor	Education
Dr. Jinjie Liu	Associate Professor	Computational Applied Mathematics
Dr. Sokratis Makrogiannis	Associate Professor	Computational Applied Mathematics
Dr. Matthew Tanzy	Associate Professor	Computational Applied Mathematics
Dr. Andre Strong	Assistant Professor	Applied Mathematics
Dr. Onur Yavuz	Assistant Professor	Mathematics
Dr. Yanan Xu	Visiting Assistant Professor	Applied Mathematics
Dr. Sharon Smith	Lecturer	Mathematics
Dr. Laila Girgis	Lecturer	Mathematics
Ms. Ellen Carr	Lecturer	Mathematics

### 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**

<b>Required Courses:</b> (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
<b>Elective:</b> (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
<b>TOTAL CREDIT HOURS: 39<sup>^</sup></b>		
<b>*Students must take any two of these courses.</b>		

<sup>^</sup> 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.

### FACULTY

Dr. Marwan Rasamny	Chairperson	Computer Science
Dr. Dawn Lott	Professor	Computational Applied Mathematics
Dr. Mazen Shahin	Professor	Mathematics
Dr. Xiquan Shi	Professor	Applied Mathematics
Dr. Nicola Edwards	Associate Professor	Mathematics Education
Dr. Delayne Johnson	Associate Professor	Education
Dr. Jinjie Liu	Associate Professor	Computational Applied Mathematics
Dr. Sokratis Makrogiannis	Associate Professor	Computational Applied Mathematics
Dr. Matthew Tanzy	Associate Professor	Computational Applied Mathematics
Dr. Andre Strong	Assistant Professor	Applied Mathematics
Dr. Onur Yavuz	Assistant Professor	Mathematics
Dr. Yanan Xu	Visiting Assistant Professor	Applied Mathematics
Dr. Sharon Smith	Lecturer	Mathematics
Dr. Laila Girgis	Lecturer	Mathematics
Ms. Ellen Carr	Lecturer	Mathematics

### 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 credits 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. 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).

## **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.

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#### **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 4<sup>th</sup> 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
			<b>Total Credits: ≥ 39</b>		

\*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 Graduate Studies and Research
- 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 21<sup>st</sup> 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 2021-2022 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 Graduate Studies and Research.

### **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.

### **PROGRAM FACULTY**

Dr. Hacene Boukari, Professor – Chemical Physics

Dr. Gabriel Gwanmesia, Professor – Geophysics

Dr. Mohamed A. Khan, Associate Professor – Electrical Engineering

Dr. Qi Lu, Associate Professor – Nanobiophysics

Dr. Aristides Marcano, Professor – Non-Linear Optics

Dr. Yuri Markushin, Associate Professor – Biophysics/Biopolymers

Dr. Gour Pati, Professor – Optical and Atomic Physics

Dr. Thomas Planchon, Associate Professor – Physics

Dr. Mukti Rana, Professor – Electrical Engineering

Dr. Jen Ren, Associate Professor – Electrical Engineering

Dr. Debora Santamore, Professor – Physics

Dr. Renu Tripathi, Professor – Physics

Dr. Essaid Zerrad, Professor – Physics

Dr. Sokratis Makrogiannis, Associate Professor – Computational Science and Engineering

## PhD in OPTICS

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.

3:3:0

#### 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, Schroedinger's equation, natural radioactivity, and elementary relativity. Credit, three hours.

3:3:0

#### 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

<b>PHYS-536. METHODS OF EXPERIMENTAL PHYSICS II</b>	<b>3:3:0</b>
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.	
<b>PHYS-563. MATHEMATICAL METHODS OF PHYSICS III</b>	<b>3:3:0</b>
An intermediate course in applied mathematics. Topics covered include the solution of differential equations, vector calculus, Fourier series and Laplace transforms. Credit, three hours.	
<b>PHYS-565. THERMAL PHYSICS</b>	<b>3:3:0</b>
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.	
<b>PHYS-567. INTERMEDIATE ELECTRICITY AND MAGNETISM I</b>	<b>3:3:0</b>
A treatment of electrostatics, Dielectric Theory, magnetic phenomena, magnetic media, ac circuits and Maxwell's equations. Vector calculus is used throughout. Credit, three hours.	
<b>PHYS-568. INTERMEDIATE ELECTRICITY AND MAGNETISM II</b>	<b>3:3:0</b>
A treatment of electrostatics, Dielectric Theory, magnetic phenomena, magnetic media, ac circuits and Maxwell's equations. Vector calculus is used throughout. Credit, three hours.	
<b>PHYS-574. SELECTED TOPICS FOR MIDDLE SCHOOL TEACHERS</b>	<b>3:3:0</b>
A course that allows middle school teachers to pursue physics concepts as they relate to middle school science. Credit, three hours.	
<b>PHYS-577. SELECTED TOPICS I</b>	<b>3:3:0</b>
A course allowing practicing teachers to pursue independent study of a topic in physics and physical science at the graduate level. Credit, three hours.	
<b>PHYS-578. SELECTED TOPICS II</b>	<b>3:3:0</b>
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.	
<b>PHYS-579. SELECTED TOPICS III</b>	<b>3:3:0</b>
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.	
<b>PHYS-600. MODERN OPTICS</b>	<b>4:4:0</b>
Electromagnetic description of light and its interaction with matter. Topics include interference, coherence, diffraction, holography, dispersion, polarization, scattering, and confinement. Credit, four hours.	
<b>PHYS-601. NONLINEAR OPTICS</b>	<b>4:4:0</b>
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.	
<b>PHYS-602. BIOPHOTONICS I: PRINCIPLES OF LUMINESCENCE</b>	<b>4:4:0</b>
A study of the physics behind light emitting molecules and their applications in biology. Credit, four hours.	

<b>PHYS-603. BIOPHOTONICS II: INSTRUMENTATION</b>	<b>3:3:0</b>
An overview of microscopes and other optical instruments used in the biomedical field. Credit, three hours.	
<b>PHYS-604. APPLIED OPTICS IN BIOMEDICINE</b>	<b>3:3:0</b>
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.	
<b>PHYS-605. PRINCIPLES OF LASERS AND OPTICAL DEVICES</b>	<b>4:4:0</b>
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.	
<b>PHYS-606. LABORATORY TECHNIQUES IN OPTICS AND SPECTROSCOPY</b>	<b>3:3:0</b>
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.	
<b>PHYS-607. INTRODUCTION TO LABVIEW</b>	<b>3:3:0</b>
A hands-on approach to the national instruments labview programming language. Credit, three hours.	
<b>PHYS-608. SELECTED TOPICS IN OPTICS AND SPECTROSCOPY I</b>	<b>3:3:0</b>
Current research topics in optics and spectroscopy. Credit, three hours.	
<b>PHYS-609. SELECTED TOPICS IN OPTICS AND SPECTROSCOPY II</b>	<b>3:3:0</b>
Current research topics in optics and spectroscopy. Credit, three hours.	
<b>PHYS-621. OPTICAL SYSTEM DESIGN</b>	<b>3:2:2</b>
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	
<b>PHYS-633. SELECTED TOPICS IN SCIENCE EDUCATION</b>	<b>3:3:0</b>
Current developments in physics education. Credit, three hours.	
<b>PHYS-652. CLASSICAL MECHANICS</b>	<b>3:3:0</b>
Lagrangian formulation, the Kepler problem, Rutherford scattering, rotating coordinate systems, rigid body motion, small oscillations, stability problems, and Hamiltonian formulation. Credit, three hours.	
<b>PHYS-655. COMPUTATIONAL METHODS</b>	<b>3:3:0</b>
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.	
<b>PHYS-661. SOLID STATE PHYSICS</b>	<b>3:3:0</b>
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.	
<b>PHYS-665. STATISTICAL MECHANICS</b>	<b>3:3:0</b>
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.	

<b>PHYS-667. MATHEMATICAL METHODS OF PHYSICS IV</b>	<b>3:3:0</b>
An advanced treatment of mathematical topics including operators, matrix mathematics, complex variables and eigenvalue problems. Credit, three hours.	
<b>PHYS-671. ADVANCED ELECTROMAGNETIC THEORY I</b>	<b>3:3:0</b>
Treatment of boundary value problems of electrostatics and magnetostatics, electromagnetic radiation, radiating systems, wave guides, resonating systems and multipole fields. Credit, three hours.	
<b>PHYS-672. ADVANCED ELECTROMAGNETIC THEORY II</b>	<b>3:3:0</b>
Treatment of boundary value problems of electrostatics and magnetostatics, electromagnetic radiation, radiating systems, wave guides, resonating systems and multipole fields. Credit, three hours.	
<b>PHYS-675. QUANTUM MECHANICS I</b>	<b>3:3:0</b>
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.	
<b>PHYS-676. QUANTUM MECHANICS II</b>	<b>3:3:0</b>
Quantum Mechanics of molecules and solid state. Relativistic quantum mechanics. Field quantization. Quantum theory of light. Basics of quantum electrodynamics. Credit, three hours.	
<b>PHYS-691. RESEARCH I</b>	<b>3:3:3</b>
Independent student research or laboratory work in a specialized field of interest. Credit, three hours.	
<b>PHYS-692. RESEARCH II</b>	<b>3:3:3</b>
Independent student research or laboratory work in a specialized field of interest. Credit, three hours.	
<b>PHYS-695. MASTER'S THESIS</b>	<b>6:6:6</b>
A research problem in a selected physics topic resulting in a written thesis. Credit, one to six hours.	
<b>PHYS-800. MODERN LASER SPECTROSCOPIC METHODS</b>	<b>3:3:0</b>
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.	
<b>PHYS-801. QUANTUM THEORY OF LIGHT</b>	<b>3:3:0</b>
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.	
<b>PHYS-802. THEORY OF LIGHT SCATTERING</b>	<b>3:3:0</b>
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.	
<b>PHYS-803. MODERN LASER SPECTROSCOPIC METHODS</b>	<b>3:3:0</b>
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.	
<b>PHYS-804. PRINCIPLES OF PHOTOCHEMISTRY AND PHOTOBIOLOGY</b>	<b>3:3:0</b>
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.	

<b>PHYS-805. PHOTOACOUSTIC AND THERMAL SPECTROSCOPY</b>	<b>3:3:0</b>
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.	
<b>PHYS-806. MOLECULAR BIOPHYSICS</b>	<b>3:3:0</b>
An overview of the physics of bio-molecular interactions. Topics will include physical models for DNA and protein systems. Credit, three hours.	
<b>PHYS-807. OPTICAL SOLITONS</b>	<b>3:3:0</b>
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.	
<b>PHYS-808. FIBER OPTICS AND FIBER OPTICS COMMUNICATION</b>	<b>3:3:0</b>
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.	
<b>PHYS-809. PHOTONICS AND INFORMATION PROCESSING</b>	<b>3:3:0</b>
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.	
<b>PHYS-810. CURRENT TOPICS IN OPTICS I</b>	<b>3:3:0</b>
Current topics in optics and spectroscopy. Credit, three hours.	
<b>PHYS-811. CURRENT TOPICS IN OPTICS II</b>	<b>3:3:0</b>
Current topics in optics and spectroscopy. Credit, three hours.	
<b>PHYS-820. DISSERTATION RESEARCH</b>	<b>9:9:9</b>
The course is for Ph.D. students in the optics program working on their dissertation research project. Credit, two to eight hours.	
<b>PHYS-890. DISSERTATION</b>	<b>9:9:0</b>
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.	
<b>PHYS-999. DOCTORAL SUSTAINING</b>	<b>0:0:0</b>
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
		<b>Total Credits</b>			<b>Total Credits</b>
		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			
		<b>Total Credits</b>			<b>Total Credits</b>
		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
		<b>Total Credits</b>			<b>Total Credits</b>
		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
		<b>Total Credits</b>			<b>Total Credits</b>
		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
		<b>Total Credits</b>			<b>Total Credits</b>
		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 SCGR
- 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 21<sup>st</sup> 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 2021-2022 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 Graduate Studies and Research. 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.

## **PROGRAM FACULTY**

Dr. Hacene Boukari, Professor – Chemical Physics

Dr. Gabriel Gwanmesia, Professor – Geophysics

Dr. Mohamed A. Khan, Associate Professor – Electrical Engineering

Dr. Qi Lu, Associate Professor – Nanobiophysics

Dr. Aristides Marcano, Professor – Non-Linear Optics

Dr. Yuri Markushin, Associate Professor – Biophysics/Biopolymers

Dr. Gour Pati, Professor – Physics

Dr. Thomas Planchon, Associate Professor – Physics

Dr. Mukti Rana, Professor – Electrical Engineering

Dr. Jen Ren, Assistant Professor – Electrical Engineering

Dr. Debora Santamore, Professor – Applied Physics

Dr. Renu Tripathi, Professor – Physics

Dr. Essaid Zerrad, Professor – Physics

Dr. Sokratis Makrogiannis, Associate Professor – Computational Science and Engineering

### 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. Many 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.

<b>PHYS-672. ADVANCED ELECTROMAGNETIC THEORY II</b>	<b>3:3:0</b>
Treatment of boundary value problems of electrostatics and magnetostatics, electromagnetic radiation, radiating systems, wave guides, resonating systems and multipole fields. Credit, three hours.	
<b>PHYS-675. QUANTUM MECHANICS I</b>	<b>3:3:0</b>
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.	
<b>PHYS-676. QUANTUM MECHANICS II</b>	<b>3:3:0</b>
Quantum Mechanics of molecules and solid state. Relativistic quantum mechanics. Field quantization. Quantum theory of light Basics of quantum electrodynamics. Credit, three hours.	
<b>PHYS-691. RESEARCH I</b>	<b>3:3:3</b>
Independent student research or laboratory work in a specialized field of interest. Credit, three hours.	
<b>PHYS-692. RESEARCH II</b>	<b>3:3:3</b>
Independent student research or laboratory work in a specialized field of interest. Credit, three hours.	
<b>PHYS-695. MASTER'S THESIS</b>	<b>6:6:6</b>
A research problem in a selected physics topic resulting in a written thesis. Credit, one to six hours.	
<b>PHYS-800. MODERN LASER SPECTROSCOPIC METHODS</b>	<b>3:3:0</b>
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.	
<b>PHYS-801. QUANTUM THEORY OF LIGHT</b>	<b>3:3:0</b>
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.	
<b>PHYS-802. THEORY OF LIGHT SCATTERING</b>	<b>3:3:0</b>
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.	
<b>PHYS-803. MODERN LASER SPECTROSCOPIC METHODS</b>	<b>3:3:0</b>
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.	
<b>PHYS-804. PRINCIPLES OF PHOTOCHEMISTRY AND PHOTOBIOLOGY</b>	<b>3:3:0</b>
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.	
<b>PHYS-805. PHOTOACOUSTIC AND THERMAL SPECTROSCOPY</b>	<b>3:3:0</b>
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.	
<b>PHYS-806. MOLECULAR BIOPHYSICS</b>	<b>3:3:0</b>
An overview of the physics of bio-molecular interactions. Topics will include physical models for DNA and protein systems. Credit, three hours.	

<b>PHYS-807. OPTICAL SOLITONS</b>	<b>3:3:0</b>
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.	
<b>PHYS-808. FIBER OPTICS AND FIBER OPTICS COMMUNICATION</b>	<b>3:3:0</b>
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.	
<b>PHYS-809. PHOTONICS AND INFORMATION PROCESSING</b>	<b>3:3:0</b>
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.	
<b>PHYS-810. CURRENT TOPICS IN OPTICS I</b>	<b>3:3:0</b>
Current topics in optics and spectroscopy. Credit, three hours.	
<b>PHYS-811. CURRENT TOPICS IN OPTICS II</b>	<b>3:3:0</b>
Current topics in optics and spectroscopy. Credit, three hours.	
<b>PHYS-820. DISSERTATION RESEARCH</b>	<b>9:9:9</b>
The course is for Ph.D. students in the optics program working on their dissertation research project. Credit, two to eight hours.	
<b>PHYS-890. DISSERTATION</b>	<b>9:9:0</b>
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.	
<b>PHYS-999. DOCTORAL SUSTAINING</b>	<b>0:0:0</b>
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			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-695*	Thesis Research	6
PHYS-675*	Quantum Mechanics I	3	PHYS-803*	Modern Laser Spectroscopic Methods	3
		Total Credits			Total Credits
		7			9

<b>Total Credits: 36</b>				
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- \*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  $\geq 3.0$ , 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

			<b>Total Credits: 33</b>		
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- \*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  $\geq 3.0$ , 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 21<sup>st</sup> 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 2021-2022 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 Graduate Studies and Research. 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.

## **PROGRAM FACULTY**

Dr. Hacene Boukari, Professor – Chemical Physics  
Dr. Gabriel Gwanmesia, Professor – Geophysics  
Dr. Mohamed A. Khan, Professor – Electrical Engineering  
Dr. Qi Lu, Associate Professor – Nanobiophysics  
Dr. Aristides Marcano, Professor – Non-Linear Optics  
Dr. Yuri Markushin, Associate Professor – Biophysics/Biopolymers  
Dr. Gour Pati, Professor – Optical and Atomic Physics  
Dr. Thomas Planchon, Associate Professor – Physics  
Dr. Mukti Rana, Professor – Electrical Engineering  
Dr. Jen Ren, Associate Professor – Electrical Engineering  
Dr. Debora Santamore, Professor – Applied Physics  
Dr. Renu Tripathi, Professor – Physics  
Dr. Essaid Zerrad, Professor – Physics  
Dr. Sokratis Makrogiannis, Associate– Computational Science and Engineering

### 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 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** **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.

<b>PHYS-806. MOLECULAR BIOPHYSICS</b>	<b>3:3:0</b>
An overview of the physics of bio-molecular interactions. Topics will include physical models for DNA and protein systems. Credit, three hours.	
<b>PHYS-807. OPTICAL SOLITONS</b>	<b>3:3:0</b>
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.	
<b>PHYS-808. FIBER OPTICS AND FIBER OPTICS COMMUNICATION</b>	<b>3:3:0</b>
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.	
<b>PHYS-809. PHOTONICS AND INFORMATION PROCESSING</b>	<b>3:3:0</b>
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.	
<b>PHYS-810. CURRENT TOPICS IN OPTICS I</b>	<b>3:3:0</b>
Current topics in optics and spectroscopy. Credit, three hours.	
<b>PHYS-811. CURRENT TOPICS IN OPTICS II</b>	<b>3:3:0</b>
Current topics in optics and spectroscopy. Credit, three hours.	
<b>PHYS-820. DISSERTATION RESEARCH</b>	<b>9:9:9</b>
The course is for Ph.D. students in the optics program working on their dissertation research project. Credit, two to eight hours.	
<b>PHYS-890. DISSERTATION</b>	<b>9:9:0</b>
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.	
<b>PHYS-999. DOCTORAL SUSTAINING</b>	<b>0:0:0</b>
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
			<b>Total Credits: 30</b>		

\*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

Graduate Studies and Research

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
			<b>Total Credits: 30</b>		

\*Denotes a Core Requirement

+Denotes an Elective

Total Core Credits = 27

Total Elective Credits = 3

Candidacy Requirement: Complete 15 credits of coursework with GPA  $\geq 3.0$  Capstone or

Culminating Experience: Presentation in special topics class about research topic

Outcomes report and rubric submitted to Graduate Studies and Research prior to graduation

# COLLEGE OF BUSINESS



***Department of Business Administration***

Master of Business Administration (MBA)

Concentrations in Business Analytics, CPA, Finance and Information Systems

***Department of Sport Management***

MS in Sport Administration

# **MASTER OF BUSINESS ADMINISTRATION (MBA)**

## **PROGRAM OBJECTIVES**

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

- Our students will understand the importance of ethical decision making.
- Our students will demonstrate an understanding of data gathering, analysis, and interpretation.
- Our students will have information technology skills.
- Our students will have a global, cultural, and diversity perspective. Our students will demonstrate leadership and communication skills.
- Our students will demonstrate leadership and communication skills.

## 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 criteria for admission attempts to balance the candidate's undergraduate GPA and GMAT score. The required GMAT score is based on the formula:  $200 \times \text{UG GPA} + \text{GMAT Score} \geq 975$ . Candidates who have attained the required GMAT score and have completed the common body of knowledge (CBK) in business will be admitted unconditionally.

- 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 Official Graduate Management Admission Test (GMAT) scores. GRE is only accepted with approval of the Program Director. Due to COVID-19, GMAT and GRE scores are not required for the 2021-2022 academic year.
- 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.

The MBA Program Admission Committee will review students' application materials and make a recommendation for acceptance into the MBA Program to the Dean of Graduate, Adult and Extended Studies, who extends an offer of admission to the applicant.

## 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 who are required to complete the foundation courses must complete foundation courses offered by the program prior to enrolling in MBA core courses. Appropriately qualified students may petition for a waiver or may test out of foundation courses up to a maximum of 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 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 are required to complete a minimum of 30 credit hours for the General MBA degree or 33 credit hours for the MBA degree with a 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)

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 discipline and have published several research articles in recognized journals.

## **PROGRAM FACULTY**

Dr. Young S. Kwak, Professor, Finance  
Dr. Daeryong Kim, Professor, Management Info. Systems  
Dr. Bridget Anakwe, Associate Professor, Accounting  
Dr. Michael Casson, Jr. Associate Professor, Economics  
Dr. Jan E. Christopher, Associate Professor, Economics  
Dr. Nandita Das, Associate Professor, Finance  
Dr. Zi “Nancy” Ning, Associate Professor, Finance  
Dr. Bernadette Ruf, Professor, Accounting  
Dr. Winston Awadzi, Professor, Management  
Dr. Constant Beugre, Professor, Management  
Dr. Martin Nunlee, Associate Professor, Marketing  
Dr. Praveen Pinjani, Associate Professor, Management Information Systems  
Dr. Carlos Rodriguez, Associate Professor, Marketing  
Dr. Devdeep Maity, Assistant Professor, Marketing  
Dr. Akash Dania, Associate Professor, Finance

## **FACILITIES**

All of our courses are taught in Wilmington, Delaware, at our Kirkwood Campus, or are taught using Blackboard Collaborate and all courses are online.

## MASTER OF BUSINESS ADMINISTRATION (MBA)

<p>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</p>	
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	<b>Finance</b> 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)
	<b>Information Systems</b> Strategic Information Systems (MBA 631) Managing Electronic Commerce (MBA 632) Topics in Information Systems (MBA 633) Supply Chain Management (MBA 651)
	<b>Business Analytics</b> Database Management Systems (MBA 681) Data Analytics (MBA 682) Data Analytics and Visualization (MBA 683)
	(Empty cell)

\*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 statements 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**

The course introduces the students to the uses, trends, and applications of information technologies in organizations. The course also examines the managerial implication of the information technology and the alignment between business and information technology. The course will expose the students to computer hardware and software, database, telecommunications and network technology, the Internet and World Wide Web, mobile computing, and other topics in information technology.

Prerequisites: MBA-504. Credit, three hours.

### **MBA-601. ECONOMICS FOR MANAGERIAL DECISION MAKING**

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

**MBA-602. MARKETING MANAGEMENT**

The course examines the strategic marketing planning process. Emphasis is placed on the development of product lines, sales promotion, and distribution strategies. Prerequisites: Common Body of Knowledge (CBK) requirements in Principles of Economics and Marketing. Credit, three hours.

**MBA 603: ACCOUNTING FOR DECISION MAKING**

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

**MBA-604. FINANCIAL MANAGEMENT**

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

**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 investigates the increasing use of the techniques of business support systems and workflow tools for the optimum performance of manufacturing and service organizations. Students will use analytical, quantitative, and qualitative techniques and workflow tools for resource allocations, facilities design and location, process design, planning, scheduling, and quality control. An emphasis will be placed on current technologies and their applications in various industries. Credit, three hours.

**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 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 setting 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 non-profits.

**MBA 681: DATABASE MANAGEMENT**

The course offers an extended study of modern database technology, which is designed to expose students to the development of database management systems. Prerequisites MBA 600 (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.

**WILMINGTON CAMPUS**

Fall Term1			Fall Term2		
Course	Course Name	Cr	Course	Course Name	Cr
MBA-601	Economics of 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
			<b>Total Credits: 30</b>		

\* 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 Graduate 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.
- Submitted official Graduate Management Admission Test Scores (GMAT) or Graduate Record Exam (GRE) scores taken within 5 years of application. Due to COVID-19, GRE scores are not required for the 2021-2022 academic year.

The Sport Management Department's Graduate Committee will review the student's application materials and make recommendation for acceptance into the Sport Administration program to the Dean of Graduate, Adult and Extended Studies, who extends an offer of admission to the applicant.

## 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 student works closely with his or her major professor throughout the development of the project and presents the project to a pre-selected committee for final approval. 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. Using a rubric, the project is evaluated by at least three faculty members.

## 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 FACULTY

Li Chen, D.P.E., Professor, Physical Education  
Jan Blade, Ed.D., Associate Professor, Sport Management  
Mark Zhang, D.S.M., Associate Professor, Sport Management  
Mark Still, Ed.D., Associate Professor, Sport Management

## COURSE SCHEDULE

During the fall and spring semesters one course is offered in the first half-term of the semester, a second course in the second half-term term of the semester, and a third course is offered over the entire semester. In the summer, two courses are offered in the first summer session and a 6 credit hour internship is offered in the second summer session.

### Course Sequence

Course#		Credit Hours	Term offered
SPSC-671	Financial Aspects of Sport	3	Fall
SPSC-672	Sport Administration	3	Fall
SPSC-676	Sport in Society*	3	Fall
SPSC-625	Introduction to Research Methods and Statistics in Sport	3	Spring
SPSC-674	Sport Marketing*	3	Spring
SPSC-681	Legal Issues in Sport	3	Spring
SPSC-673	Sport Facilities Design and Management*	3	Summer I
SPSC-675	Current Trends and Issues in Sport* -- Comprehensive Project	3	Summer I
SPSC-616	Internship	6	Every Term
Total Credits:		30	

\*All can be taught through online delivery

## **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. FINANCIAL ASPECTS OF SPORT**

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 fund raising 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 IN SOCIETY**

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. LEGAL ISSUES IN SPORT**

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**

Fall			Spring		
Course	Course Name	Cr	Course	Course Name	Cr
SPSC671	Financial Aspects of Sport	3	SPSC625	Intro to Research Methods & Statistics	3
SPSC672	Sport Management	3	SPSC674	Sport Marketing	3
SPSC676	Sport in Society	3	SPSC681	Legal Issues in Sport	3
	Total Credits	9		Total Credits	9
Summer I			Summer II		
Course	Course Name	Cr	Course	Course Name	Cr
SPSC673	Sport Facilities Design & Management	3	SPSC616	Internship	6
SPSC675	Current Trends & Issues in Sport	3			
	Total Credits	6		Total Credits	6
			<b>Total Credits: 30</b>		

\*Denotes a Core Requirement

+Denotes an Elective

Total Core Credits = 30

Total Elective Credits = 0

Candidacy Requirement: 18 credit hours with a minimum GPA of 3.0

Capstone or Culminating Experience: Submission and successful defense of a comprehensive project

Outcomes report and rubric to Graduate Studies and Research prior to graduation

# COLLEGE OF HEALTH AND BEHAVIORAL SCIENCES



## ***Department of Nursing***

MS in Nursing (MSN)

Concentration in Global Leadership  
Concentration in Nursing Education

## ***Department of Social Work***

Master of Social Work (MSW)

## ***Department of Public and Allied Health Sciences***

Master of Occupational Therapy (MOT)

# 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 advance practice levels in professional nursing practice. Currently the program offers educational experiences in two areas of expertise. These include nursing educator and global leadership. Nursing Education will prepare students with the skills in curriculum development, instructional strategies, learning theory, and evidenced-based teaching. Global Leadership will prepare nurses to become leaders who analyze the cultural, legal, political, economic, and social forces that shape global health care policies.

The program also prepares advance practice nurses to continue to develop their human potential through preparation for higher-level nursing practice including clinical experts, educators, researchers, leaders and agents of change to improve health care outcomes. Graduates of the program will have the educational prerequisites to pursue doctoral study.

In addition, purposes of the Graduate Program include meeting the needs of its stakeholders in Delaware and surrounding areas, for highly skilled clinicians and 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 graduate 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 health care practices.
- Synthesize in one's specialty area leadership concepts, principles, and ethical reasoning to influence decision making for quality outcomes in health care.
- Maximize professional standards in the practice of health care with integrity, caring, accountability, respect and excellence in nursing practice.
- Influence health care professionals as a leader and change agent in one's specialty area to create safe, effective and culturally competent health care.
- Combine knowledge and skills in one's specialty area of practice, identifying gaps in theory and/or practice, and utilizing clinical reasoning to formulate research questions.

### ROLE-SPECIFIC PROFESSIONAL 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 PROFESSIONAL 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 AND DEGREE REQUIREMENTS**

### **Application Deadline:**

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:

1. Apply to 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](mailto: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 three (3) letters 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, 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](mailto: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.
  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:**

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.

### **FACULTY**

Jennifer Akey, Associate Professor, EdD, MSN, RN  
Nicole Bell Rogers, Assistant Professor, EdD, FNP-C

## **COURSE DESCRIPTIONS**

### **NURS 512\*- GLOBAL HEALTHCARE**

This course explores health care 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 health care resources in relation to global health care disparities are also analyzed.

Prerequisites: None

3 credits

### **NURS 509\*- ETHICAL AND LEGAL PERSPECTIVES**

The course is designed to develop responsible health care leaders and socially engaged citizens. Students explore various ethical theories and health care 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 health care, 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 health care 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 health care 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 health care 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 5<sup>th</sup> 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 health care environment. Students examine evidence-based practices that reinforce ethical and critical decision making as they pertain to leadership and positive health care 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 health care 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 health care 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 health care policies, and the role nurses play as advocates for marginalized populations. Students analyze the cultural, legal, political, economic, and social influences that shape global health care 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 health care 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 health care systems.

Prerequisites: NURS530 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 health care 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 5<sup>th</sup> semester in Program of Study

3 credits (1 theory 2 clinical hours)

**PROGRAM: MASTER OF SCIENCE IN NURSING  
NURSING EDUCATION CONCENTRATION**

\*For 2019-2020 Cohort Only

1 <sup>st</sup> Semester					2 <sup>nd</sup> Semester				
Course	Course Name	Sem	Cr	Gr	Course	Course Name	Sem	Cr	Gr
*NURS-509	Ethical and Legal Perspectives		3						
*NURS-512	Global Healthcare		3		*NURS-530	Research and Applied Statistics in Nursing		3	
	Total Credits		6			Total Credits		3	
3 <sup>rd</sup> Semester					4 <sup>th</sup> 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-521	Organizational Change		3		NURS-640	Theories and Principles of Teaching and Learning		3	
	Total Credits		6			Total Credits		6	
5 <sup>th</sup> Semester					6 <sup>th</sup> Semester				
Course	Course Name	Sem	Cr	Gr	Course	Course Name	Sem	Cr	Gr
					NURS-680	Teaching Practicum (1 Theory Credit, 2 Clinical Credits) (90)		3	
NURS-641	Curriculum Development and Evaluation in Nursing		3		NURS-650	Instructional Technology		3	
	Total Credits		3			Total Credits		6	
7 <sup>th</sup> Semester									
Course	Course Name	Sem	Cr	Gr	Course	Course Name	Sem	Cr	Gr
NURS-689	Capstone		3						
	Total Credits		3			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 Professional Competencies

**PROGRAM: MASTER OF SCIENCE IN NURSING  
GLOBAL LEADERSHIP CONCENTRATION**

\*For 2019-2020 Cohort Only

1 <sup>st</sup> Semester					2 <sup>nd</sup> Semester				
Course	Course Name	Sem	Cr	Gr	Course	Course Name	Sem	Cr	Gr
*NURS-509	Ethical and Legal Perspectives		3						
*NURS-512	Global Healthcare		3		*NURS-530	Research and Applied Statistics in Nursing		3	
	Total Credits		6			Total Credits		3	
3 <sup>rd</sup> Semester					4 <sup>th</sup> Semester				
Course	Course Name	Sem	Cr	Gr	Course	Course Name	Sem	Cr	Gr
NURS-540	Leadership Styles and Principles		3		NURS-545	Informatics		3	
*NURS-521	Organizational Change		3		NURS-550	Building Effective Communication and Relationships		3	
	Total Credits		6			Total Credits		6	
5 <sup>th</sup> Semester					6 <sup>th</sup> Semester				
Course	Course Name	Sem	Cr	Gr	Course	Course Name	Sem	Cr	Gr
NURS-610	Trends in Global Health		3		NURS-620	Leadership Practicum (1 Theory Credit, 2 Clinical Credits) (90)		3	
	Total Credits		3		NURS-630	Financial Management		3	
						Total Credits		6	
7 <sup>th</sup> Semester									
Course	Course Name	Sem	Cr	Gr	Course	Course Name	Sem	Cr	Gr
NURS-689	Capstone		3						
	Total Credits		3			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 Professional Competencies

**PROGRAM: MASTER OF SCIENCE IN NURSING  
NURSING EDUCATION OPTION**

1 <sup>st</sup> Semester					2 <sup>nd</sup> 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 <sup>rd</sup> Semester					4 <sup>th</sup> 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 <sup>th</sup> Semester					6 <sup>th</sup> 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		6			Total		3	
	Credits					Credits			
	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 Professional Competencies

**PROGRAM: MASTER OF SCIENCE IN NURSING  
GLOBAL LEADERSHIP OPTION**

1 <sup>st</sup> Semester					2 <sup>nd</sup> 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 <sup>rd</sup> Semester					4 <sup>th</sup> 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 <sup>th</sup> Semester					6 <sup>th</sup> 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 Professional Competencies

# 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.

## **PROGRAM FACULTY**

Dr. Ezekiel Ette, Professor, Social Work  
Dr. Franzine Franklin, Associate Professor, Social Work  
Dr. Amy Habeger, Associate Professor, Social Work  
Dr. Eleanor Kiesel, Associate Professor, Social Work  
Dr. Leela Thomas, Associate Professor, Social Work  
Dr. Tana Connell, Assistant Professor, Social Work

Dr. Michelle Ratcliff, Assistant Professor, Social Work  
Dr. Geraldine Atkins, Assistant Professor, Social Work  
Ms. Ethyl "Liz" Horsey, Lecturer II, Social Work  
Ms. Lauren Allen, Social Work Director of Field

## **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 health care 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**

**College of Health and Behavioral Sciences  
Department of Social Work**



**PROGRAM: MASTERS IN SOCIAL WORK (MSW)**

<b>Student Name:</b>			<b>Student ID: D</b>		
<b>Year One Fall Semester</b>			<b>Year One Spring Semester</b>		
Course	Course Name	Cr	Course	Course Name	Cr
SCWK 601	Social Welfare Policies & Services Policy I	03	SCWK 602	Social Welfare Policies & Services Policy II	03
SCWK 603	Human Behavior & the Social Environment I	03	SCWK 604	Human Behavior & the Social Environment II	03
SCWK 605	Generalist Practice I	03	SCWK 606	Generalist Practice II	03
SCWK 607	Research & Evaluation I	03	SCWK 608	Research & Evaluation II	03
SCWK 633	Field Practicum I	03	SCWK 634	Field Practicum II	03
	Total Credits	15		Total Credits	15
<b>Year Two Fall Semester</b>			<b>Year Two Spring Semester</b>		
Course	Course Name	Cr	Course	Course Name	Cr
SCWK 646	Advanced Generalist Practice I	03	SCWK 668	Advanced Generalist Practice III	03
SCWK 647	Advanced Generalist Practice II	03	SCWK 669	Advanced Generalist Practice IV	03
SCWK 643	Theories of Personality & Adult Psychopathology	03	SCWK 610	Administration, Management & Supervision	03
SCWK 651	Practice & Program Evaluation for the Advanced Practitioner	03	SCWK 660	Advanced Generalist Practice in a Health Context	03
SCWK 635	Field Practicum III	03	SCWK 636	Field Practicum IV	03
	Total Credits	15		Total Credits	15
				<b>Total 60</b>	

\*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 Graduate Studies and Research prior to graduation

## MASTER OF SOCIAL WORK ADVANCED STANDING

**College of Health and Behavioral Sciences  
Department of Social Work**



**PROGRAM: MASTERS IN SOCIAL WORK (MSW)**

Advanced Standing			Advanced Standing		
	Total Credits	15		Total Credits	15
Year Two Fall Semester			Year Two Spring Semester		
Course	Course Name	Cr	Course	Course Name	Cr
SCWK 646	Advanced Generalist Practice I	03	SCWK 668	Advanced Generalist Practice III	03
SCWK 647	Advanced Generalist Practice II	03	SCWK 669	Advanced Generalist Practice IV	03
SCWK 643	Theories of Personality & Adult Psychopathology	03	SCWK 610	Administration, Management & Supervision	03
SCWK 651	Practice & Program Evaluation for the Advanced Practitioner	03	SCWK 660	Advanced Generalist Practice in a Public Health Context	03
SCWK 635	Field Practicum III	03	SCWK 636	Field Practicum IV	03
	Total Credits	15		Total Credits	15
					<b>Total Credits: 30</b>

30 credits waived, and 30 course credits with a preceding summer seminar.

\*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 the Office of Graduate Studies and Research prior to graduation

## MASTER OF SOCIAL WORK PART TIME

**College of Health and Behavioral Sciences  
Department of Social Work**



### PROGRAM: MASTERS IN SOCIAL WORK (MSW)

Foundation Fall – Year 1	Foundation Spring – Year 1
SCWK 601 Social Welfare Policy & Services I (3) SCWK 603 Human Behavior & the Social Environment I (3) SCWK 607 Research & Evaluation Methods for Social Work I (3)	SCWK 602 Social Welfare Policy & Services II (3) SCWK 604 Human Behavior & the Social Environment II SCWK 608 Research & Evaluation Methods for Social Work II (3) (Data Analysis)
Foundation Fall – Year 2	Foundation Spring – Year 2
SCWK 605 Generalist Practice I (3) SCWK 633 Field Practicum I (3)	SCWK 606 Generalist Practice II (3) SCWK 634 Field Practicum I (3)
Concentration Fall – Year 3	Concentration Spring – Year 3
SCWK 646 Advanced Generalist Practice I: Engagement & Assessment with Individuals & Treatment Groups (3) SCWK 647 Advanced Generalist Practice II: Engagement & Assessment with Communities & Organizations (3) SCWK 635 Field Practicum III (3)	SCWK 636 Field Practicum (3) SCWK 668 Advanced Generalist Practice III: Intervention & Evaluation with Individuals, Families & Treatment Groups (3) SCWK 669 Advanced Generalist Practice IV: Intervention with Communities & Organizations (3)
Concentration Fall – Year 4	Concentration Spring – Year 4
SCWK 643 Theories of Personality & Adult Psychopathology (3) SCWK 651 Practice & Program Evaluation for the Advanced Practitioner (3)	SCWK 610 Administration, Management & Supervision (3) SCWK 660 Advanced Generalist Practice in a Public Health Context (3)

\*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 the Office of Graduate Studies and Research prior to graduation

# 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 health care 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**

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

## **DEPARTMENTAL FACULTY**

Dawnn Thomas: OTD, MS, OTR/L, BCG, PhD candidate

Brittney Pride: MS, OTR/L

Other faculty TBD

## **FACILITIES**

Space and location is TBD

## **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 health care 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
<b>Total Credits</b>		<b>14</b>	<b>Total Credits</b>		<b>16</b>
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
<b>Total Credits</b>		<b>10</b>	<b>Total Credits</b>		<b>12</b>
<b>Year 2: Summer</b>			<b>Year 3: Fall</b>		
<b>Course</b>	<b>Course Name</b>	<b>Cr.</b>	<b>Course</b>	<b>Course Name</b>	<b>Cr.</b>
OT 515	Level IIa: Immersion in Experiential Practice	6	OT 621	Fieldwork Level IIb: Advanced Experiential Practice	6
<b>Total Credits</b>		<b>6</b>	<b>Total Credits</b>		<b>6</b>
			<b>Professional courses: 52 credits</b> <b>Clinical Fieldwork: 12 credits</b> <b>Total Credits for the Program = 64</b>		

# 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 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

# DOCTOR OF EDUCATION (Ed.D.) IN EDUCATIONAL LEADERSHIP

## DOCTOR OF EDUCATION (Ed.D.) IN EDUCATIONAL LEADERSHIP

The Ed.D. Program trains and prepare Transformational Leaders for Equity, Diversity & Social Justice to eradicate systemic and systematic barriers to progress 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 institutions, higher education institutions and other educational and civic 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 district, state, and national levels. This program is deeply grounded in CAEP and NELP standards.

Delaware State University's Ed.D. 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 programs meet 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 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 personal 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 21st century. 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>.

To serve the professional needs of the students and to meet the growing demands of the job market, our 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. Sessions are held on Friday evenings from 5- 9 p.m., Saturdays from 9 a.m.- 3 p.m. and Sundays from 10 a.m.- 2 p.m. Currently, the classes are being held via virtual synchronous hybrid format due to COVID-19.

## 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 benefit academic growth and ensure 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 the 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 institution.

**For Ed.D. in Higher Education Concentration:**

Education Graduate Programs at Delaware State University has established the following Learning Outcomes for its doctoral program in consonance with the standards of CAS (Council for the Advancement of Standards in Higher Education) to ensure that our candidates are able to:

1. Develop, design, and implement a higher education institution's mission and vision that reflects a core set of values, priorities and strategic goals that include data collection, technology use, diversity, and digital citizenship.
2. Demonstrate the ability of realistic self-appraisal, intra-personal growth, capacity to advocate for ethical decisions and cultivate professional dispositions for institutional growth.
3. Cultivate and maintain a supportive, equitable, culturally responsive, and inclusive institutional culture.
4. Evaluate, design, cultivate, and implement coherent system of data collection, assessment, evaluation and integrate authentic practices to achieve institutional strategic goals.
5. Develop, monitor, evaluate, and manage data-informed and equitable institutional systems for operations, resources, technology, and human capital management.
6. Cultivate meaningful relationships, lead collaborative decision making in governance and represent institutional needs in broader policy conversations.
7. Collaborate with diverse community partners to develop and implement a comprehensive system of responsibility, accountability and decision making for increasing campus diversity, improving campus climate, advancing the knowledge base for creating and sustaining a culturally diverse institution.
8. Demonstrate critical and reflective thinking, effective reasoning, and creativity to conduct strategic inquiry and the application of data-driven decisions through analytical review and scholarly writings to lead the 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 institution.

## 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.
- Graduate Record Exam (GRE) or Miller Analogies Test (MAT) scores. Testing must be within 5 years of the application. Scores must be submitted prior to being admitted into the program. The acceptable cut-off scores: (i) GRE: 40 percentile (+ - 1) and a score of 3.0 or better on the Analytical Writing component; or (ii) MAT: 400 (+ - 10). OR Writing an essay (i.e., an on campus writing sample). (Due to COVID-19, test scores are not required for the 2021-2022 academic year.)
- 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): The applicant must be working in or toward a leadership role in his or her current position, or must have similar experience (e.g., administrator, coordinator, or teacher at a district/school, higher education, or education department in another organization).
- For admission in Ed. D. (K12 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 prior to August 31, 2003 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 to meet the licensure requirements.
- Copies of earned teaching and/or administrative certificates (optional).

The Director 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 including an integral component of 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, and the students of the Higher Education concentration will be required to complete 120 hours of field experience in a higher education 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 an exhaustive 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.

## **CAPSTONE**

The Ed.D. program at Delaware State University offers three options for the final capstone experience i.e., the Case Study Analysis, the Project Study, and the Dissertation. The doctoral candidates must complete, orally present, and defend a research capstone to meet their final degree requirement.

## **PROFESSIONAL PORTFOLIO**

In consultation with their Academic Advisor, the candidates will also be required to submit a professional portfolio in the office of Education Graduate Programs before successfully defending their final Capstone. The candidates from the K-12 concentration will submit a professional portfolio reflecting their experiences and skills related to district-level NELP standards as evaluated through CAEP approved assessments. Candidates of the Higher Education concentration will submit a professional portfolio reflecting activities/projects completed during their field experience and the major course assignments related to CAS standards.

## **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, School of Graduate, Adult and Extended Studies, who will approve the credit hours allowed to be transferred.

## **FACULTY**

The Department of Education'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.

### **PROGRAM FACULTY**

Dr. Joseph Falodun, Associate Professor  
Dr. Richard Phillips, Professor  
Dr. Nirmaljit K. Rathee, Professor  
Dr. Sae Yeol Yoon, Associate Professor  
Dr. Chetanath Gautam, Associate Professor  
Dr. Yvette Pierre, Assistant Professor

## **CORE COURSES FOR K-12 AND HIGHER EDUCATION CONCENTRATIONS**

### **COURSE DESCRIPTIONS FOR Ed. D. PROGRAM (To be implemented in Fall 2021)**

#### **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 the 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 the 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 program faculty as 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 program faculty (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 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 of 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. The 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 of 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 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 submit 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

**College of Humanities, Education and Social Sciences**  
**Department of Education**



**PROGRAM: DOCTOR OF EDUCATION (ED.D.) IN**  
**EDUCATIONAL LEADERSHIP (K-12 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 800	The Superintendent as a Scholar-Practitioner Educational Leader	3	EDUC 888 (Core Course)	Demystifying Qualitative Research Methods in Education	3
EDUC 801	Social Justice, Equity, and Cultural Responsiveness: Critical Analysis of Contemporary Educational Issues	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 4: Fall		
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
<b>Total Credits for the Program = 55</b>					

- 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 <i>*Constitution of Advisory Committee &amp; Capstone Option Declaration by the students</i>	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 <b>**Qualifying Exam - after completion of 34 cr. hr.</b>	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 <i>*Apply for IRB &amp; candidacy</i>	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 4: Fall		
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
<b>Total Credits for the Program = 55</b>					

- Students must enroll in the Sustaining Course (EDUC 829) if final capstone requirement is not satisfied by the end of the culminating semester

\*\* 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 =			Total Credits =
		9			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 =			Total Credits =
		10			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 =			Total Credits =
		9			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 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.
- Graduate Record Exam (GRE) or Miller Analogies Test (MAT) scores. Testing must be within 5 years of the application. Scores must be submitted prior to being admitted into the program. The acceptable cut off scores: (i) GRE: 40 percentiles (+ - 1) and a score of 3.0 or better on the Analytical Writing component; or (ii) MAT: 40 percentiles (+ - 1). Or the on-campus writing sample (i.e., an on campus writing sample). in lieu of the GRE/GMAT scores. (Due to COVID-19, test scores are not required for the 2021-2022 academic year.)
- 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, 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, School of Graduate, Adult and Extended Studies, who will approve the hours allowed to be transferred.

## **PROGRAM FACULTY**

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.

Dr. Joseph Falodun, Associate Professor

Dr. Nirmaljit K. Rathee, Professor

Dr. Richard Phillips, Professor

Dr. Kim K Keun, Associate Professor

Dr. SaeYeol Yoon, Associate Professor

Dr. Chetanath Gautam, Associate Professor

Dr. Yvette Pierre, Assistant Professor

## **COURSE DESCRIPTIONS FOR M. Ed. PROGRAM 2021**

### **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 the 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: CYBER SECURITY FOR EDUCATIONAL LEADERS: IMPLEMENTING TECHNOLOGY TO ENHANCE STUDENT LEARNING AND ORGANIZATIONAL MANAGEMENT**

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 over 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  
2021-22 (approved w.e.f. Fall 2021)**

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	Cyber Security for Educational Leaders: Implementing Technology to Enhance Student Learning and Organizational Management ** 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

**College of Humanities, Education and Social Sciences  
Department of Education**



**PROGRAM: MASTER OF EDUCATION (M.ED.) IN  
EDUCATIONAL LEADERSHIP**

<b>CURRICULUM SEQUENCE SHEET – M. ED. – CARIBBEAN COHORT 2021</b>				
<b>Semester</b>	<b>EDUC</b>	<b>Course</b>	<b>Class Meeting days</b>	<b>Cr</b>
Fall-I 2021 (8 weeks)	605	Curriculum Organization and Design	Mondays & Thursdays 5:30 to 8 p.m.	3
	625	Introduction to Statistics and Research Methods/Action Research	Mondays & Thursdays 5:30 to 8 p.m.	3
Fall-II 2021 (8 weeks)	614	Human Growth and Development	Mondays & Thursdays 5:30 to 8 p.m.	3
	682	Assessment of Instruction	Mondays & Thursdays 5:30 to 8 p.m.	3
Spring-I 2021 (8 weeks)	680	Leadership with a Vision for Changing School Culture in a Changing Society	Mondays & Thursdays 5:30 to 8 p.m.	3
Spring-II 2021 (8 Weeks)	681	Human Relations in Diverse Populations	Mondays & Thursdays 5:30 to 8 p.m.	3
Summer – I 2021 (8 Weeks)	686	Supervision and Leadership in Elementary & Secondary Schools	Mondays & Thursdays 5:30 to 8 p.m.	3
Summer-II 2021 (8 Weeks)	684	Legal Issues, Ethical Conduct, and Social Justice in Today's Schools	Mondays & Thursdays 5:30 to 8 p.m.	3
Spring-I & II 2022 (8 weeks)	690	Internship (120 hours)	In field – No class	6
	690	Internship (120 hours) <u>(Apply for the Comprehensive Exam)</u>		
Summer – I 2022 (8 weeks)	683	Using Technology to Enhance Student Learning and Organizational Management <u>(Comprehensive Exam)</u>	Mondays & Thursdays 5:30 to 8 p.m.	3
Summer-II 2022 (8 weeks)	685	Supporting a School Vision Through Effective Business & Finance Practices	Mondays & Thursdays 5:30 to 8 p.m.	3
<b>TOTAL CREDITS REQUIRED = 36</b>				

# MASTER OF ARTS IN TEACHING (MAT)

The goal of the Master of Arts in Teaching program at Delaware State University in the Department of Education is to prepare highly qualified classroom teachers from diverse backgrounds who are change agents in Delaware schools. Currently the program offers three pathways:

1. **The two-year traditional master's program:** This program is for candidates who have earned a bachelor's degree in a content taught at the middle and/or high school level.
2. **The 4 +1 MAT program:** This program 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 MAT coursework as early as their junior year of studies in their undergraduate program.
3. **The Alternative Route to Certification (ARTC) MAT program:** This program 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 MAT degree at Delaware State University. Their status as teacher of record in the second year of the program will count as their teacher residency.

All pathways consist of the same coursework in curriculum, instruction, assessment, learning development, and learning environment and conclude with a full-year teacher residency experience where the theory gained in coursework can be applied in a classroom setting. This program leads to certification in the state of Delaware in a secondary teaching field.

## PROGRAM GOALS

The goals of the program are as follows:

1. To prepare highly qualified classroom teachers for employment in Delaware schools.
2. To prepare highly qualified classroom teachers in teacher shortage areas identified by Delaware DOE.
3. To recruit and retain diverse teacher candidates by building a community of support with LEA partners, college faculty and staff, and DOE resources.
4. To promote classroom teaching as a viable career option for students within the college in non-teaching areas of study.

## STUDENT LEARNING OUTCOMES

Delaware State University commits itself to preparing highly qualified classroom teachers for employment in Delaware schools. Through 18 credits of coursework, students will gain theoretical perspectives on teaching and learning that can be applied during their 12-credit full-year teacher residency. During the program, students will gain knowledge of the following: child development and different learning theories; skills for planning for instructional delivery; understanding standards, curriculum and curricular resources; research-based instructional practices; various assessment strategies; and different strategies for establishing and maintaining an environment conducive to learning. Throughout the program, students will have opportunities to engage in self-reflection, specifically by completing the PPAT and an action research project on a problem of practice during the teacher residency, as well as numerous professional learning experiences.

**Delaware State University graduates will be able to:**

- **Program SLO1:** Use their knowledge of learner development, individual differences and diversity to create inclusive learning environments that enable each student to achieve at high levels.
- **Program SLO2:** Work with colleagues to create supportive and collaborative learning experiences that promote prosocial interactions, active engagement and self-motivation to learn.
- **Program SLO3:** Implement content specific pedagogical practices that make the discipline accessible and meaningful for all learners that encourage mastery of the content.
- **Program SLO4:** Create opportunities that engage learners in experiences that promote critical thinking, creativity,

and collaborative problem solving related to issues relevant to their lived experiences.

- **Program SLO5:** Understand, use and create multiple methods of assessment to engage learners in self-assessment, to monitor learner progress in achieving academic expectations, and to guide the teacher's and learner's decision making.
- **Program SLO6:** Plan instruction that supports every student in meeting rigorous learning goals.
- **Program SLO7:** Use a variety of instructional strategies, including the use of technology, that encourage deep comprehension of the content, its connections within the content and to other disciplines, as well as to build learners' skills to apply knowledge in meaningful ways.
- **Program SLO8:** Actively engage in ongoing professional learning and reflective practice leading to continuous evaluation of his/her practice and its impact on others. Adapt practice based on feedback, professional learning experiences and reflection to address the needs of each learner in the classroom.
- **Program SLO9:** Pursue appropriate leadership opportunities that encourage responsibility for student learning and opportunities for collaboration with members of the school community (students, families, and colleagues) that ensure learner growth and that advance the teaching profession.

## ADMISSION DEADLINES AND DEGREE REQUIREMENTS FOR THE MAT PROGRAM

### Application Deadlines:

- Applications are received on a rolling basis.

Educators who wish to seek admission in the program are required to submit the following for consideration of unconditional admission:

1. 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.
2. Official copies of passing Praxis II scores (DE) in the applicant's content area.
3. Resume and statement of philosophy of teaching and learning.
4. 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 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.

## CAPSTONE REQUIREMENTS:

Students are required to:

- Complete a two-semester teacher residency under the direction of a cooperating teacher or as the teacher of record for the ARTC pathway.

## **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 of Arts in Teaching programs may transfer a maximum of 6 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 Coordinator, Master of Arts in Teaching Program, at the time of admission. The Coordinator, Master of Arts in Teaching Program, will review all the submitted documentation and note the allowable course waivers in the program's recommendation to the Dean, School of Graduate, Adult and Extended Studies, who will approve the hours allowed to be transferred.

## **PROGRAM FACULTY**

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.

## **PROGRAM FACULTY**

Dr. Tina Mitchell, Visiting Assistant Professor

Dr. Robert Marsteller, Visiting Assistant Professor

## **COURSE DESCRIPTIONS**

### **EDUC-506. CURRICULUM BUILDING**

Focuses on skills and knowledge for curriculum building, including analyzing standards, writing content summaries, 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**

Capstone course that represents the final phase of teacher training, and serves to assess both professional readiness and the effectiveness of the MAT program. Students develop and conduct an action research project in their student teaching classrooms. (MAT only, co-requisite with student teaching ED526). 3 credits.

### **EDUC-526. STUDENT TEACHING II**

Provides fourteen weeks of full-time experience with and practice in a middle or secondary classroom. Prerequisites: admission to the initial certification graduate program and permission of the Program Director, Education Graduate Programs. Co-requisite: ED522 The Reflective Practitioner. 3 credits.

### **EDUC-533. ASSESSMENT**

Provides an extensive examination of assessment models and techniques and their theoretical origins. Examines in-depth recent assessment practices such as the use of rubrics for performance assessment and portfolio assessment. 3 credits.

### **EDUC-534. LEARNING THEORY**

Examines classical and contemporary theories of learning, 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**

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**

Explores the application of knowledge and skills in the secondary classroom. Special emphasis on understanding the importance of providing learning environments in which students can create meaning. Examines and practices models of effective teaching that motivate students to learn. 3 credits.

### **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. A regularly scheduled seminar (ED537) will be an integral part of this course and covers 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. Pre-requisite: ED506, ED533, ED534, ED536 AND the successful completion of content area praxis. 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
<b>Total Credits</b>		<b>6</b>	<b>Total Credits</b>		<b>6</b>
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
<b>Total Credits</b>		<b>9</b>	<b>Total Credits</b>		<b>9</b>
			<b>Total Credits for the Program = 30</b>		

\*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>

# 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: DEPARTMENT OF MA TESOL / BILINGUAL EDUCATION  
 FULL TIME ENROLLMENT – Dover Campus - Full Time Enrollment**

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	
<b>Total Credits</b>		<b>9</b>	
Spring 1 Semester			
Course	Course Name	Credit	EFE
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	
<b>Total Credits</b>		<b>9</b>	
Fall 2 Semester			
Course	Course Name	Credit	EFE
ENGL - 516	Classroom – Planning, Supporting Learners†	3	
Elective	Elective	3	
ENGL - 590	Practicum	3	40
<b>Total Credits</b>		<b>9</b>	
Spring 2 Semester			
Course	Course Name	Credit	EFE
ENGL 591 OR ENGL 592	Research and Thesis OR Applied Research	6	
<b>Total Credits</b>		<b>6</b>	
Requirement Totals			
		<b>33</b>	<b>80</b>

Electives			
Course	Course Name	Credit	EFE
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: DEPARTMENT OF MA TESOL / BILINGUAL EDUCATION  
 FULL TIME ENROLLMENT – Sussex Campus - Full Time Enrollment**

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	
<b>Total Credits</b>		<b>9</b>	
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	
<b>Total Credits</b>		<b>9</b>	
Fall 2 Semester			
Course	Course Name	Credit	
ENGL - 516	Classroom – Planning, Supporting Learners†	3	
Elective	Elective	3	
ENGL - 590	Practicum	3	40
<b>Total Credits</b>		<b>9</b>	
Spring 2 Semester			
Course	Course Name	Credit	
ENGL 591 OR ENGL 592	Research and Thesis OR Applied Research	6	
<b>Total Credits</b>		<b>6</b>	
Requirement Totals			
		<b>33</b>	<b>80</b>

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: DEPARTMENT OF MA TESOL / BILINGUAL EDUCATION**  
**FULL TIME ENROLLMENT – Dover Campus with Summer - Full Time Enrollment**

Summer 1 Semester			
ENGL - 510	Structure of Modern English	3	
Elective	Elective	3	
<b>Total Credits</b>		<b>6</b>	
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	
<b>Total Credits</b>		<b>6</b>	
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	
<b>Total Credits</b>		<b>6</b>	
Summer 2 Semester			
Elective	Elective	3	
<b>Total Credits</b>		<b>3</b>	
Fall 2 Semester			
Course	Course Name	Credit	
ENGL 516	Classroom – Planning, Supporting Learners†	3	
ENGL - 590	Practicum	3	40
<b>Total Credits</b>		<b>9</b>	
Spring 2 Semester			
Course	Course Name	Credit	
ENGL 591 OR ENGL 592	Research and Thesis OR Applied Research	6	
<b>Total Credits</b>		<b>6</b>	
Requirement Totals			
		<b>33</b>	<b>60</b>

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, and 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 and Research Methods/ Action Research (Spring)	3	

EDUC 683	Using Technology to Enhance Student Learning and Organizational Management (Fall)	3	
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† 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**

<b>Fall Semester</b>			
<b>Course</b>	<b>Course Name</b>	<b>Credit</b>	<b>EFE</b>
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	
<b>Total Credits</b>		<b>9</b>	
<b>Spring Semester</b>			
<b>Course</b>	<b>Course Name</b>	<b>Credit</b>	
ENGL - 510	Structure of Modern English	3	
ENGL - 511	Teaching Literacy for English Language Learners	3	
<b>Total Credits</b>		<b>6</b>	
<b>Requirement Totals</b>			
		<b>15</b>	<b>20</b>

# 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**

<b>Fall 1 Semester</b>		
<b>Course</b>	<b>Course Name</b>	<b>Credit</b>
ENGL - 516	Classroom – Planning, Supporting Learners	3
ENGL - 518	Methods of Teaching English as a Second Language	3
<b>Total Credits</b>		<b>6</b>
<b>Spring 1 Semester</b>		
<b>Course</b>	<b>Course Name</b>	<b>Credit</b>
ENGL - 510	Structure of Modern English	3
ENGL - 514	Second Language Learners – Identity, Community and Language Learning	3
<b>Total Credits</b>		<b>6</b>
<b>Total Program Credits</b>		<b>12</b>

# 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	
<b>Total Credits</b>		<b>6</b>	
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	
<b>Total Credits</b>		<b>6</b>	
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	
<b>Total Credits</b>		<b>6</b>	
Fall 2 Semester			
Course	Course Name	Credit	
EDUC – 614	Human Growth & Development	3	
ENGL - 518	Methods of Teaching English as a Second Language	3	
<b>Total Credits</b>		<b>6</b>	
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	
<b>Total Credits</b>		<b>6</b>	
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	
<b>Total Credits</b>		<b>6</b>	
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	
<b>Total Credits</b>		<b>6</b>	
<b>Spring 3 Semester</b>			
<b>Course Name</b>		<b>Credit</b>	
EDUC - 690	Applied Educational Leadership Internship (120 hrs.)	3	
EDUC - 690	Applied Educational Leadership Internship(120 hrs.)	3	
<b>Total Credits</b>		<b>6</b>	
<b>Requirement Totals</b>			
		<b>48</b>	

**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	
<b>Total Credits</b>		<b>6</b>	
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	
<b>Total Credits</b>		<b>6</b>	
Year 1: Summer			
Course	Course Name	Credit	
EDUC – 686	Supervision and Leadership in Elementary & Secondary Schools	3	
ENGL – 510	Structure of Modern English	3	
<b>Total Credits</b>		<b>6</b>	
Fall 2 Semester			
Course	Course Name	Credit	
EDUC – 614	Human Growth & Development	3	
EDUC - 605	Curriculum Organization & Design	3	
<b>Total Credits</b>		<b>6</b>	
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	
<b>Total Credits</b>		<b>6</b>	
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	
<b>Total Credits</b>		<b>6</b>	
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	
<b>Total Credits</b>		<b>6</b>	
<b>Spring 3 Semester</b>			
<b>Course Name</b>		<b>Credit</b>	
EDUC - 690	Applied Educational Leadership Internship (120 hrs.)	3	
EDUC - 690	Applied Educational Leadership Internship(120 hrs.)	3	
<b>Total Credits</b>		<b>6</b>	
<b>Requirement Totals</b>			
		<b>48</b>	

# 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 Graduate 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.

## **PROGRAM DIRECTOR**

Jason Bourke, PhD

## **FACILITIES**

Courses can be taken in person or online. All traditional courses are taught at Delaware State University's Wilmington location: 3931 Kirkwood Highway, Wilmington, DE 19808.

## **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			Total Credits
		3			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			Total Credits
		3			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			Total Credits
		3			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			Total Credits
		3			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			Total Credits
		3			3
			<b>Total Credits: 36</b>		

- \*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			Total Credits
		6			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			Total Credits
		3			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			Total Credits
		3			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			Total Credits
		3			6
			<b>Total Credits: 33</b>		

- \*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

# 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 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 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 at least 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.

### **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 Department of Sociology and Criminal Justice, at the time of admission or in any case no later than the first semester of study. The Department of Sociology and Criminal Justice will review all the submitted documentation and note the allowable course waivers in the program's recommendation to the Dean, School of Graduate, Adult and Extended Studies, who will approve the hours allowed to be transferred.

### **PROGRAM FACULTY**

Dr. Raymond Tutu, Professor  
 Dr. Laurin Parker, Associate Professor  
 Dr. John Balzarini, Associate Professor  
 Dr. Kevin Ralston, Associate Professor  
 Dr. Anwar Ouassini, Associate Professor  
 Dr. Charles Cange, Associate Professor  
 Mr. Kimeu Boynton, Assistant Professor  
 Dr. Xuanren Goodman, Assistant Professor  
 Dr. Tanya Whitte, Assistant Professor

## **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 first-hand 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 (2021-2022)*

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 (2021-2022)*

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				

# WESLEY COLLEGE/DELAWARE STATE UNIVERSITY TEACH OUT POLICY

**University Area(s) Responsible:** Office of the Provost, University Registrar, Office of General Counsel

**Policy Number & Name:** Wesley College/Delaware State University Teach-out Plan and Teach Out Agreements for Wesley Legacy Students

**Subject:** Policy and Procedure to Teach-out Wesley Legacy Students

## I. Introduction

Delaware State University and Wesley College are institutions of higher learning accredited by the Middle States Commission on Higher Education. Pursuant to the acquisition of Wesley College (Wesley) by Delaware State University (DSU), Middle States Commission on Higher Education (MSCHE) solicits a writing to ensure that Wesley has a teach-out plan in conjunction with the acquisition to provide for the equitable treatment of Wesley students who desire to complete a degree after Wesley closes. As part of the acquisition, DSU has agreed to teach-out the Wesley students. These students will be classified as Wesley Legacy students at DSU. This policy outlines the process DSU has in place to allow Wesley Legacy students complete a degree at DSU.<sup>1</sup>

## II. Policy Statement

Both member institutions, DSU/Wesley, have developed joint teach out plans and one teach out agreement. This policy ensures the equitable treatment of all Wesley Legacy students, graduate and undergraduate, with a reasonable opportunity for the students to complete their program of study within a specified teach-out period from July 1, 2021 until July 1, 2023.<sup>2</sup> While the focus is on the Wesley Juniors and Seniors, all credits earned at or accepted by Wesley for all Wesley students will be accepted by DSU.

## III. Intent

The intent of this policy is to ensure equitable treatment to Wesley students who are transitioning to DSU after the acquisition of Wesley College as per MSCHE requirements.

## IV. Definitions

*Member Institution.* All institutions that are accredited by MSCHE and all institutions that have been granted Candidate for Accreditation Status by MSCHE, that are in good standing with respect to payment of dues and fees, shall be institutional members of MSCHE. Accreditation and candidacy shall be established according to the standards for accreditation, requirements of affiliation, policies and Teach-Out Plans and Agreements Policy Page 3 procedures, and applicable federal regulatory requirements adopted by the Commission.<sup>3</sup>

*Teach-Out.* A process during which an institution or institutional location that provides 100 percent of at least one program engages in an orderly closure or when, following the closure of an institution or location, another institution provides an opportunity for the students of the closed school to complete their program, regardless of their academic progress at the time of closure (34 CFR § 600.2, slightly modified to remove the word “program”).<sup>3</sup>

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<sup>1</sup> See also, the Commission’s Substantive Change Policy and Procedures. (Some substantive changes require the submission of a teach-out plan in conjunction with the substantive change request [MSCHE Teach-Out Plans and Agreements Policy, 2020]).

<sup>2</sup> Under certain circumstances, students may be permitted to complete their program of study after the July 1, 2023 deadline, for example, if they choose to sit out for up to two years, pursuant to DSU policy and V.1.d. below.

<sup>3</sup> MSCHE Teach-out Plan and Agreement Policy, 9/1/2020

*Teach-Out Agreement.* A written agreement between two or more institutions that provides for the equitable treatment of students and a reasonable opportunity for students to complete their program of study if an institution, or an institutional location that provides 100 percent of at least one program offered, ceases to operate before all enrolled students have completed their program of study. (34 CFR § 600.2) <sup>3</sup>

*Teach-Out Period.* The start and end date for the full implementation of the teach out plan and any teach-out agreements. <sup>3</sup>

*Teach-out plan.* A written plan developed by the institution that provides for the equitable treatment of students to complete their education, including any teach-out agreements that the institution has entered into or intends to enter into with another institution. (34 CFR § 600.2) <sup>3</sup>

*Course Waiver.* The course requirement is no longer relevant for the student. No credit hours are applied.

*Course Substitutions.* The course requirement is met through the substitution of a different course, regardless of content, with equal or more credit hours.

*Course Equivalencies.* The course requirement is met by a course that is considered equivalent in content to the required course with equal or more credit hours.

*Curriculum Alignment/Mapping.* The process of comparing curricula taken at Wesley with Delaware State curricula for congruence to support the ultimate goal of graduating the Wesley legacy students in a timely basis. To support the curriculum alignment process, all departments must sequentially list and align DSU courses to their Wesley equivalent, per the teach-out agreement. The focus is on determining what courses Wesley Legacy Juniors and Seniors have to complete on the Wesley curriculum and finding appropriate courses to use in the DSU curriculum to graduate the Wesley students. Wesley Legacy Freshmen and Sophomores will be integrated into the DSU curriculum but still get waiver or substitution credit for courses from Wesley.

*Wesley New Admits Transitioning to DSU.* Admitted new undergraduate and graduate students to Wesley will follow DSU curriculum. <sup>3</sup>

*Wesley Legacy Students* – All students, undergraduate and graduate, previously enrolled at Wesley College prior to the acquisition by DSU who choose to transition to DSU.

- Currently enrolled Wesley students in a degree program who have 60 or more credit hours (Juniors and Seniors) applicable to the major in their program of study;
- Currently enrolled students in a degree program who have less than 60 credit hours (Freshman and Sophomores) applicable to the major in their program of study; and,
- Graduate students currently enrolled in a graduate degree program who have been granted an opportunity at DSU to complete the program (Substantive change request (MSCHE Teach-Out Plans and Agreements Policy, 2020).
- Former Wesley students who have not completed their degree because they stopped attending Wesley within three-years prior to July 1, 2021 and wish to complete their degree at DSU.
  - After the three-year period has expired these students will be considered transfer students.

## **V. Academic Requirements for the Teach Out Plans**

1. Wesley Legacy Junior and Seniors who need to complete their major or minor degree requirements will use the Wesley Major or Minor Curriculum and DSU/Wesley Curriculum Mapping/Alignment.
  - a. Wesley Legacy students who come to DSU will have credits taken at Wesley accepted by DSU, including transfer credits previously accepted by Wesley.
  - b. No courses will be added for Wesley Legacy Junior and Seniors because of differences in DSU and Wesley curriculum.

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<sup>3</sup> MSCHE Teach-out Plan and Agreement Policy, 9/1/2020

- c. Wesley Legacy Junior and Seniors will transition to DSU based on their Wesley majors and minors and following that Wesley curriculum.
    - i. If the Wesley Legacy Junior or Senior desires to change their major either at transition to or while at DSU, the student will have to use the new major's DSU program curriculum using the DSU/Wesley Curriculum Mapping/Alignment to determine what courses will be accepted under the DSU program curriculum.
    - ii. This change of major may add time to the Wesley Legacy students progress to degree completion.
  - d. Wesley Legacy Juniors and Seniors have three years from July 2021 to enroll at DSU and follow the Wesley curriculum to complete their degree with the DSU/Wesley Curriculum Mapping/Alignment.
    - i. After the three years has lapsed, the Wesley Legacy students will be considered as transfer students and therefore will have to follow the DSU curriculum.
2. Wesley Legacy Freshmen and Sophomores who need to complete their major or minor degree requirements will use DSU Program Curriculum and the DSU/Wesley Curriculum Mapping/Alignment for courses in the identified major and/or minor.
    - a. Wesley Legacy Freshmen and Sophomores will follow DSU policies regarding stop-out.
  3. Wesley Legacy Graduate students have three years from July 2021 to enroll at DSU and follow the Wesley curriculum to complete their degree with the DSU/Wesley Curriculum Mapping/Alignment.
    - a. After the three-year period has expired these students will be considered transfer students

## VI. Additional Considerations: Teach Out Agreements and Advisement

1. General Education
  - a. If a Wesley student has completed their Wesley General Education (GE) (i.e. Wesley College Core Curriculum), then they have completed DSU's GE requirements.
  - b. If a D is acceptable for Wesley's GE (i.e. Wesley College Core Curriculum) then it is acceptable for DSU.
  - c. Consult the Curriculum Mapping/Alignment in the GE articulation agreement for substitution recommendations.
  - d. Whenever applicable, Level 3 courses in the Wesley College Core Curriculum will be accepted for General Education credits in the respective areas of the appropriate academic departments.
2. Procedures for curriculum alignment: Review Wesley's current continuing academic program curricula
  - a. Determine the courses left on the student's Wesley plan and find appropriate course substitutions at DSU.
  - b. Identify potential equivalency gaps in the curriculum sequence
  - c. Develop equivalencies/substitutions for the gaps
  - d. Ensure synchronization of core content and competencies
  - e. Develop curricula for new academic programs
3. Advisement Procedures Wesley Legacy Undergraduate Students
  - a. Assigned professional advisors/faculty mentors according to students' last name per academic program
  - b. Continuing students will meet with professional advisors for advisement and complete registration.
  - c. All first-year students are required to take the ALEKS Math Placement.
  - d. All first-year students are registered according to their program requirements and receive their semester schedules at new student orientation.
  - e. Individual Development Plans (IDP) completed for all students by professional advisors each semester.
  - f. Degree audits for graduating seniors completed by Department Chair or Director.
  - g. Course drops, withdrawals and leave of absence initiated by professional advisors and student.
  - h. All students on academic probation are required to take learning strategies and be restricted to 13 credits.
  - i. All students with at-risk indicators (i.e., provisional admits, GPA of 2.3 and below, non-residential, SAP and SAP warnings, low course completion rate/ frequent courses drop) will be assigned to Intervention caseload.
  - j. Students are expected to adhere to university policies and deadlines
4. Advisement Procedures for Wesley Legacy Graduate Students
  - a. The Wesley Legacy Graduate students work with the respective Department Chairs or Program Directors to determine applicable plans of study for completing their degree.

## **VI. Criteria for Discipline Specific Accreditation Programs**

1. Accredited programs are:
  - a. Nursing – Accreditation Commission for Education in Nursing, Inc (ACEN)
  - b. Education – Council for the Accreditation of Educator Preparation (CAEP)
  - c. Occupational Therapy (MOT) – Accreditation Council for Occupational Therapy Education (ACOTE)
  - d. Law Studies – American Bar Association (ABA approved)
2. Students enrolled in these programs need to work closely with the Department Chairs or Program Directors to develop course schedules.
3. Programs may include special modules to ensure coverage of topics on licensure exam.

## **VII. Criteria for Certificate Programs and Graduate Students**

1. MSCHE approved DSU to provide a certificate program as long as it is less than one year in duration.
  - a. Faculty Senate approval is required.
  - b. Certificate programs eligibility for Title IV funds are dependent on the program listing and approval by the Delaware State University Program Participation Agreement (PPA). The Process to list with PPA for approval:
    - i. Approval by VP of Strategic Enrollment Management; Executive Director, Student Financial Aid; University Registrar.
    - ii. MSCHE documentation indicating approval to DSU to provide program from Institutional Effectiveness.
    - iii. Documentation from DE State Higher Education indicating DSU is authorized and approved to provide the program.
2. Matriculating undergraduate, graduate, and postbaccalaureate students interested in certificate programs at DSU should consult with Adult and Continuing Education (ACE).

## **VIII. Effective Date: July 1, 2021**

## **IX. Approved by the Delaware State University Board of Trustees on June 17, 2021**

## FACULTY CREDENTIALS

Last Name	First Name	Department	Position	Degree	Degree Concentration	Educational Institution
Abbott	Barbara	Public & Allied Health Sciences	Visiting Lecturer	M.Ed.	Education	Salisbury University
Aharone	Ezra	History, Political Science & Philosophy	Visiting Assistant Professor	Ph.D.	Business Management	Hampton University
Aikins	Anthea	Biological Sciences	Associate Professor	Ph.D.	Microbiology-Medicine and College Teaching	University of Missouri
Akey	Jennifer	Nursing	Associate Professor/MSN Program Director	Ed.D.	Educational Leadership	Delaware State University
Amoako	Joe	Languages & Literatures	Professor	Ph.D.	Linguistics	University of Florida
Anakwe	Bridget	Accounting, Economics & Finance	Associate Professor	Ph.D.	Accounting	Rutgers, The State University of New Jersey
Anderson	Amanda	Languages & Literatures	Associate Professor	Ph.D.	English	University of Louisiana at Lafayette
Aryal	Bhushan	Languages & Literatures	Assistant Professor	Ph.D.	English	West Virginia University
Aryee	Alberta	Human Ecology	Associate Research Professor	Ph.D.	Food Science and Agriculture Chemistry	McGill University
Atkins	Geraldine	Social Work	Assistant Professor -- Emergency Hire	MSW	Social Work	Rutgers University
Awadzi	Carrie	Business Administration	Lecturer II/Prof. of Practice		Organizational Leadership	Wilmington University

Awadzi	Winston	Business Administration	Professor	Ph.D.	Management	Louisiana State University
Awodiya	Daniel	Mass Communications	Associate Professor	Ph.D.	Human Communication	Howard University
Balzarini	John	Sociology & Criminal Justice	Associate Professor	Ph.D.	Sociology	Temple
Banerjee	Padmini	Psychology	Associate Professor	Ph.D.	Human Development and Family Studies	The Pennsylvania State University - University Park
Barry	Maureen	Public & Allied Health Sciences	Visiting Lecturer	MAT	Education	Wilmington College
Becker	Carla	Mass Communication, Visual & Performing Arts	Associate Professor	Ed.D.	Music and Music Education	Teacher College, Columbia University
Belcher	Natalie	Languages & Literatures	Lecturer II/Prof. of Practice	M.A.	Education	Delaware State University
Bell-Rogers	Nicole	Nursing	Associate Professor	Ed.D.	Education	Delaware State University
Besong	Samuel	Human Ecology	Professor	Ph.D.	Animal Science	University of Kentucky
Beugre'	Constant	Business Administration	Professor	Ph.D.	Management	Rensselaer Polytechnic Institute
Blade	Janet	Sports Management	Associate Professor	Ed.D.	Sport Management	United States Sports Academy
Blake	Andrew	Languages & Literatures	Associate Professor	Ed.D.	Innovation and Leadership	Wilmington University

Bluemel	Brody	Languages & Literatures	Associate Professor	Ph.D.	Applied Linguistics and Asian Studies	The Pennsylvania State University
Bobrowsky	Matthew	Physics, Engineering, Mathematics & Computer Science	Lecturer II effective 8/25/2021	Ph.D.	Physics and Astronomy	University of Maryland College Park
Boukari	Fatima	Physics, Engineering, Mathematics & Computer Science	Visiting Assistant Professor	Ph.D.	Mathematics and Physics	Delaware State University
Boukari	Hacene	Physics, Engineering, Mathematics & Computer Science	Professor	Ph.D.	Chemical Physics	University of Maryland College Park
Boynton	Kimeu	Sociology & Criminal Justice	Assistant Professor	J.D.	Law	University of Wisconsin School of Law
Bradshaw-Young	Hazel	Mass Communication, Visual & Performing Arts	Professor	Ph.D.	Art Education	The Ohio State University
Broderick	Cyril	Agriculture & Natural Resources	Professor	Ph.D.	Plant Science	University of New Hampshire
Brownlow	Janeese	Psychology	Assistant Professor	Ph.D.	Neuropsychology	Howard University
Bunyaratavej	Kraiwinee	Business Administration	Visiting Associate Professor	Ph.D.	International Business	The George Washington University
Cange	Charles	Sociology & Criminal Justice	Associate Professor	Ph.D.	Health Policy, Pub Hlth & Medical Sociology	University of Washington
Carr	Ellen	Physics, Engineering, Mathematics & Computer Science	Professor of Practice	Ph.D.	Mathematics	Delaware State University
Casson	Michael	Accounting, Economics & Finance	Associate Professor	Ph.D.	Agriculture and Resource Economics	University of Connecticut

Charvet	Christine	Psychology	Assistant Professor	Ph.D.	Biological Sciences	University of California, Irvine
Chen	Li	Sports Management	Professor	D.P.E	Physical Education	Springfield College
Cheng	Yinghong	History, Political Science & Philosophy	Professor	Ph.D.	History	Northeastern University
Christopher	Jan	Accounting, Economics & Finance	Associate Professor	Ph.D.	Economics	Howard University
Clarke	June	Business Administration	Associate Professor	Ph.D.	Human Science	Oklahoma State University
Clendaniel	Joanne	Biological Sciences	Lecturer II	M.S.	Chemistry	Delaware State University
Colbert	William	Mass Communication, Visual & Performing Arts	Associate Professor & Program Dir. For the Art Department	Ph.D.	Art	University of Delaware
Collins	Phyllis	History, Political Science & Philosophy	Assistant Professor	Ph.D.	Organizational Leadership	University of Maryland Eastern Shore
Connell	Tana	Social Work	Assistant Professor	Ph.D.	Social Welfare	University at Albany
Contino	Robert	Nursing	Visiting Associate Professor	Ed.D.	Educational Innovation and Leadership	Wilmington College
Crampton	Chavon	Nursing	Assistant Professor	M.S.	Nursing	Kaplan University
Crawford	Lori	Mass Communication, Visual & Performing Arts	Associate Professor	M.F.A.	Computer Art	Savannah College of Art and Design

Curran-Hossler	Kathleen	Biological Sciences	Visiting Associate Professor	Ph.D.	Etymology	Ohio State University
Dania	Akash	Accounting, Economics & Finance	Professor	Ph.D.	Business Administration	The University of Texas Rio Grande Valley
Das	Nandita	Accounting, Economics & Finance	Professor	Ph.D.	Economics	West Virginia University
Davis	LaPointe	Mass Communication, Visual & Performing Arts	Professor	Ph.D.	Music	The Ohio State University
Davidson	Adenike	Languages & Literatures	Professor	Ph.D.	English Language and Literature	University of Maryland
Dawley	Edward	Languages & Literatures	Associate Professor	Ph.D.	Modern French Studies	University of Maryland
Dhillon	Harbinder	Biological Sciences	Professor	Ph.D.	Biochemistry	Rutgers, The State University of New Jersey
Dillard	Dorothy	Sociology & Criminal Justice	Associate Professor	Ph.D.	Sociology	University of Delaware
Edelin	Charlisa	Mass Communication, Visual & Performing Arts	Associate Professor and Interim Chair	J.D.	Law	Howard University School of Law
Edwards	Nicola	Physics, Engineering, Mathematics & Computer Science	Associate Professor	Ph.D.	Education	University of Delaware
Elavarthi	Sathya	Agriculture & Natural Resources	Associate Professor	Ph.D.	Plant Science	Oklahoma State University
Eluwawalage	Damayanthie	Human Ecology	Assistant Professor	Ph.D.	Interdisciplinary-Design, History, Theory	Edith Cowan University, Australia

Ette	Ezekiel	Social Work	Professor	Ph.D.	Social Work Immigration/ Social Research	Portland State University
Falodun	Joseph	Education	Associate Professor	Ph.D.	Education	University of Pennsylvania
Fees	Joseph	English & Foreign Languages	Assistant Professor	Ph.D.	Spanish Literature	University of Texas at Austin
Fletcher	Charles	Business Administration	Lecturer I effective 8/25/2021	Ph.D.	Systems Analysis and Economics for Public Decision Making	The Johns Hopkins University
Fondong	Vincent	Biological Sciences	Professor	Ph.D.	Epidemiology	Cornell University
Fox	Dewayne	Agriculture & Natural Resources	Professor	Ph.D.	Zoology	North Carolina State University
Franklin	Franzine	Social Work	Associate Professor	Ph.D.	Social Work	Catholic University of America
Friel	Brian	Psychology	Associate Professor & Undergraduate Program Director	Ph.D.	Experimental Psychology	Kansas State University
Ganatra	Chandrakant	Business Administration	Lecturer I	MBA	General	Delaware State University
Gautam	Chetanath	Education	Associate Professor	Ed.D.	Educational Leadership	Stephen F. Austin State University
Gazda	Frank	Mass Communication, Visual & Performing Arts	Professor	D.M.A	Music	University of Maryland College Park
German	Myna	Mass Communication, Visual & Performing Arts	Professor	Ph.D.	Literature and Philosophy in Communication	University of South Africa at Pretoria

Girgis	Laila	Physics, Engineering, Mathematics & Computer Science	Professor of Practice	Ph.D.	Applied Mathematics	Delaware State University
Gitcho	Michael	Biological Sciences	Associate Professor	Ph.D.	Cellular & Molecular Pharmacology	Saint Louis University
Gladney	Karin	Psychology Dept.	Visiting CADC Coordinator/Lecturer II Emergency Hire	Phil.D.	Human Services	Capella University
Golubski	Antonio	Biological Sciences	Visiting Assistant Professor	Ph.D.	Biological Sciences	University of Illinois at Chicago
Gomez	Cara	Public & Allied Health Sciences	Assistant Professor	Ed.D.	Innovation & Leadership-Org. Leadership	Wilmington University
Gomia	Victor	Languages & Literatures	Professor	Ph.D.	Post-Colonial Literature	University of Yaoundé, Cameroon
Goodman	Jarid	Psychology	Assistant Professor	Ph.D.	Neuroscience	Texas A&M University, College Station
Gootee-Ash	Amy	Public & Allied Health Sciences	Professor of Practice	Ph.D.	Health Science	Northern Illinois College
Guo	Mingxin	Agriculture & Natural Resources	Professor	Ph.D.	Soil Science	The Pennsylvania State University - University Park
Guo (Song Guo)	Weiping (Song)	Chemistry	Lecturer I	Ph.D.	Chemistry	Pennsylvania State University
Gupta	Sangeeta	Public & Allied Health Sciences	Professor	MD	Psychiatry	Lady Hardinge Medical College
Gwanmesia	Gabriel	Physics, Engineering, Mathematics & Computer Science	Professor	Ph.D.	Earth and Space Sciences	State University of New York at Stony Brook

Habeger	Amy	Social Work	Associate Professor	Ph.D.	Organizational Leadership	University of Maryland Eastern Shore
Hankoua	Bertrand	Human Ecology	Assistant Professor	Ph.D.	Genetics and Plant Biotechnology	
Harpe	Tracy	Nursing	Lecturer II	MSN	Nursing	Holy Family University
Heckscher	Christopher	Agriculture & Natural Resources	Professor	Ph.D.	Etymology and Wildlife Ecology	University of Delaware
Hoffman	Patrick	Mass Communication, Visual & Performing Arts	Professor	D.M.A.	Music	University of Georgia
Holloway	Merril	History, Political Science & Philosophy	Lecturer II	M.A.	History	American Public University
Homer	Von	Public & Allied Health Sciences	Assistant Professor; Research & Laboratory Coordinator	Ph.D.	Evaluation, Research	Barry University
Horsey	Ethel (Liz)	Social Work	Lecturer II	MSW	Social Work	Widener University
House	Anton	History, Political Science & Philosophy	Visiting Assistant Professor	Ph.D.	Philosophy	Howard University
Hubble	Ryan	Public & Allied Health Sciences	Visiting Assistant Professor	Ph.D.	Human Movement Science	Australian Catholic University
li	Miki	Biological Sciences	Assistant Professor	Ph.D.	Molecular Biology	Kyushu University, Japan, Graduate School of Medicine
Jenson	Mary	Psychology	Visiting Assistant Professor	Ph.D.	Health & Social Psychology	University of Iowa

Johnson	Delayne	Physics, Engineering, Mathematics & Computer Science	Associate Professor	Ph.D.	Education	University of Delaware
Kalavacharla	Venugopal	Agriculture & Natural Resources	Professor	Ph.D.	Plant Science	North Dakota State University
Kern	Donald	Education	Assistant Professor	Ed.D.	Innovation & Leadership-Org Leadership	Wilmington University
Khan	Mohammad	Physics, Engineering, Mathematics & Computer Science	Professor	Ph.D.	Electrical Engineering	Old Dominion University
Kiesel	Eleanor	Social Work	Associate Professor	J.D.	Law	Temple University School of Law
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Kim	Keun Kyu	Education	Professor	Ph.D.	Early Childhood Education	University of Georgia
Kim	Yong-Hwan	Biological Sciences	Associate Professor	Ph.D.	Physiological Science	University of California
Kim	Young-Gi	Chemistry	Assistant Professor	Ph.D.	Polymer Science	University of Massachusetts
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Kuperavage	Adam	Public & Allied Health Sciences	Associate Professor	Ph.D.	Kinesiology and Movement Science	Pennsylvania State University
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Marsteller	Robert	Education	Visiting Assistant Professor	Ph.D.	Teaching, Learning & Technology	Leigh University
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Newton	Faith	Education	Professor	Ed.D.	Educational Administration	The College of William and Mary
Ning	Nancy (Zi)	Accounting, Economics & Finance	Associate Professor	Ph..	Business	The University of Texas at San Antonio
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Pati	Gour	Physics, Engineering, Mathematics & Computer Science	Professor	Ph.D.	Physics	India Institute of Technology
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Scott	Latia	Cell Biology in Biological Sciences	Associate Professor	Ph.D.	Medical Sciences	Virginia Union University
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Timmons	Crystal	Education	Associate Professor and Director of Clinical and Field Experiences	Ed.D.	Educational Leadership	University of North Florida
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Vulinec	Kevina	Agriculture & Natural Resources	Professor	Ph.D.	Wildlife Ecology	University of Florida

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