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DISCLAIMER

The provisions of this publication are not to be regarded as an irrevocable contract between the student and the University of Maryland Eastern Shore. At the time of publication, every reasonable effort was made to attain factual accuracy in the material presented.

This Catalog is not intended to be a complete statement of all procedures, processes and regulations governing graduate or professional degree programs which may be covered in separate program and office manuals and handbooks.

The University of Maryland Eastern Shore reserves the right to make changes in fees, course offerings and general regulations and academic requirements without prior notice.

All effort has been made to ensure that the information in this Catalog is current and accurate. However, policies, procedures, fees, forms and other information are subject to change after publication.

For the most up-to-date information on course offerings, program requirements, fees and deadlines, please write, call, email or visit the website of the program or department to which you are applying.

UMES Graduate Studies Contact Information

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URL website: www.umes.edu/grad

Date of Publication: Fall 2011

THE UNIVERSITY

The UMES Mission

The University of Maryland Eastern Shore (UMES) is an undergraduate and graduate degree granting, research/teaching university on Maryland's Eastern Shore, and the 1890 Land Grant institution for the State of Maryland. UMES is a growing, primarily residential university with a teaching, research and extension mission consistent with its legacy as an 1890 Historically Black Land Grant institution. UMES emphasizes its commitment to equal educational opportunity, and strives to provide educational, research and public service programs to the state and region.

The Academic Program

The University of Maryland Eastern Shore is one of eleven degree-granting campuses of the University System of Maryland. It was founded in 1886 as the Delaware Conference Academy under control of the Methodist Church.

UMES offers major programs leading to baccalaureate degrees in 26 disciplines in the arts and sciences, professional studies and agricultural sciences. UMES has 13 teaching degree programs and two pre-professional programs, as well as an Honors Program designed to prepare students for study in professional schools.

UMES also offers graduate degrees as follows:

Department of Mathematics and Computer Science

- Master of Science (M.S): Applied Computer Science

Department of Technology

- Master of Education (M.Ed.): Career and Technology Education

Department of Criminal Justice

- Master of Science (M.S): Criminology and Criminal Justice

Department of Agriculture

- Master of Science (M.S): Food and Agriculture Sciences
- Doctor of Philosophy (Ph.D.): Food Science and Technology

Department of Education

- Master of Education (M.Ed.): Special Education
- Master of Education (M.Ed.): Counselor Education
- Master of Arts in Teaching (M.A.T)

Department of Physical Therapy

- Doctor of Physical Therapy (D.P.T)

Department of Rehabilitation Services

- Master of Science (M.S): Rehabilitation Counseling

Department of Natural Sciences

- Master of Science (M.S): Marine-Estuarine-Environmental Sciences
- Doctor of Philosophy (Ph.D.): Marine-Estuarine-Environmental Sciences
- Master of Science (M.S): Toxicology
- Doctor of Philosophy (Ph.D.): Toxicology
- Quantitative Fisheries and Resource Economics (Professional Science Master's Degree)

School of the Arts and Professions

- Doctor of Philosophy (Ph.D.): Organizational Leadership
- Doctor of Educational Leadership (Ed.D.)

School of Pharmacy

- Doctor of Pharmacy (Pharm.D.)

THE CAMPUS AND ENVIRONMENT

Located in the small, historic town of Princess Anne on the Eastern Shore of Maryland, UMES is located on 745 acres of land with 90 buildings. UMES offers suitable facilities for its graduate programs including well-equipped, state-of-the-art laboratories and instrumentation, computing and telecommunications and networking capabilities, and resource centers.

Behind the East Campus are about 300 acres of farmland where innovative agriculture, environmental, and aquaculture research – serving both local and global economies – is conducted by several institutes, centers and programs.

Programs in the marine, estuarine and environmental sciences and in the agricultural sciences also benefit from the Eastern Shore of Maryland as a field laboratory with its diverse natural resources: the land, the ecosystem of the Chesapeake Bay estuary and the Atlantic Coast, state forests and parks, and a National Seashore (at Assateague Island). There is easy access to outdoor recreation opportunities such as camping, fishing and water sports. Within a several hour drive are the resources of Maryland's Western Shore and the federal sector located in the Washington, D.C.-Baltimore- Northern Virginia corridor.

The UMES graduate programs in quantitative fisheries, education, computer science, physical therapy, criminology & criminal justice and rehabilitation counseling serve and address community and regional needs for professionals and technical specialists.

The international dimension of the UMES campus can be evidenced by the flags of over 50 nations that fly, on a rotational basis, at the campus entrance. These flags are a reminder of the various nationalities of students enrolled at UMES.

GRADUATE STUDIES GENERAL INFORMATION

The University of Maryland Eastern Shore's Graduate School believes that it can best serve societal needs and respond to the challenges of graduate education through its commitment to time-honored principles. Accordingly, the major role of the UMES Graduate School is to provide for the education of students in the scholarly methods of intellectual inquiry and critical analysis; to train them in the discipline and skill necessary for beneficial research, applications and practice; and to foster in them a dedication to creative thought and the search for knowledge. The UMES Graduate School promotes the freedom and intellectual environment necessary to stimulate research and scholarship of the highest quality for both students and faculty.

In terms of governance, each campus of the University System of Maryland is administered by a President who is responsible for all academic programs. The delegated administration of the graduate programs at UMES, within the office of the Vice President for Academic Affairs, is to the Graduate Studies Dean. A Graduate Faculty Assembly and Graduate Council on the campus provide the organization by which the Graduate Faculty discharges its responsibilities for the quality and scope of graduate studies and research, embodied within the Graduate School.

The Graduate Studies website (www.umes.edu/grad) provides information for prospective, new, current and international students including details on graduate programs. There are also links to online application forms for admission, catalogs and handbooks, and information on scholarships, grants and loans.

Governance

The Graduate Faculty

The Assembly of the Graduate Faculty consists of all regular and associate members of the Graduate Faculty who, through their participation in research and graduate instruction, have displayed a capacity for individual research or creative and scholarly work at the highest levels.

The Graduate Faculty, working through the Assembly and the Graduate Council, establishes policies governing admission to graduate study and the minimum requirements to be met by all students seeking advanced degrees awarded by the Graduate Faculty at the University of Maryland Eastern Shore. The faculty of the various departmental graduate programs may set additional requirements for the admission to specific programs or for the completion of degrees within those programs, which are beyond the minimum established by the Graduate Council.

The Graduate Council

The Graduate Council consists of members of the Graduate Faculty elected by the Assembly, as well as appointed and ex-officio members. It is charged with formulation of policies and procedures for the graduate programs at UMES. These include, but are not limited to, admission standards, review of new graduate programs and courses, and review of the UMES Graduate Faculty membership.

Graduate Students

Students' opinion and participation in determining matters of policy, procedure, and administration are appreciated and encouraged. In addition to their election to the Graduate Council, graduate students may also serve on departmental and campus committees.

National/Regional Organizations

The University of Maryland Eastern Shore maintains membership in national organizations such as the Council of Graduate Schools and the National Association of State Universities and Land Grant Colleges.

Accreditation

The University of Maryland Eastern Shore is accredited by the Middle States Commission on Higher Education. UMES has professional accreditation for the graduate programs in Physical Therapy, Rehabilitation Counseling and Teacher Education (Career and Technology Education, Guidance and Counseling, Special Education and 11 content areas for the Master of Arts in Teaching). Three other graduate programs have selected an accreditation agency.

ADMISSION TO GRADUATE SCHOOL

General

Responsibility for admitting applicants to graduate programs rests with the Dean of the Graduate Studies in consort with the advice of the departmental Program Coordinators and Graduate Admission Committees for each graduate program. Standards applied by the UMES Graduate School and the departmental programs are to ensure that students admitted are highly qualified and have a reasonable expectation of successfully completing a graduate program. In order to maintain programs of outstanding quality, the number of spaces in each program may be limited by the availability of faculty, and departmental and campus resources. In addition, there is a 30% ceiling on out-of-state (including international) admissions and enrollment.

Graduate credit for courses will not be given unless students have been admitted to the UMES Graduate School or have its consent if a UMES senior according to the pertinent policy set in the Graduate School Catalog.

Criteria for Admission (Master's and Doctoral)

Those who have earned or will earn a Bachelor's or Master's degree at a regionally accredited college or university in the United States or the US credit hours equivalent of a Bachelor's or Master's degree from another country, will be considered for admission to the UMES Graduate School. A "*regionally accredited college or university*" refers to accreditation by one of the six regional accrediting associations in the US recognized by the US Department of Education.

Students may apply for admission to UMES during or after their final year of undergraduate or graduate study, but must furnish proof of degree award before the end of their first term of enrollment at UMES. Students applying for admission to a Master's or Doctoral degree program in a field of specialization in which they already hold a Master's or Doctoral degree or its equivalent, may do so only if the previous degree program was of a substantially different character or was not accredited by a regional association.

Admission is open to non-US citizens (permanent residents, immigrants or non-immigrants). There is no separate application process for these applicants.

The decision to admit an applicant to a program is based primarily on a combination of the following criteria, which are consistent with requirements of the specific graduate programs:

1. **The quality of previous undergraduate and, as applicable, graduate work:** The UMES Graduate School requires as a minimum standard, a "B" average or 3.0 cumulative Grade Point Average (GPA) on a 4.0 scale, in a program of study resulting in the award of a baccalaureate degree from a regionally accredited US college or university, or the US credit hours equivalent of a Bachelor's degree from another country. Graduate Admissions Committees look closely at courses studied and grades earned in the major area of study. The student's undergraduate program should include completion of any prerequisites for graduate study in the chosen field. In individual programs where resources are available, applicants who do not meet the above minimum standard for their undergraduate work, may be

provisionally-admitted if there is evidence, on the basis of other criteria, of a reasonable likelihood of success in the program the applicant desires to enter.

Doctoral program applicants will also submit Master's program transcripts.

2. **Strength of letters of evaluation (recommendation):** Three letters of evaluation are required from persons competent to judge the applicant's probable success in graduate school. Usually, these letters are from the applicant's former instructors who are able to give an in-depth evaluation of the applicant's strengths and weaknesses with respect to academic work. For applicants who have been out of school for a number of years, evaluations may come from employers or supervisors who are familiar with the applicant's work experience and strengths and weaknesses. Applicants should request their references to send the letters of evaluation directly to the Graduate School.
3. **Scores on a nationally standardized examination (as may be required by a program):** Because the predictive utility of these scores may vary from one group of applicants to another, a discriminating use of all relevant materials will be made in each applicant's case. The most widely used standardized examinations at UMES are the Graduate Record Examinations and the PRAXIS (formerly the National Teachers Examination).
4. **The Statement of Purpose:** The Statement of Purpose form is used by the applicant to explain why he/she wishes to pursue graduate study at UMES; and the applicant's career objectives and/or research interests which are pertinent to the intended program of study. The Statement of Purpose helps the specific graduate program to identify applicants whose purposes are compatible with the objectives of the graduate program.
5. **Other evidence of preparation:** Individual programs may require a personal interview, a writing sample essay or evidence of prior work experience in the field of study.

Policy on Applicant Rejection

UMES may review a number of different factors to determine whether to admit an applicant to a graduate program, including but not limited to academic achievement, personal and professional references, scores on admission examinations, writing samples, personal interviews, character and integrity, personality, and potential to perform as a graduate student and as applicable to a profession. Applicants should consider licensing/registration/credential requirements of a profession in which past personal history or conviction/criminal record may restrict completion of a degree program (the professional phase) and the eligibility to practice in a profession if graduated from a program.

Graduate Record Examinations (GRE)

Although not all graduate programs at UMES require the GRE, almost all will use such test scores as an additional measure of an applicant's qualifications. The GRE may be taken in either or both of two forms: the General Test, and the Subject Test. Applicants can take the test(s) in their senior year or when submitting the application for admission. Note that some programs may require the GRE test scores prior to an admissions decision.

For details on registering for the tests, applicants should visit the Educational Testing Service's website at www.ets.org/gre.

The UMES institutional code for the GRE is 5400.

The General Test is being revised beginning August 2011.

Applicants should take the Subject Test package appropriate for the program to which they are seeking admission.

For information on the UMES graduate programs requiring the GRE, consult the specific graduate program in this Catalog.

Official test scores should be sent directly to the Graduate School.

Photocopies of test score results are acceptable for initial review, but not for Regular Admission status should the test score(s) be required by the program.

Categories of Admission to Degree Programs

- Regular or Full Graduate Status

For admission to this category, an applicant must have received a baccalaureate degree and, if applicable, a Master's degree, from a regionally accredited institution (defined above in *Criteria for Admission* - Pg 12) or the US equivalent of a bachelor's and/or Master's degree in another country, and be otherwise fully qualified in the judgment of the individual program and the Graduate School.

- Provisional Graduate Status

This designation may be used by the graduate program:

1. when quality of the previous academic record at a regionally-accredited institution in the US or abroad is lower than established standards (see *Criteria for Admission* section above, item 1.) or when there is a lack of adequate prerequisite course work in the chosen field;
2. when applicants have majored in another program area with a creditable record but there is some doubt about their ability to pursue the chosen program of study;
3. when the applicant is engaged in undergraduate or graduate study at another institution but is not able to furnish a transcript indicating completion of course work or degree requirements; or
4. when the applicant has completed a baccalaureate or Master's degree but has not yet submitted official verification of the last semester's work and receipt of the degree.

Final official transcripts indicating receipt of the degree must be submitted before the end of the first semester of enrollment at UMES.

Conditions to correct any deficiencies in preparation for graduate study at UMES will be outlined by the faculty. Full-time matriculated students are expected to remove condition(s) for provisional admission within the time period stated on the admission recommendation form, normally within the first year of matriculation depending upon the program (e.g., the first two consecutive semesters which might include the adjacent summer). Part-time matriculated students are expected to remove condition(s) of provisional admission no later than the end of the second year of matriculation (the fourth semester which might include the adjacent summer, depending on the program).

When all conditions have been met, the program may recommend admission of the student to full or regular status. This statement also applies to any conditions set by the Graduate School (e.g., degree award, final/original transcript, etc.). Regular status is required to obtain the degree. Students who are unable to qualify for full admission under the conditions specified (e.g., by failure to fulfill them), will have their admission terminated.

- Advanced Special Student Status

The Advanced Special Student Status is designed for individuals who do not have an immediate degree objective in mind, but wish to take graduate level courses for personal or professional enrichment. Although the primary mission of the UMES Graduate School is to conduct programs of graduate instruction leading to advanced degrees, the Graduate Faculty welcomes, to the extent that resources allow, qualified students who have no degree objectives. Unofficial transcripts or photocopies of degrees will be accepted with the application for evaluation purposes, but by the end of the first semester of enrollment, the student must submit official copies of all required documents. Official transcripts must be submitted from all institutions attended except for the University of Maryland Eastern Shore; the Graduate Studies office obtains the UMES transcript. Since Advanced Special students enroll in the same classes as degree-seeking students and are subject to the same course prerequisites, standards for admission to this status cannot be lower than what the degree programs would allow for regular or provisional admission.

Applicants for admission to Advanced Special Student Status must hold a baccalaureate degree and satisfy at least *one* of the following criteria:

1. Hold a baccalaureate degree from a US regionally accredited institution or the US credit hours equivalent of this degree from another country, with an overall "B" (3.0) average. Applicants must submit official transcripts covering all credits used in satisfying the baccalaureate degree requirements;
2. Hold a Master's or Doctoral degree from a regionally accredited institution, or the equivalent of these degrees from another country. Applicants must submit an official transcript showing the award of a Master's or Doctoral degree;
3. Hold a baccalaureate degree from a regionally accredited institution or the US credit hours equivalent of this degree from another country, a cumulative GPA of 2.5 and have successful post-baccalaureate work or professional experience. Applicants must submit an official transcript showing the award of the baccalaureate degree, and summarize their post-baccalaureate work or professional experience on that section of the application form or submit a resume;
4. Achieve a score which would place an applicant in the upper 50th percentile of appropriate national standardized aptitude examinations such as the GRE or Miller's Analogies Test.

Admission to Advanced Special Student Status is granted by the Dean of Graduate Studies for a period of five years. Advanced Special Students must meet course prerequisites and maintain a 2.5 cumulative grade point average. There are restrictions on graduate courses in which Advanced Special Students may not enroll (e.g., Physical Therapy, the MAT, and the Doctoral weekend programs). Heavy enrollment programs such as Applied Computer Science require that Advanced Special Students who will earn six credit hours in Applied Computer

Science courses with a grade of B or better must apply to the graduate program in Applied Computer Science before taking any further courses in Applied Computer Science if they seek that graduate program. Registration for Advanced Special Students Status in the Applied Computer Science program is restricted.

Advanced Special Students must pay all standard graduate fees. Students in this status are not part of any of the UMES graduate programs, and therefore are not eligible to hold any Graduate Assistantships or receive similar forms of financial aid. All other services, e.g., parking, library privileges, etc., are the same as those accorded to other graduate students.

Admission to Advanced Special Student Status is not intended to be used as a preparatory program for later admission to a Doctoral or Master's program. Only six credits earned while in this status may be applicable to a degree or certificate program at a later time, with the approval of the faculty in the desired program, if the student is subsequently accepted for a degree or certificate program. For consideration of admission to a degree or certificate program, a student must submit the application for degree program form and meet all admission requirements, including an overall grade point average of 2.75 among the graduate courses taken at UMES.

Because Advanced Special Student is a non-degree status, it is not allowable for international applicants on a F-1 (student) visa. Advanced Special Student is allowable for F-2 visa holders (dependents) and may be allowable in some instances for other visa holders (e.g., H-1).

The application deadline for consideration of Advanced Special Student Status is no later than ten (10) school days prior to the registration date set for each semester or session.

- Visiting Graduate Student Status

A graduate student matriculated in another graduate school and who wishes to enroll in the UMES Graduate School but intends, thereafter, to return to the graduate school in which he/she is matriculated, may be admitted as a Visiting Graduate Student. (NOTE: This section does not apply to graduate students matriculated within the University System of Maryland campuses, who should follow the provisions given in a later section on the *Inter-Campus Enrollment*; however, inter-institutional enrollment for Salisbury University and UMES students follows the section below on "*Collaborative Programs with Salisbury University*".)

Criteria for enrollment as a Visiting Graduate Student are admission to and good academic standing in another recognized graduate school. The applicant need not submit full transcripts of credits, but must apply for admission to the UMES Graduate School (the application form for non-degree) and pay the application fee. In lieu of transcripts, a student may have his/her graduate administrator certify in writing to the UMES Graduate School, that the student is in good standing and that the credits to be earned at UMES will be accepted toward the graduate degree at the home institution. Unless otherwise specified, admission to this status will be offered for one year only.

The application deadline for consideration under this status is one month prior to the registration date set for each semester or session for full-time study, and ten (10) school days for part-time study.

- Golden Identification Card for Senior Citizens of Maryland

The purpose of this identification is to make available, without charge, courses and services of the University to citizens who are 60 years of age or older, who are residents of the State of

Maryland and who are retired (retired persons will be considered those who affirm that they are not engaged in gainful employment for more than 20 hours per week). Persons who meet these requirements may apply for graduate admission, either as degree or non-degree students, and must meet the same admissions criteria pertaining to either category as do all applicants. Once admitted and having been issued the Golden Identification (ID) Card, these persons may register for courses in any semester/session, subject to the same restrictions as any other student, and use the library and other campus facilities during the time they are enrolled in courses. Tuition and fees charges will be waived for holders of the Golden Identification Card. See latest release of the UMES application for Graduate Admission package , for more information on this section on this program.

- Non-degree Student Status - Undergraduate

This is an undergraduate classification. It may be assigned by the Director of Admissions (Undergraduate Division) to those applicants who have received the baccalaureate or an advanced degree from a regionally-accredited institution but who do not desire, or who do not qualify for graduate admission. Non-degree seeking students who do not have a baccalaureate degree must submit transcripts and meet regular admission standards. Transcripts are not required from students with baccalaureate degrees.

Application for "Non-degree Student Status--Undergraduate" (Special Student) must be made directly to the Office of Admissions, not to the Graduate School.

The student is advised that no credit earned while in a "Non-degree Student Status-Undergraduate" may be applied at a later date to a graduate degree program at UMES.

Collaborative Programs with Salisbury University

Students matriculated into a graduate program at either Salisbury University (SU) or UMES or for the joint Master of Arts in Teaching Program, follow the modified procedures for the Visiting Graduate Student Status to enroll in classes at either institution. Students use the inter-institutional concurrent enrollment process for any eligible semester or session class taken with the host institution.

Offer of Admission and Deferments

A written offer of admission is made by the Graduate School to all accepted applicants and specifies the date of entrance (semester or session). The offer of admission also permits the applicant to register for courses. Graduate credit for courses taken at UMES will not be given unless students have been admitted to the UMES Graduate School.

Individuals whose original offers of admission have lapsed, or lapsed after one requested deferment of the date of entrance (up to a 12-month period), must submit a new application and fee if they want to be reconsidered for admission at a later date.

Applicants who are unsuccessful in gaining admission to a graduate program are notified in writing, usually by the program. The Graduate School informs non-degree applicants who are unsuccessful in gaining admission.

A student can be admitted to only one graduate program at any one time. There are no dual degree programs at the graduate level. Applications may be sent to more than one graduate program for review, but only one offer of admission to one degree program will be granted.

Admission Time Limits for Degree Programs

Applicants admitted to a Master's degree program must complete all program requirements within a five-year period of the date of entrance specified in the offer of admission or deferred admission. Applicants admitted to a Doctoral degree program (traditional or accelerated and intensive) must be admitted to candidacy status within five years of the date of entrance specified in the offer of admission, after which another four-year period is permitted for the completion of the remaining requirements.

Change of Degree-Level, Program or Status

Students are admitted only to a specified program and within that program only for the specified objective, e.g., Master's or Doctoral degree. If matriculated students wish to change either the program or their non-program status (for example, from Advanced Special Student to degree status), they must submit a new appropriate application along with the Change of Degree Program form if applicable and provide any other form or information as specified. Admission to the new program and/or status is not granted automatically.

Students must be re-admitted when the original objective has been attained. For example, when a student who is admitted for the Master's degree completes the requirements for that degree, if the student wishes to continue for the Doctorate, a new application for admission to the Doctoral program must be submitted. However, programs which offer both the M.S. and the Ph.D. degrees may consider qualified baccalaureate students for a probationary period before full admission into the Doctoral degree program. Their requests for admission to the Doctoral program are subject to the same review process applied to others seeking admission to that program.

Termination of Admission (Time Limits; Grades; Academic Probation & Dismissal; Academic Suspension)

A student's admission terminates:

- a. when time limits for the completion of degree or non-degree status expire;
- b. if the student is no longer in good academic standing with an academic dismissal;
- c. with voluntary withdrawal from a graduate program;
- d. with the failure to meet Provisional Admission conditions, and
- e. with the intent to defraud, among other actions.

To be in good academic standing, degree seeking students must maintain a grade point average of 3.0 ('B') or better in all graduate courses taken for credit toward a degree program at UMES, and must also satisfy all additional requirements of the Graduate School and the specific graduate program. This makes them eligible to re-enroll each semester/session without restriction.

For most programs, graduate students who receive academic probation notices from the Graduate School must comply with the following requirement in order to retain their admission status at UMES. They have two consecutive semesters in which to bring their cumulative grade point average back to 3.0 ("B") after it falls below that level. Summer is an academic semester for programs with a required nine or more credit hour curriculum over the summer period. Some graduate programs may stipulate additional or more stringent academic probation and dismissal criteria (also see section on *Grades for Graduate Students* - Pg 33).

Academic suspension temporarily interrupts a student's continued enrollment for a specific time period, but allows the student to return to his/her admitted status. Academic dismissal is a termination of admission. It may be a permanent separation, or, if a graduate program allows, a separation for a time period, removed only by review by the program and acceptance of the case for reinstatement. Reinstatement involves special conditions to be met by the returning student.

The admission of all students, both degree and non-degree, is continued at the discretion, as applicable, of the Academic Advisor or Committee, the department Chair, the Program Coordinator and the Graduate School.

Readmission/Reinstatement Process

The Graduate School form *Application for Readmission or Reinstatement* contains information on the process of seeking readmission or reinstatement. The student completes the front and back of the form, provides any additional materials needed and submits all to the graduate program for review and recommendation to the Graduate School for final action on acceptance or denial of the request.

Policy on Dismissal for Non-Academic Reasons

UMES reserves the right to dismiss or refuse to graduate any student who does not maintain standards of academic and professional integrity, ethics, and conduct appropriate to the discipline/degree program during the student's course of study at the University, including clinical experiences, practica, and internships.

Admission of Faculty

No member of the faculty employed by UMES with the rank of Assistant Professor or above is permitted to enroll in a graduate program leading to an advanced degree offered in his/her academic school. A faculty member who wishes to take course work for personal enrichment in his/her academic school may choose the Advanced Special Student status. A faculty member with rank of Assistant Professor or above who wishes to pursue an advanced degree (e.g. Doctorate) in a UMES graduate program outside of his/her academic school may do so by obtaining written permission from the Graduate School, subsequent to obtaining written consent from the Deans of both the academic school in which he/she is employed and that which he/ she seeks a degree.

Departments employing faculty below the rank of Assistant Professor must monitor and seek to avoid possible conflict of interest situations in cases of faculty appointments which will involve a dual role, as a teacher/researcher in the department and a matriculated graduate student in an advanced degree program housed in the department to which the faculty member is attached.

APPLICATION INSTRUCTIONS

Application Forms and Materials

For a copy of the application for graduate admission booklet, write, call or e-mail the Graduate School, or visit the Graduate School's Prospective Students webpage (www.umes.edu/grad/) for forms. Also read the section on "Important Application Information." There are separate application forms for degree and non-degree status. Applicants should submit materials as instructed on each of application form. For further explanation of the graduate application and admissions process described in this Catalog, including summary checklists, refer to the *UMES Application for Graduate Admission* form(also available on the Graduate School webpage under Prospective Students - <http://www.umes.edu/WorkArea/showcontent.aspx?id=31828>).

There is also an online graduate application on the University System of Maryland's website (www.acaaff.usmh.usmd.edu/gradapp/index.html).

The introductory narrative in the *UMES Application for Graduate Admissions Process and Checklist* (www.umes.edu/Grad/Default.aspx?id=17610) is also useful background information for those submitting the online application.

The Initial Application Process

To apply for a degree program, applicants must send the following:

1. The completed application form along with a completed Statement of Purpose form. These two may be submitted in hard copy or online.
2. Official transcripts covering all credits earned or in progress at any post-secondary institution.
3. Letters of evaluation (recommendation).
4. All applicable forms and materials listed in the application package including resume; and test scores.

Transcripts

Each applicant must submit official copies of all of his/her academic transcripts for undergraduate and graduate work taken to date, regardless of whether a degree was awarded. Each transcript should bear the signature of the registrar and the seal of the granting institution and should include the years of attendance, courses taken, grades received, and the degree, diploma or certificate conferred. For applicants who attended UMES, the UMES Graduate School may obtain the records for courses completed on this campus and the degree awarded. To facilitate the application process, an official copy of transcripts from all other institutions should be attached to the application.

Although photocopies of credentials or unofficial (student issued) transcript copies are acceptable for initial review, regular admission status cannot be granted, nor will any degree be awarded, until the UMES Graduate School has received official copies of all academic credentials certified by an administrative official of the school, college or university.

Holders of transcripts of post-secondary study and degrees earned outside the United States are subject to the information requested in the section on *Academic Credentials of International Applicants*.

Calculation of Grade Point Average (GPA)

Applicants with degrees from US institutions or foreign institutions with a grading system comparable to the US, must be certain to calculate and convert their grade averages to a four-point (4.0) grading system, and at three levels, for credits included in the baccalaureate program, unless their transcripts already provide the GPA calculated data. See the instructions below for specifics on the calculation.

The Graduate School will determine an equivalent cumulative GPA for foreign applicants with educational systems different from the US.

The GPA levels are:

1. Overall.
2. Credits earned after the first 60 credits up to the date of application or the date of the award of the baccalaureate degree, whichever is later.
3. Those credits which constitute the major field.

For work taken beyond the bachelor's degree, a separate computation should be made.

All results are entered into the spaces provided for the GPA on the application form. All grades are to be calculated on a four-point grading system, shown below, regardless of the grading system used at the institution attended. Pass/fail, satisfactory/failure, completed credit and similar grades are not to be included in the calculations. All numerical, alphabetical or equivalent grades, except as already noted, must be calculated as follows:

1. Convert all hours to semester hours (one-quarter hour equals 2/3-semester hour or one-semester hour equals 1½ quarter hours).
2. Count the number of credit hours for each grade.
3. Multiply the total credits for each grade by the number of (quality or honor) points for each as follows: A = 4; B = 3; C = 2; D = 1; and F = 0 (intermediate marks, e.g., B+, C-, are assigned in the value of the letter grade, e.g., B+ = 3, C- = 2).
4. Then divide the total grade points by the total number of credits to obtain the GPA.

Application Fee

A non-refundable application fee of US\$45 (Master's/non-degree) and US\$50 (Doctoral) must accompany each application. NOTE: the governing policy for, and any allowable waiver of the application fee, is found in the subsequent section on *Graduate Fees* (Pg 25).

Payment should be made by check or money order payable to the University of Maryland Eastern Shore. The on-line application allows use of a credit card.

Application Deadlines

It is the applicant's responsibility to check the individual program to which he/she is applying for any specific application deadline, including those for international applicants. Except for programs which have only one application deadline per year, all other programs have Fall, Spring or Summer deadline dates. If an applicant misses one of these deadlines, his/her application may be considered for the next available admissions cycle.

It is also to the applicant's advantage to be timely if he/she wishes to be considered for Graduate Assistantships (admission to a program is required) or other forms of financial

support. Applicants should consult the *Financial Assistance* section for application deadlines for federal financial support.

Non-degree program applicants (e.g., Advanced Special and Visiting Graduate Students) should submit applications according to the schedule given in those admissions sections.

Faculty who comprise the program Admissions Committees may not always be available over the summer months. Applicants for consideration of a Fall admission should note that if they do not meet the program's Fall application deadline or have their application complete by that deadline, they may not be admitted in a timely manner or may be deferred to a Spring admission.

If all completed degree program application materials, as requested, do not arrive simultaneously, the Graduate School, for internal processing purposes, desires the order of receipt to be the application and attachment forms, the official transcripts, standardized exam test scores and lastly, the letters of evaluation (recommendation). However, by the stated application deadline date, the application is **complete** only if **all** materials have been received. The graduate programs' Admissions Committees normally will not begin review of applications unless each application package is complete.

Refer to www.umes.edu/Grad/Default.aspx?id=22806 for more information on deadlines.

Termination of Application Process

Deliberate omission, misrepresentation or falsification of information on the application for degree or non-degree programs and accompanying application materials, and altered or fraudulent credentials (transcript, test score) will terminate the admission process for the applicant. If any of these problems surface after the applicant has been admitted, that student's enrollment status will be terminated.

Status of Application

Refer to this subsection in the latest issue Application for Graduate Admission 2007 booklet. This subsection is applicable to domestic and international applicants.

All hardcopy print materials should be sent to:

**The Graduate School,
University of Maryland Eastern Shore,
Princess Anne, Maryland 21853.**

Please note that applicants also have the option to apply online at www.umes.edu/Grad/Default.aspx?id=17612.

Applicants are advised to carefully follow the instructions in the application package and to respond to all applicable requests for information. Some programs may have a supplemental information form or checklist to be completed and submitted with the application.

Incomplete application materials (i.e., insufficient information or responses), will delay the start of the admissions review process.

The Graduate School forwards all materials received to the appropriate Graduate Program Coordinator to start the application review process by the program's Admissions Committee.

It is important, then, for applicants to arrange to have all application materials requested to arrive around the same time period in order to facilitate, rather than delay, the admissions review process. The Graduate School and the Graduate Program involved jointly track the application materials received.

Applicants, however, are solely responsible for making certain that their transcripts, letters of evaluation/recommendation and any applicable application attachment forms have, in fact, been received. No follow-up action can be taken by the UMES Graduate School for missing, misdirected or incomplete items.

International Students Application Process

International applicants seeking admission to the University of Maryland Eastern Shore should not plan to leave their country before receiving an official offer of admission from the Graduate School. The Graduate School undertakes a preliminary review and evaluation of the international applicant's materials (academic credentials and application completeness) prior to their admission to the graduate program.

Academic Credentials

For foreign nationals, the completed application and fee, letters of evaluation and official academic credentials for all undergraduate and graduate (tertiary level) institutions attended/being attended, should all be received by the UMES Graduate School by the appropriate international deadline date (if given) or the specific program deadline date (if a fixed date).

Official transcripts must be submitted by the applicant to World Education Services (WES) for a course by course evaluation which must be received by the Graduate School at the time the application for admission to the graduate program is being reviewed. WES currently evaluates and authenticates credentials for submission to the Graduate School at UMES. As of January 20, 2010 WES has been officially recognized as the recipient of verified Chinese degrees for the U.S. and Canada. Foreign nationals should complete an application for transcript review at www.wes.org and request that the registrar of the institution from which they obtained their degree send the original copy of the transcript to WES for evaluation. WES will submit the evaluation along with a certified copy of the transcript to UMES. Transcripts that do not indicate the degree earned will not be accepted by the Graduate School.

The name of the individual on the credentials must match that on the application.

Photocopies of credentials are acceptable for initial review purposes only. Official credentials (original documents) from non-US institutions must bear either an imprinted seal, an original stamp of the institution or the original signature of a school official.

Official documents should include the courses completed, the amount of time taken per course, grades and the grading system.

Public documents signed by a notary public are considered unofficial.

Official credentials must be received or certified by the Graduate School before regular (or full) admission status is granted. Students enrolled at another US institution may have certified copies of all foreign records sent directly to the UMES Graduate School by their current institution. Transcripts of their US coursework must be sent directly from the institution.

Only applicants who have completed a full sequence of preparatory studies and examinations equivalent to a US bachelor's (normally four years and 120 credit hours of study) or higher degree from an approved institution, and who have demonstrated high academic achievement, will be considered for admission.

English Proficiency Testing

When applicants are ready to begin their studies, they will be expected to read, speak and write fluently in English, in order to understand lectures, take examinations and participate in seminars and presentations. Applicants should be aware that UMES does not offer any program of English for non-native speakers of English to improve their proficiency.

Native speakers of English are defined as those who have received all of their education in the United States, United Kingdom, English-speaking Canada, Ireland, Australia, New Zealand and Commonwealth Caribbean. International applicants who are non-native speakers of English (not their first language or the language of instruction at all levels of schooling) must demonstrate a proficiency in the English language by taking the Test of English as a Foreign Language (TOEFL) and scoring 79/80 (internet based test), 213 or better (computer based test), or by providing evidence of an equivalent official testing in the English language with an acceptable score. Graduate programs may request TOEFL scores of non-immigrant visa status holders and permanent resident applicants.

Possible exceptions may be made for non-native speakers who have successfully pursued full time academic work leading to a postsecondary degree or diploma in an English speaking country (see above), where English is the language of instruction. The TOEFL requirement is waived for an international student awarded a baccalaureate degree from UMES or a graduating senior at UMES who will have completed at least four years of undergraduate study at a US college or university.

Because TOEFL is given at selective times a year throughout various parts of the world, as soon as applicants contemplate study at UMES, they should make arrangements to take the test. For TOEFL test information, go to www.ets.org/toefl.

Standardized test scores are considered valid within a 24-month period of the examination. When requesting official TOEFL score reports to be sent to the Graduate School, please refer to the UMES institutional code: 5400. A copy of an applicant's "Examinee's Score Record" may be sent with the application for evaluation purposes only. (Note that the data on this record will be verified with ETS). The official score from ETS must be received for the applicant's permanent file. Applicants found to be deficient in English and required to improve their English proficiency do so at their own expense. Any course(s) or exams taken for this purpose will not count for degree credit.

Financial Resources

To meet immigration requirements, each international applicant must furnish a completed *Certification of Finances* form to the Graduate School with the application, signed by him/her and the sponsor. Approximately US\$16,000 annually is an average for educational and living expenses. Evidence of funding (in US dollars) for the first year must be provided with an indication of how financial support will be provided for subsequent years (normally up to two years for a Master's program and up to three to four years for the Doctorate).

International students are ineligible for need-based federal and state financial aid programs.

International applicants may not refer to assistantships and campus employment as a source of financial support since a student must be admitted to the Graduate School before being eligible for these scarce financial resources. Applicants unable to demonstrate that they possess adequate financial self-support for their graduate study, including health insurance, will not be admitted.

The *Certification of Finances* form is to be updated and resubmitted if there is a request for deferment of the original admission since financial institution statements will be outdated.

Immigration Documents

In order to obtain an F-1 student visa (for the purpose of pursuing full-time study), international applicants must complete Form I-20, issued by the UMES Office of Undergraduate Admissions. International applicants should not plan to leave their home country before obtaining an official offer of admission. International students already studying in the US, who wish to transfer to UMES, must provide copies of their I-20, I-94 and passport visa stamp to the Office of Undergraduate Admissions. The Department of Homeland Security is then requested to grant permission for the transfer. UMES handles only the F-1 student visa.

Reporting Upon Arrival

Every admitted international graduate student is expected to report to the campus International Student Advisor as soon as possible after arrival at UMES. The Advisor will inform the student about campus and community services and assistance, which are available to international students.

Records Maintenance and Disposition

All records, including academic records from other institutions, become part of the official file of the Graduate School and can neither be returned nor duplicated for any purpose. Students should maintain a copy of their official credentials for their personal use.

The official credentials and the applicants' data are retained for 18 months only and then destroyed in the following cases:

1. Applicants who do not register for courses in the term for which they were admitted and have not sought a deferment of the date of entrance.
2. Those whose applications have been disapproved.
3. Applicants who do not respond to the departmental graduate program and/or the Graduate School requests for additional information.
4. Those whose application folders remain incomplete, e.g., missing transcripts, recommendation letters, application forms, etc.

Fees and Other Expenses

Payment of Tuition and Other Fees

It is the policy of UMES not to defer tuition fee payment on the basis of a pending application for financial assistance to an outside agency, including Veterans Administration benefits, bank loans, guaranteed student loan programs, etc.

Students whose accounts are in arrears will experience delays and holds in registration and in admittance to classes. Students indebted to the University are likewise prevented from having degrees conferred or transcripts released until the total debt is cleared.

The State of Maryland has a State Central Collections Unit, and in accordance with State law, UMES is required to refer all delinquent accounts to that office for collection and subsequent legal action.

Withdrawal and Tuition Refund (Regular Semester/Session)

A Cancellation of Registration, submitted to the Undergraduate Admissions Office before the official first day of classes, entitles the student to a full credit or refund of semester/session tuition.

After classes begin, students who wish to terminate part or all of their registration must follow the drop class or withdrawal procedures of the Registrar and Academic Affairs. Students in the University System of Maryland intercampus enrollment must make certain they drop or withdraw at the host campus as well as at UMES. The effective date used in computing refunds is the date the drop and/or withdrawal form is filed.

Students dropping classes and/or withdrawing from the University during a semester will be credited for any allowable tuition charges, according to the following schedule:

Period from date instruction begins	Refundable Tuition only (not other fees)
Two weeks or less	80%
Between two and three weeks	60%
Between three and four weeks	40%
After four weeks	No Refund

(This schedule is subject to change)

University Refund Statement (Regular Semester/Session)

Tuition is authorized for refund, according to a refund time schedule (see above), only if the student cancels registration before classes begin, or drops classes after classes begin, completes the prescribed procedures for withdrawal from classes for the semester, or is dismissed. Note that all of these conditions to be eligible for a tuition refund must be acted on during the refund schedule period.

Weekend Programs

Weekend Programs follow a separate Graduate School policy for adding, dropping and withdrawing from classes and refund of tuition. Consult the program and the Graduate School.
Graduate Fees

The fees and charges listed herein are those charged at the time this Graduate School Catalog went to publication and are offered as a general guide. **THE UNIVERSITY RESERVES THE RIGHT TO MAKE SUCH CHANGES IN FEES AND OTHER CHARGES AS MAY BE NECESSARY.** The University's *Schedule of Fees & Expenses* is available on the UMES website at <http://www.umes.edu/About/Default.aspx?id=241>.

Application Fee

US\$45 for Master's & US\$50 for Doctoral.

A non-refundable Application Fee and a separate application must be submitted for each program or degree-level or status in which entrance is sought.

UMES will waive the Application Fee under the following circumstances:

1. The applicant had been admitted, and had previously taken graduate courses at UMES or at SU (see section on Collaborative Programs with Salisbury University); or
2. The applicant is a UMES senior or graduate with a cumulative grade point average of 3.5 or better; or
3. The applicant is a senior or a graduate of an accredited US college or university, with a cumulative grade point average of 3.75 or better (confirmed by transcript).
4. The applicant is a McNair student/Scholar (must be documented).

Graduate programs may require an acceptance fee, which is applied as a credit to tuition and other fees upon the student's initial enrollment in the degree program.

Tuition Per Credit Hour Fee: (subject to change)

Resident Student	US\$265.00
Non-Resident Student	US\$472.00

Students admitted to the UMES Graduate School must pay the graduate tuition regardless of whether a course is audited or the credit earned will be used to satisfy program requirements. Graduate students will be charged for tuition at the graduate rate regardless of the numbering system of courses for which they register.

Supplemental Fees (subject to change)

Registration Fee (campus) - Summer/Winter Session		\$5.00
Graduation Fee	Master's Degree	\$35.00
	Doctoral Degree	\$35.00
Student Activity Fee (on-campus)		\$30.00
Vehicle Registration/ Parking Fee		\$40.00
Late Registration Fee		\$25.00
Off-Campus/Continuing Education Registration Fee		\$25.00
Technology Fee		\$10.00

Determination of In-State Status for Admission, Tuition and Charge-Differential Purposes

An initial determination of Maryland residency status for admission, tuition and charge differential purposes will be made by UMES at the time a student's application for admission is under consideration. The determination made at that time, and any determination made thereafter, shall prevail in each semester/session until the determination is successfully petitioned and changed. A campus residency committee meets periodically to review petitions for reclassification to in-state status.

Persons who need assistance with the reclassification should contact the UMES Office of Undergraduate Admissions or the Graduate Studies office. The Board of Regents Residency Policy is on the Graduate School's webpage (www.umes.edu/Grad/Default.aspx?id=17650).

Financial Assistance

The University of Maryland Eastern Shore recognizes the high cost of education and makes every effort to offer financial assistance to qualified students through a variety of programs. Admission to a graduate program (e.g., Provisional or Regular student status) is a prerequisite for consideration of an award of a teaching, research or administrative assigned assistantship, a traineeship, a grant, loan or a work-study award. Some awards are made on the basis of the applicant's academic merit and/or financial need, others on the basis of skill qualifications and other criteria. Once awarded, the continuation of most financial assistance is dependent upon the student's continued enrollment each term for a specified number of credit hours and continued good academic standing, among other factors.

The Graduate Studies office processes applications for the Graduate Studies Grant Award (www.umes.edu/Education/Content.aspx?id=13366), the *Dr. Archie Buffkins Scholarship for Graduate Education* (www.umes.edu/Grad/Default.aspx?id=17616) and the *Connectiv Graduate Studies Endowed Scholarship* (www.umes.edu/Grad/Default.aspx?id=17620).

Individual faculty, the graduate programs and the academic departments recommend appointments for teaching and research assistantships. Some offices and departments may offer administrative-type assistantships. The graduate programs as well as academic departments and offices on campus should be consulted for available traineeships and part-time employment on sponsored grants and contracts.

The UMES Financial Aid Office (www.umes.edu/financialaid/Default.aspx?id=18726) determines eligibility for financial aid programs that are primarily based on "need." Full and many part-time graduate students are eligible to apply for the Federal Stafford Student Loans. The Financial Aid Office also administers the Federal Unsubsidized Stafford Loan Program, which is not based on need. Students must complete all the required forms for need-based aid or the unsubsidized Stafford loan program.

The Financial Aid application process takes approximately four (4) weeks to receive the student aid report and three (3) weeks for award notification. Students should submit the required documents by March 1st in order to receive priority in the awarding process for the upcoming award year.

International students are not eligible for most types of financial assistance.

Graduate Studies Grant Award

This grant is intended to promote diversity in the UMES graduate student population. The Scholarship is available for legal residents of Maryland whose have obtained regular admission and enrolled as full-time graduate students in a Master's or Doctoral degree program at the University. Applications and guidelines are available in the Graduate Studies office.

Fellowships and Traineeships

Some faculty may obtain federally sponsored fellowships and traineeships for underrepresented minorities in the sciences. They should be consulted on availability and

applicability of this funding. Another general option for graduate students is the Henson Fellows. Contact the Office of Undergraduate Admissions for information.

Assistantships

Recommendations for appointment of graduate teaching, research or administrative assistantships, which are made by the graduate programs, academic departments, campus offices or faculty, are contingent upon the applicant's acceptance and admission into a degree program. The number, level, and duration of assistantships vary by graduate program/department/office needs, enrollment, and the availability of institutional and sponsored funding. Applications for teaching and research assistantships will usually be made directly to the program/department in which the student is admitted. These Graduate Assistants are supervised and mentored at the department or program level. A smaller number of Assistantships (administrative assignment) may be available in selected campus offices. Information on campus policy and procedures concerning Graduate Assistants is found in the *Graduate Assistant Handbook* available on the Graduate Studies publications webpage at www.umes.edu/Grad/Default.aspx?id=17594. The Graduate Studies office releases annually the assistantship stipend amounts for each succeeding academic year.

Federal Loans

Perkins Loan Funds are available to graduate students after awards are made to undergraduate students. Loans are approved based upon financial need. Repayment begins six months after the borrower leaves school, and no interest is charged until the beginning of the repayment schedule. Repayment of the loan, including interest, is deferred during the time the borrower may be in military service, the Peace Corps, VISTA and ACTION, up to a period of three years, as well as during time of continued study on, at least, a half-time basis. For information and applications, contact the UMES Office of Financial Aid.

Federal Stafford Student Loans

Stafford Student Loan programs permit students to borrow money from their hometown banks or other local financial institutions. Graduate students in good standing may borrow up to \$12,500 per year. An origination fee will be deducted from the face value of each student's loan. New borrowers will borrow at a variable rate that will be determined each year by the federal government. Monthly repayments begin six months after graduation or withdrawal from school. The federal government will pay the interest for eligible students while the student is in school. Contact the UMES Financial Aid office for details.

Veterans Benefits

UMES is fully accredited for accepting Veteran students and assists them in their needs for certification. Credit is given for any work done in the military service related to their major field of study. The Certificate of Eligibility must be submitted to the Office of Undergraduate Admissions when the veteran reports for registration. Benefits to which the veteran is entitled will be sent monthly by the Veterans Administration and directly to the veteran after he/she has been properly certified. Each veteran is responsible for the payment of all fees and expenses at the same time as regular students. The Undergraduate Admissions Office coordinates veteran services. Veterans are advised to contact that office for further information on admissions, tutorials, and special programs.

REGISTRATION, CREDITS AND GRADES

Academic Schedule (Classes)

Information concerning graduate class offerings by department, per semester or session, registration procedures, deadlines and the Academic calendar is found on the Academic Affairs website at www.umes.edu/academic/.

Developing a Program of Study

Each graduate student is responsible for understanding and complying with the rules and procedures of the UMES Graduate School and all applicable departmental graduate program requirements which govern individual programs of study.

Course selection for newly-admitted graduate students, whether degree or non-degree seeking, begins with a contact with each student's assigned Academic Advisor, usually a graduate faculty member in the departmental graduate program to which the student has been admitted.

Non-degree seeking students may have a graduate faculty or program coordinator as their Advisor while they are in this status.

Degree seeking students will obtain information from their Advisors about specific degree or certificate requirements, recommendations on courses, etc.

Some graduate programs have handbooks, manuals, or websites which explain degree program requirements, department resources and forms used in evaluating student progress to degree, applying for internships, etc.

Each degree-seeking student will develop with their Academic Advisor their program of study and timetable for completion.

Academic Advisor

Upon admission to the Graduate School, students are assigned an Academic Advisor. This person will be responsible for advising on all aspects of the student's progress throughout the program. Any request for a change of advisor must be submitted to and be approved by the Program Director.

In certain situations, a student may want a second Academic Advisor. This might happen if, for instance, the professor most familiar with the student's work will have only an Associate Graduate Faculty status. In this case, it is possible to set up a Co-Advisor team of two professors who jointly serve in the role of Advisor (the other having Regular Graduate Faculty status).

Exceptions, Waivers, Appeals, Grievances

While most questions and issues normally raised and met by graduate students will be answered or resolved by the faculty advisor or a departmental committee, the Graduate School is also charged with assisting graduate students who need additional information, guidance or follow-up assistance. Requests or petitions for exceptions or waivers of Graduate

School regulations or of graduate degree requirements, or appeals and grievances, with supporting materials, should be directed to the Graduate School for review and determination of applicable policy, procedure or process for the handling of the exception/waiver, appeal or grievance.

Course Numbering System

Number	Course Designations
000-009	Non-Credit Courses
100-199	Primarily First-year undergraduate courses
200-299	Primarily Sophomore undergraduate courses
300-399	Junior and Senior courses not acceptable for credit toward graduate degrees
400-499	Junior and Senior courses acceptable for credit toward some graduate degrees
500-599	Professional School courses (Dentistry, Law and Medicine) and post-baccalaureate courses not for graduate degree credit. An exception is the joint UMES/SU Master of Arts in Teaching program.
600-898	Courses restricted to graduate students. Under certain conditions, seniors may take 600 lower level courses with prior approval.
799	Master's thesis credit
899	Doctoral dissertation credit

The first character of the numeric position determines the level of the course and the last two digits are used for course identification.

Courses ending with an 8 or 9 are courses that are repeatable for credit.

All non-repeatable courses end in 0 through 7.

Designation of Full and Part-Time Graduate Students

In order to accurately reflect both involvement of graduate students in their programs of study/research and use of University resources in these programs, the UMES Graduate School employs graduate units. These graduate units, in turn, are utilized in making calculations to determine full- or part-time student status in the administration of minimum registration requirements described below, and in responding to student requests for certification of full-time student status.

The number of graduate units, per semester credit hour, is calculated in the following manner:

Courses in the series:	000-399 carry 2 units/credit hour.
Courses in the series:	400-499 carry 4 units/credit hour.
Courses in the series:	500-599 carry 5 units/credit hour.
Courses in the series:	600-898 carry 6 units/credit hour.
Research course:	799 carries 12 units/credit hour.
Research course:	899 carries 12 units/credit hour.

To be certified as a full-time graduate student, an individual must be officially registered for a combination of courses equivalent to 48 units per semester.

Graduate Assistants, holding full-time appointments, are full-time students if they are registered for at least 24 units, in addition to their Assistantship.

Courses taken for Audit do not generate graduate units and cannot be used in calculating full- or part-time status.

UMES reserves the right to alter this system.

Continuous Enrollment

Graduate programs may require a continuous enrollment for admitted students into the program during each semester of the academic year and summer session until the student completes the degree requirements. The number of credit hours required per registration each semester or session may vary according to the course credit offerings and degree requirements of the program. In extenuating circumstances, students may petition for an official leave of absence from the program for up to one academic year (two semesters).

Minimum Registration Requirements

All graduate students, at any level of study and research, making any demand upon academic or support services of the university – whether taking courses, using UMES facilities (e.g., library, laboratories, computers, office space, housing, etc.), consulting with faculty advisors, taking comprehensive examinations and oral defenses, etc. – must register for the number of graduate units which will, in a faculty advisor's judgment, accurately reflect a student's involvement with graduate study and use of university resources. In no case will registration be for less than one credit. Minimum registration may also be needed to comply with requirements for financial aid and deferments, visa status, campus housing, health and car insurance, etc.

Minimum Registration Requirements for Doctoral Candidates

Doctoral students who have been advanced to candidacy must register each semester (see above section), until their degree is awarded. If the degree program is an accelerated one, the Summer session is also a semester.

Dissertation Research

Those who have not completed the required number of credit hours of Dissertation Research (899) must register for a minimum of one credit of dissertation research each semester. Doctoral candidates whose demands upon the University are greater than that represented by a minimum registration, will be expected to register for the number of graduate credits which reflect their use of UMES resources.

Inter-Campus Enrollment (USM)

A student admitted to a Graduate School on any campus of the University System of Maryland (USM), is eligible to take courses on any other USM campus with approval of both the Academic Advisor and administrators on the home as well as host campuses. Credits earned on a host campus are considered resident credits at the home campus in meeting degree requirements. Transcripts of work taken at another campus will be maintained on the home campus, and fees will be paid to the home campus.

Forms for registration as an intercampus student may be obtained from the Registrar or Graduate School offices on any USM campus. Terms and conditions of USM intercampus enrollment are given on the reverse side of the USM form. Students are responsible to notify both the home and the host campus of intended changes in registration (add/drop, withdrawal, etc.) to avoid incorrect billings.

Inter-campus students anticipating enrollment in courses at UMES should have their forms received by the UMES Graduate School no later than ten (10) school days prior to the registration date set for each semester/session. The Inter-campus enrollment process may not be acceptable to all USM campuses during the Winter or Summer sessions as these sessions are self-supporting.

The UMES Policy on Graduate Student Concurrent Inter-Institutional Registration (1992) and the Board of Regents Policy Statement on the subject (1991) shall govern procedures and arrangements.

For more information, go to www.umes.edu/Registrar/Content.aspx?id=2514.

Graduate Credit for Senior Undergraduates

A senior in the final semester at UMES, who is within six credit hours of completing all requirements for an undergraduate degree, has a 3.0 cumulative GPA and has completed any graduate course prerequisite with a grade of 'B', may, with approval of both the department/program offering the course (e.g., instructor, chair) and the Graduate School, register for a 600 level or below graduate course. The course(s) may later be counted for graduate credit toward an advanced degree at UMES if the student has been granted admission to the UMES Graduate School within an academic year of completing the course, and subject to the admitted program's approval in the student's plan of study.

The student's total of undergraduate and graduate courses must not exceed 15 credit hours for the semester and 6 credit hours for the Summer Session. Excess credits in the senior year cannot be used for graduate credit unless proper pre-arrangement is made. Seniors who wish to register for graduate credit should contact the UMES Graduate School for the form to be completed.

The maximum number of graduate credits that can be earned under this mechanism will be six. The credits earned can be used only once, either for the undergraduate degree or toward an advanced degree at UMES. Seniors who wish to take a graduate course for undergraduate credit should consult the subsection below.

Undergraduate Credit for Graduate Level Courses

Subject to requirements and prior approval of the graduate program offering the course, undergraduate students may register for 600 level or below graduate level courses to receive undergraduate credit.

A student seeking to use this option must be in the senior year at UMES, should have earned an accumulated grade point average of 3.0, have successfully completed with a grade of "B" or better any graduate course prerequisite, and be a major in the appropriate or a closely-related department.

Enrollment in a graduate level course for undergraduate credit does not, in any way, imply subsequent departmental or UMES Graduate School approval for admission into a graduate program, nor may the course(s) be used as credit for a graduate degree within the University System of Maryland.

Credit by Examination (Graduate and Undergraduate)

A graduate student may obtain graduate credit by examination in courses (at the 400 or 500 level) previously identified for such credit by the appropriate department/program. As a general rule, credit by examination is not available for courses at the 600, 700 or 800 levels. In the judgment of the UMES Graduate Council, courses at these levels require a continuing interaction between faculty and student to achieve the educational goals of advanced study.

Students may receive graduate credit by examination only for courses for which they are otherwise eligible to receive graduate credit. The department or program in which the student is enrolled, may establish a limit on the number of graduate credits earned in this manner. Graduate students seeking credit by examination for graduate credit or for prerequisite undergraduate courses (100-300 series), must obtain the consent of their Advisor, the instructor currently responsible for the course, and the Graduate School. Once each student begins the examination, the grade earned will be recorded. The fee for credit by examination is set per course regardless of the number of credits or units to be earned (subject to change). The Credit by Examination form is available in the Registrar's office.

Transfer of Credit

A maximum of six semester hours of graduate level course credits, earned at regionally-accredited institutions (see definition, above under *Criteria for Admission* - Pg 12) prior to, or after admission and enrollment at UMES, may be applied toward Master's degree programs. Proportionately, larger amounts of credit may be applied toward Doctoral degrees. See the section on *Inter-Campus Enrollment (USM)* for treatment of course credits within the University System of Maryland campuses.

Credit from foreign universities will be evaluated, but, because of academic and procedural differences between foreign and US regionally accredited institutions, may not in every case be acceptable for transfer on a *quid pro quo* basis.

All graduate study credits offered as transfer credit must meet the following criteria:

1. They must have received graduate credit at the institution where earned.
2. They must not have been used to meet the requirements for any degree previously earned.
3. They must have been taken typically within the time limits applicable to expected degree completion at UMES (e.g., up to five years prior to the Master's program admission, up to nine years prior to the Doctoral program admission but subject to criterion D below).
4. The department or program to which the student has been admitted at UMES must certify that the courses are appropriate and current to the degree program the student is pursuing at UMES.
5. The student must have earned a grade of "B" or better in the courses offered for transfer credit.

A student-seeking acceptance of transfer credit is advised to submit the necessary transcripts and certification of UMES department/program approval to the UMES Graduate School as promptly as possible, for its review and processing.

Transfer grades earned at other than University System of Maryland campuses are not factored into the computation of cumulative grade point averages at UMES.

Criteria that Courses Must Meet to be Accepted for Graduate Credit (the Winter Session)

Any course(s), workshop or seminar(s), planned to take place in a span of time less than a normal academic semester or a winter/summer session, and offering graduate credit to participants, must meet the following criteria:

1. There must be 15 "contact hours" per graduate credit.
 - a. Lectures: 1 contact hour per 50 minutes lecture.
 - b. Non-lecture (laboratory, workshops, discussion and problem working sessions, etc.): One contact hour per 2 or 3 hour sessions.
2. Ordinarily, no more than three "contact hours" per day will be permitted. Three "contact hours" are equivalent to 0.2 credits. Exceptions, such as intensive all day sessions, require the prior approval of the Graduate School.

During the short winter session, lecture, non-lecture and research credit courses are limited to a maximum two hours of credit without prior approval. The MAT program is excepted. All students, regardless of program, may not take more than one course during this period.

Course and Credit Changes

A graduate student may change elections (i.e., drop or add a course, change between audit and credit status, change number of credits for a variable credit course within the listed range, cancel registration or withdraw for the semester/session) by obtaining the appropriate approvals and observing published deadlines and procedures of the applicable offices of the Registrar or Academic Affairs, and if the course/credits set up allows the change.

Procedures for Withdrawal from the Graduate School/Program

Graduate students wishing to withdraw from a program may do so at any time.

The procedure for withdrawal is to submit a letter of the withdrawal to the program coordinator and the Graduate School. The letter will be reviewed and processed, and the necessary offices notified of the action. The requested date of resignation will be used as the effective date of withdrawal.

Although students may withdraw during the course of a given semester/session, they remain liable for all fees and other obligations due UMES, and their academic records will reflect their standing at the time of withdrawal. Program withdrawal terminates a student's admission. The act of withdrawal from a program prohibits readmission to the same program to complete it, should the student wish to return to graduate study at a later time.

Refer to the Graduate School definition and process of readmission by going to www.umes.edu/Grad/Default.aspx?id=22720.

Procedure for Canceling Registration (Withdrawal) for a Semester/Session

To cancel a registration for a given semester/session the Office of Undergraduate Admissions Application for Withdrawal form is used.

The canceling of registration is treated by that office as a withdrawal from the University for the semester or session.

Cancellation of one's classes during the course of a semester/session is not meant to be used as a means of avoiding poor grades.

Minimum GPA/Grades for Graduate Students

A minimum grade point average of 3.0, or "B," on all 400 and above level courses taken for graduate credit in the student's approved program of study is required to receive the degree.

Graduate students are required to meet graduate program retention and exit requirements for acceptable grades in order to continue in the program and to receive the degree.

A grade of "D" is not acceptable for a graduate core or required course or an elective course to be used to satisfy graduate program requirements for a degree.

Policy on Incomplete Grades

The following policy on In-complete ('I') grades pertains to regular courses, not to the variable research credit courses available for the different Master's programs (thesis, project, etc.) and the Doctoral dissertation.

The grade of 'I' (Incomplete) is to be given only to a graduate student whose work in a course(s) has been qualitatively satisfactory, and when because of illness, or other circumstances beyond his/her control, the graduate student has been unable to complete the stated requirements of the courses(s).

In no case will the grade of 'I' be recorded for a graduate student who:

1. has not completed satisfactorily the major portion of the coursework; and/or
2. wishes to improve his/her grade by additional course work not offered to all students enrolled in the course.

In cases where an 'I' grade is issued, the graduate student may not re-register for the course(s) until the 'I' is removed by completing work outstanding and meeting all course requirements.

Work must be completed by the end of one year, or the 'I' becomes 'W' (Withdrawal).

Before the end of the one year period, a student upon written petition to the Graduate School may request on extension of time if circumstances warrant further delay.

An 'I' cannot be removed by earning credit by examination.

When the graduate student receives the terminal grade, he/she may repeat the course as provided for any course where repeats are authorized.

Accelerated or intensive weekend graduate programs, because of the accelerated process of coursework and other degree requirements to meet a degree program completion within an abbreviated time frame (e.g., three years), have the option of using a six-months time frame to facilitate the removal of incomplete grades in a timely manner.

Grading Systems

The conventional 'A' through 'F' grading system is used in graduate level courses.

A 'Satisfactory' or 'Unsatisfactory' (S/U) grading system may be used, at the discretion of the department or program, for certain types of graduate study. These include courses which require independent work. Master's project and research projects may also be appropriate for such S/U grading systems.

Thesis and dissertation research use the S/U grading system (see the subsection below).

Courses labeled 'Topics', 'Special Problems', 'Seminar', 'Clinical', 'Practicum', or 'Internship' may use either the 'A'-'F' or 'S/U' grading system.

Only one grading system will normally be used for a single course in a particular semester/session. The grading system will be designated in the course database by the department or program offering the course (excluding courses already specified for only one grading system).

Grading System for Research Credit Courses

A grade of S/U should be used instead of an 'I' grade for 799, 899 and similar research credit courses (500 to 798 series) which are offered/carried over or continued over semesters or sessions, usually with variable credit hours, and whose objective is the long-term development of a thesis, dissertation, Master's project, or research project. In these instances a 'Satisfactory' ('S' grade) completion of the required research credit hours satisfies only part of the graduation requirements.

A successful thesis or dissertation defense and final approved copy of the thesis or dissertation are essential for the degree programs with the thesis option and the dissertation requirement.

A final written document and an oral presentation, both acceptable to the student's Advisor/Advisory Committee, are normally the requirements for Master's projects and research projects.

Computation of Grade Point Average (GPA)

An 'A' is calculated at 4 quality points, 'B' at 3 quality points and 'C' at 2 quality points. The grades of 'D', 'F' and 'I' receive no quality points. Courses taken with 'A' to 'F' letter grades will be used in calculating the Grade Point Average.

Students may request that prerequisite undergraduate course grades be excluded from being computed in the cumulative GPA of their graduate record.

Grade Change, Repeating of Courses, Arbitrary and Capricious Grading

A student may repeat any course where repeats are authorized, in an effort to earn a better grade. The later grade, whether higher or lower, will be used in computing the GPA. While matriculated at UMES, a graduate student who earns a grade of 'F' or 'D' in residence may not advance his/her credit hours earned toward a UMES degree by repeating the course at another institution.

Grades for graduate students remain part of each student's permanent record. In addition to the repeating of courses, grades may be changed only by the original instructor on the supplementary grade report form and approved by both the department Chair and the Dean. Changes may be made only in circumstances in which an actual mistake was made in determining or recording the grade, to record a missing grade from the official grade roster or transcript, or to remove an incomplete grade.

A grade of 'W' recorded on the transcript does not qualify for the change of grade process.

Allowable grade changes other than an 'I' (Incomplete) grade must be received in the Registrar's Office in the specified 60 calendar day period (see Registrar Office policy for specifics - www.umes.edu/Registrar/Content.aspx?id=3340).

The UMES procedures for Review of Alleged Arbitrary and Capricious Grading (1992) address and cover both graduate and undergraduate students and will be used.

Where a faculty composition or venue are not workable, the Graduate School may appoint a required tenured professor(s) from the graduate faculty at-large to hear the case, which also may be heard outside the unit offering the course(s) in dispute.

Auditing of Graduate Courses

A graduate student, regardless of program or status, may audit a graduate course with the written permission of the course instructor and the student's Advisor and subject to certain restrictions.

Courses which may not be audited are

1. Internships
2. Research credit courses such as 799 thesis and 899 dissertation, the 699/798 Master's projects, and any other program's research-designated courses.
3. Any graduate course in the graduate program with restricted enrollment such as Physical Therapy, the Master of Arts in Teaching and intensive weekend programs.

Audited courses will appear on the student's academic record as 'AU' and may not be used to repeat a course for which credit has been previously earned.

Audited courses do not earn credit, nor count as part of the credit hour load, nor may be applied toward the requirements of a graduate degree. The regular tuition rate applies to audited courses. Once a course has been audited, it cannot be converted to credit, except as below.

If students later find that an audited course they took is/will be a required course for the degree program in which they are matriculated, they must file a *Petition for Waiver of Regulation* to be considered to repeat the course for credit.

Prerequisite Courses

Prerequisite courses (e.g., 100 to 400 numbered undergraduate and selected 500 or 600 numbered graduate) may be required to satisfy conditions of provisional admission status or for preparation and understanding of advanced graduate level courses (500 or 600 and above numbering sequence). Prerequisite courses may be satisfied before or after enrollment in the

University of Maryland Eastern Shore, but if after enrollment, must be completed within the first academic year of admittance.

Prerequisite courses provide no graduate credit (if undergraduate numbered) and do not count toward the course credits required to graduate from a graduate degree program at UMES.

Prerequisite undergraduate courses may be satisfied by credit by examination at UMES if the graduate program allows it (see *Credit by Examination* subsection – Pg 31).

Graduate students satisfying undergraduate numbered prerequisite courses must earn a letter grade of 'C' or better in the course unless a graduate program/department stipulates a higher grade. A Pass/Fail option may not be used to satisfy prerequisite courses taken at UMES.

Experimental Courses

Students should confirm whether experimental courses may be elective courses for them or possible interim substitute core courses with the approval of the Advisor and Advisory Committee as appropriate.

Undergraduate and Graduate Combined Instruction

In 400 or 400/600 level courses approved to be applied toward a graduate degree program, which is combined undergraduate and graduate instruction, requirements for work expected in the course for graduate students will be specified to reflect the level of complexity and specialization expected of graduate study.

The Academic Record (Transcript)

A graduate student's academic record (transcript) is intended to serve as a complete history of that student's academic progress at UMES. As such, it cannot be altered except in conformance with stated UMES Registrar and Graduate School policies (see *Grade Change* section).

Under no circumstances will the academic records be altered because of dissatisfaction with a grade (original or repeated) or other academic accomplishment.

DEGREE REQUIREMENTS

Graduate School Requirements Applicable to all Master's Degree Programs

The entire course of study undertaken for any Master's degree must constitute a unified and coherent program, which is approved by the student's Advisor and, for some programs, the program coordinator in the department.

A minimum of 30 semester hours, in courses acceptable for credit towards a graduate degree, is required. In certain cases, six of the 30 semester hours must be thesis research credits. The graduate program must include at least 12 hours of course work at the 600 level or higher.

If the student is inadequately prepared for the required graduate courses, additional courses may be required, which may not be considered as part of the student's overall program of study for the degree.

Credits to be applied to a student's program for a Master's degree at UMES cannot have been used to satisfy any other previously earned Master's degree.

Grade Point Average (GPA)

The student seeking any Master's degree must maintain a GPA of 3.0 ("B" average) over all courses taken for graduate credit.

Time Limitation

All requirements for the Master's degree must be completed within a five-year period. This time limit also applies to any transfer work from other institutions to be included in a student's overall program of study.

Leave of Absence; Extension of Time Limitation Period

In cases of unusual and/or compelling circumstances, a leave of absence for up to one academic year (two semesters) may be granted to a matriculated graduate student by the Graduate Studies Dean, at the recommendation of the Academic Advisor and the Graduate Program Coordinator.

An approved leave of absence will stop the five-year time clock for Master's students to complete their degree program (nine years for Doctoral students).

In cases of unusual and/or compelling circumstances, an extension of the time limitation period for the degree may be considered for a matriculated graduate student. If granted, the extension will normally be for no more than one academic year (two semesters). The extension is granted by the Graduate Studies Dean on the recommendation of the Academic Advisor and the Graduate Program Coordinator.

Under both circumstances, the Graduate School's *Petition for Waiver of a Regulation* (www.umes.edu/Grad/Default.aspx?id=17612) form should be completed.

Minimum Residence Requirements; Continuous Enrollment

A minimum residence for a degree program is one calendar year of full-time equivalent study (18 credit hours) taken on campus or at an off-campus site where the UMES program is offered. Full-time students may satisfy this requirement in one year; part-time students in two years after enrollment.

The graduate programs may require a continuous enrollment for admitted students into the program during each semester of the academic year and/or session until the student completes the degree requirements. The number of credit hours required per registration each semester or session may vary according to the course credit offerings and degree requirements of the program.

Comprehensive Examinations (applicable to all Master's and Doctoral Programs)

Graduate Programs have the option of holding qualifying examinations before students complete the thesis, non-thesis option, dissertation or Doctoral research project. These examinations are often termed 'comprehensive examinations', and are usually composed of a written and oral segment.

Comprehensive examinations are usually given after a student has satisfactorily completed the coursework in a program. The examinations test a student's understanding of, and ability to integrate knowledge in his/her program of study. Because graduate programs vary in format, the nature and content of comprehensive examinations, if given, will vary by program.

The Graduate School's minimum format for conducting comprehensive examinations, whether taken individually or a group is:

- a. Graduate program coordinators will have questions for comprehensive examinations from the faculty reflecting the curriculum and/or student's program of study.
- b. Students must apply to the program to take the comprehensive examination(s) and be found eligible to do so.
- c. Comprehensive examinations are scheduled to be taken in a time block (a set-time period, e.g., 6-8 hours duration).
- d. Students taking comprehensive examinations are notified in advance of the examination date, location and time, and provided with information on proposed types of examination questions or categories of testable information (samples may be on file in the program).
- e. The written examination normally precedes an oral examination (if required), which is likewise to be scheduled shortly after the written examination and in a specified time duration.
- f. Written comprehensive examinations taken as a group must be monitored.
- g. Written comprehensive examination must be graded within a specified time period (e.g., within 60 days), so the oral examination may be scheduled.

- h. The written examination must be passed before taking the oral examination (if the latter is required).
- i. The graduate programs determine the grading and voting policy for pass/fail on the examination, which are stated in their procedures' guidelines for the comprehensive examinations.
- j. Students and the Graduate School are notified of the comprehensive examination results, written and oral, and, in the case of *'failure'*, the deficiencies in performance, specified in detail, that led to *'failure'*.
- k. Unethical actions in the written comprehensive examination will invoke action under the campus' academic honesty policy.
- l. Comprehensive examination(s) may be retaken only once in the event the student fails the initial examination in whole or part (written and/or oral). The second examination should be given no earlier than four months after the first examination and no later than one calendar year from the date of the initial examination. If the student fails the second time, the admission status is terminated.

In the program's section of the Graduate School Catalog or separate program handbook or procedures' guidelines, students will find the particulars of the comprehensive examination process for their program. Graduate programs may set more stringent requirements than the minimum set by the Graduate School.

Internships and Practicums

Internships and/or practicums may be required or optional for a program. Students may elect an internship for practical work experience/training prior to completing the thesis/non-thesis option of a program, usually after all coursework has been completed. Students may need and elect an internship as the preparation to seek initial, entry-level certification in a profession.

Practicums may be identified as clinical or workplace and occupation based.

If a program requires an internship or practicum as part of the curriculum and degree completion, the program must assist the student in arranging an internship or practicum appropriate to the program; specify the time period, the purpose and desired outcome(s) of the internship or practicum; arrange for the supervision and grading of the internship or practicum; and set the format for approval of the internship or practicum (e.g., any proposal to initiate and any final product such as a scholarly paper or reports).

Subject to program approval, an internship or practicum may be repeated once.

Scholarly Products

For non-thesis option, graduate programs and professional Doctorates scholarly products may consist of a major seminar or research paper, a major or extensive research project, a Master's project and a creative component paper. The graduate programs may set the format for the scholarly products of non-thesis option programs and professional Doctorates, any of which products may also be accompanied by an oral presentation in addition to a written version.

Theses and dissertations are scholarly products for thesis-required Master's program and Ph.D. and Ed.D. programs respectively.

Scholarly products for required internships may consist of a culminating paper or series of reports, oral presentations or some combination thereof as determined by the program to measure the student's progress and outcome.

The Graduate School receives a copy of scholarly products for assessment of student learning and quality of research or scholarship. The Graduate Studies Dean approves the final official thesis or dissertation to be bound for the library's collection

Co-Advisement of Student's Thesis

A Master's student may be equally and jointly advised by two graduate faculty members. The faculty members may be Associates or regular members of the UMES Graduate Faculty. For the Marine-Estuarine-Environmental Sciences program and the graduate programs in Agriculture, graduate faculty at other USM campuses and specialists at other institutions may also be used. These individuals acquire a special membership on the UMES Graduate Faculty or will have a USM Inter-Institutional (IIGF) Graduate Faculty Membership.

Participation in Commencement

All requirements for graduation must be completed before the graduate student is allowed to participate in Commencement exercises. To be eligible, graduate students must have:

1. Abided by the dates set forth in the Graduate School's announcement on semester deadlines for graduation and marching in Commencement, pertaining to completion of, as applicable, comprehensive examinations, seminar or research papers, Master's thesis and oral presentations or dissertations and defenses. In the case of a thesis or dissertation, the student must have submitted copies acceptable to the Graduate School for binding.
2. Satisfactorily completed any other particular requirements of the graduate degree which they are seeking.
3. Processed on their behalf the Graduate School's "*Certification of Completion of Master's Degree*" (or Doctoral Degree) form by the designated signatories.
(<http://www.umes.edu/assets/0/232/1278/3114/eefdf6a-77bc-4d6e-aaa4-ecaa23be3205.pdf>).

Outstanding financial obligations must also have been satisfied.

Additional Requirements

In addition to the preceding requirements, special requirements of the different graduate programs may be imposed. For these special requirements, consult the specific graduate program listings in this Catalog.

Graduate School Requirements for the Degrees of Master of Arts and Master of Science.

Thesis Option

Course Requirements

1. A minimum of 30 semester hours, including six hours of thesis research credit (799), is required for the degrees of Master of Arts and Master of Science.
2. Of the 24 hours required in graduate courses, no less than 12 must be earned in the major subject.
3. No less than one-half of the total required course credits for the degree, or a minimum of 12, must be selected from courses numbered 600 or above.
4. Degree programs may stipulate course credit hours beyond the minimum.

Thesis Requirement

1. A thesis must be submitted for the Master of Arts and Master of Science degrees, except for those programs in which a non-thesis option has been approved by the Graduate School, in conformity with the policy of the UMES Graduate Council.
2. Approval of the thesis is a responsibility of an Examining Committee appointed by the Graduate Studies Dean, on the recommendation of a student's Advisor. The Advisor is the Chairperson of the Committee, and the remaining members of the Committee are members of the Graduate Faculty who are familiar with the student's program of study and research.
3. A replacement Committee member must be approved by the Graduate Studies Dean.

Directions for the preparation and submission of thesis can be found in the "*Guide to the Preparation of Theses and Dissertations*" available at the Graduate School's webpage at www.umes.edu/Grad/Default.aspx?id=17594.

Research Assurances

All faculty and student research and scholarly activities conducted at UMES, including student seminar or research papers, Master's and research projects and thesis and dissertation research, and whether primary or secondary-derived research, must be conducted in accordance with Board of Regents, USM, state and federal policies.

For research involving animals, human subjects, or materials that may pose biological or chemical hazards, graduate students should seek information and guidance from the Office of Sponsored Programs.

UMES has established Internal Review Boards which meet periodically to review the aforementioned types of research protocols for compliance with established standards and regulations, including those established by Federal agencies (e.g., FDA, USDA, NIH).

Graduate students may seek guidance from the Graduate Studies Dean and the Director of the Sponsored Programs Office about scholarly misconduct policies and issues, which include plagiarism, improper credit citations, falsification or manipulation of a study, sources and

data, intellectual property (copyright/patent) policy, among others. Scholarly misconduct violations are handled under the University's *Policy on Academic Honesty and Integrity* (PDF available at www.umes.edu/cms300uploadedFiles/Academic%20Honesty%20Statement%20A.pdf).

Oral Examination

See later section on *Established Procedures for Conduct of the Master's Thesis Examination* (Pg 47) for specifics.

Upon written approval of the Graduate Studies Dean, a graduate student in otherwise good standing, but lacking a maximum of two courses toward completely fulfilling the Master's course requirements, may be allowed to undergo the oral examination, only if the student will complete the outstanding courses in the same semester in which the oral examination is given.

The duration of the examination is normally about an hour, but may be longer, if necessary, to insure an adequate examination.

Non-Thesis Option

The requirements for Master of Arts and Master of Science degrees without thesis vary among the graduate programs in which this option is available. Standards for admission are identical with those for admission to any other Master's programs. The quality of work expected of each student is also identical to that expected in the thesis program.

The general requirements for those on the non-thesis program are:

1. A minimum of 30 semester credit hours in courses approved for graduate credit with a minimum average grade of "B" in all course work taken.
2. A minimum of 18 semester credit hours in courses numbered 600 or above. In most cases, the submission of a major research project or seminar paper.
3. Successful completion of a comprehensive final examination, written or oral, or an oral defense.
4. Practicums/internships, if required.

Graduate School Requirements for the Degree of Master of Arts in Teaching

The Master of Arts in Teaching (MAT) degree requirements include:

1. A minimum of 39 credit hours of coursework with an overall grade point average of 3.0 or higher.
2. Successful completion of a written and/or oral comprehensive examination, a seminar paper and internship.
3. Adherence to the Research Assurances section of the Graduate School Catalog as applicable.

Graduate School Requirements for the Degree of Master of Education

The Master of Education (M.Ed.) degree requirements include:

1. A minimum of 30 credit hours in course work with a grade point average of 3.0 ("B") or better, usually exclusive of internships and practicums. Grades for courses not a part of the program, but taken in graduate status, will be computed in the average.
2. A minimum of 15-18 credit hours in courses numbered 600 to 800 series, with usually no more than 12 credit hours in the 400 series.
3. A successful completion of a written and/or oral comprehensive examination, a seminar paper by the end of the coursework and practicum and/or internship if required.
4. Adherence to the Research Assurances section of the Graduate School Catalog as applicable.

Graduate School Requirements Applicable to the Doctor of Philosophy (Ph.D.) and Doctor of Education (Ed.D.) degrees

Credit Requirements

The UMES Graduate School requires that every student seeking the Ph.D. or Ed.D. degree, register for a minimum of 12 research credits. The number of research and other credit hours required in the individual degree programs varies according to the program.

Residence Requirements

The equivalent of a minimum two years of full-time coursework and completion of comprehensive examinations typically meets the residence requirements, whether taken on campus or at an off-campus site where the UMES degree program is offered.

Coursework taken at other institutions, offered in partial fulfillment of the requirements for the Ph.D. or Ed.D. degree at UMES, must be submitted, with the recommendation of the UMES graduate program concerned, to the UMES Graduate School for approval within the first year of enrollment.

Official transcripts of the work must be filed in the UMES Graduate School.

Doctoral programs which are full-time, continuous enrollment of at least nine credit hours per semester and summer session and which follow an accelerated, intensive course scheduling format, meet the minimum residence requirement.

Admission to Candidacy

Preliminary or comprehensive examinations (or other such substantial tests as the programs may elect), internships and defense of the dissertation proposal, are typically prerequisites for admission to candidacy. The policy governing the number of times such examinations, internships or proposal defenses may be taken and the outcome for failure to pass them, is found in the subsections on *Comprehensive Examinations* (Pg 38) and *Internships* (pg 39) in the *Graduate School Requirements Applicable to All Master's Degree Programs* section.

A student must be admitted to candidacy for the Doctorate within five-years after admission to the Ph.D. or Ed.D. program. It is the responsibility of each student to submit an application for admission to candidacy when all the requirements for candidacy have been fulfilled, including regular admission status. The application form is submitted to the program/department for action and forwarding to the UMES Graduate School. The application form is available on the Graduate School website at <http://www.umes.edu/Grad/Default.aspx?id=17612>.

The timeline for *Admission to Candidacy* for Doctoral programs designed as full-time, continuous enrollment programs per semester/session and with an accelerated course scheduling format will typically be within the third year of the program to follow a three-year expected program completion. Students who fall out of the continuous enrollment pattern follow the above five-year rule for admission to candidacy.

Time Limitation

The student must complete the entire program for the degree, including the dissertation and final defense, during a four-year period after admission to candidacy. Extensions of time are granted only under the most unusual circumstances.

If students fail to complete all requirements within the time allotted and are in good academic standing, they must submit another application for admission to the UMES Graduate School and, if readmitted, another application for *Admission to Candidacy*, after satisfying any program admission pre-requisites prior to the *Admission to Candidacy*.

For leaves of absence, Ph.D. or Ed.D. students follow the same policy as for Master's students (see *Leave of Absence* subsection under *Graduate School Requirements Applicable to all Master's Degree Programs*).

The time limit for required full-time, continuous enrollment programs per semester and session, with an accelerated course scheduling format and with a three-year expected program completion design is three years from initial enrollment.

Students in this type of program who take leave or need to extend the time to complete degree program requirements may have the maximum time allotment as other Doctoral programs. Students who take leaves and time extension may be subject to changed curriculum and other requirements implemented during their absence.

Internship

For programs which require an internship, see the subsection on *Internships* (Pg 39) in the *Graduate School Requirements Applicable to All Master's Degree Programs*.

Dissertation

The ability to undertake independent research and provide sufficient evidence of scholarship is demonstrated by submission of an original dissertation, required of all candidates for a Ph.D. or Ed.D. degree. The topic of the dissertation must be approved by the candidate's program committee.

The subsection on *Research Assurances* listed under the *Graduate School Requirements for the Master of Arts/Science Thesis Option*, is applicable to dissertation research. Candidates are advised to check whether their proposed research will be subject to a prior approval process by a UMES Internal Review Board.

Approval of the dissertation is a responsibility of an Examining Committee appointed by the Graduate Studies Dean, on the recommendation of a student's Advisor and student input. The Advisor is the Chairperson of the Committee, and the remaining members of the Committee are members of the Graduate Faculty who are familiar with the student's program of study and research. A replacement Committee member must be approved by the Graduate Studies Dean.

During preparation of the dissertation, all candidates for the Ph.D. or Ed.D. degree must register for the prescribed number of semester hours of Doctoral Dissertation Research (899) at UMES. A minimum of 12 semester hours of 899 credits is required.

Directions for the preparation and submission of dissertations can be found in the *Guide to the Preparation of Theses and Dissertations* available for download on the Graduate School website at www.umes.edu/Grad/Default.aspx?id=17612.

Co-Advisement of Student's Dissertation

A Doctoral student may be equally and jointly advised by two Graduate Faculty members. The faculty members must be regular members of the UMES Graduate Faculty (the exceptions are the Marine- Estuarine-Environmental Sciences (MEES) program and the accelerated weekend Doctoral programs).

For the accelerated weekend Doctoral programs, the Graduate Studies Dean's representative (see section below) may also serve as a co-advisor of the student's dissertation.

For the MEES and weekend Doctoral programs, faculty at USM campuses and other universities, and specialists and practitioners at other institutions may also be used. These individuals acquire a special membership on the UMES Graduate Faculty or will have a USM Inter-Institutional Graduate Faculty Membership.

Publication of the Dissertation

If a student wishes to publish all, or a portion, of the dissertation prior to its defense and approval by the UMES Dissertation Examining Committee, he/she must first seek the approval of the Graduate Studies Dean by submitting a letter endorsed by the dissertation advisor, which presents the case for early publication.

Final Defense

The final oral defense of the dissertation is a requirement in partial fulfillment of the Ph.D. or Ed.D. degree.

One or more members of the Dissertation Examining Committee may be persons from other institutions, including USM campuses, who hold a Doctorate and who are distinguished scholars or specialists and experiential leaders in the field of the dissertation.

One member of the Committee, designated as the Graduate Studies Dean's representative, besides having the usual responsibility of a faculty examiner, has the additional responsibility of assuring that the examination is conducted according to established procedures.

Any disagreement over the examination procedures is referred to the Graduate Studies Dean's representative for decision.

The Graduate Studies Dean's representative may be a separate member appointed by the Graduate Studies Dean.

The student is responsible for distributing a complete copy of the dissertation to each member of the Committee at least ten working days before the defense.

See the section below on the *Established Procedures for Conduct of the Doctoral Dissertation Defense* (Pg 49).

Accelerated Doctoral Programs

Accelerated or intensive Doctoral programs, typically the weekend model, may develop and use a separate manual to describe the format, process and conduct of the coursework, comprehensive examinations, internship, dissertation proposal and the defense, retention and completion of degree program requirements, so long as the Graduate Studies Dean approves the content of these manual(s).

The Graduate Studies Dean approves the membership of the Research Advisory Committee before it begins to advise and guide the student on the dissertation process and approves any replacement member. See also the section above on *Co-advisement of a Student's Dissertation* (Pg 44).

Participation in Commencement Exercises

All requirements for graduation must be completed before the graduate student is allowed to participate in Commencement exercises. To be eligible, graduate students must have:

1. Abided by the dates set forth in the Graduate School's announcement on semester deadlines for graduation and marching in Commencement, pertaining to completion of, as applicable, comprehensive examinations, seminar or research papers, Master's thesis and oral presentations or dissertations and defenses. In the case of a thesis or dissertation, the student must have submitted copies acceptable to the Graduate School for binding.
2. Satisfactorily completed any other particular requirements of the graduate degree which they are seeking.
3. Processed on their behalf the Graduate School's *Certification of Completion of Master's Degree* (or Doctoral Degree) form by the designated signatories.
(www.umes.edu/assets/0/232/1278/3114/eefdf6a-77bc-4d6e-aaa4-ecaa23be3205.pdf).

Outstanding financial obligations must also have been satisfied.

Additional Requirements

In addition to the preceding requirements, special requirements of the different graduate programs may be imposed. For these special requirements, consult the specific graduate program listings in this Catalog.

Graduate School Requirements for the Degree of Doctor of Physical Therapy

Credit and General Program Requirements

The professional Doctor of Physical Therapy (DPT) degree requirements include four major areas of learning and an extensive research project:

- A. 98 semester hours of didactic course work as specified in the program.
- B. 18 semester hours of clinical education experience.
- C. 6 semester hours of independent study/elective courses in specialty areas.
- D. 11 semester hours in critical inquiry/research.
- E. Successful completion and submission of an extensive research project in written form and an oral presentation on the project.

Residence Requirements

Since the Doctor of Physical Therapy degree is a full-time continuous enrollment program leading to an expected degree completion in three years following enrollment, the residence requirement is satisfied.

Time Limitation

While the expected degree completion for the Doctor of Physical Therapy (DPT) degree is three years of full-time study and research following enrollment, under extenuating circumstances, DPT students may seek leaves of absences and extensions of time as the Department of Physical Therapy will allow.

Leave of Absence; Extension of Time Limitation Period

In cases of unusual and/or compelling circumstances, a leave of absence for up to one academic year (two semesters) may be granted to a matriculated graduate student by the Graduate Studies Dean, at the recommendation of the Academic Advisor and the Graduate Program Coordinator.

An approved leave of absence will stop the nine-year time clock for Doctoral students to complete their degree program (five years for Master's students).

In cases of unusual and/or compelling circumstances, an extension of the time limitation period for the degree may be considered for a matriculated graduate student. If granted, the extension will normally be for no more than one academic year (two semesters). The extension is granted by the Graduate Studies Dean on the recommendation of the Academic Advisor and the Graduate Program Coordinator.

Under both circumstances, the Graduate School's *Petition for Waiver of a Regulation* (www.umes.edu/Grad/Default.aspx?id=17612) form should be completed

Students who take leaves and time extensions may be subject to changed curriculum and other requirements implemented during their absences.

Research and Research Project

The Graduate School policies on Research Assurances, Internships and Practicums and scholarly products apply to the DPT program.

Admission to Candidacy

The Graduate School policy on *Admission to Candidacy* for other Doctoral programs applies to the DPT program except that the admission should normally take place within the third year of the program. Students who fall out of the DPT continuous enrollment pattern follow the five-year rule for *Admission to Candidacy*.

Participation in Commencement Exercises

The Graduate School policy applicable to other graduate programs applies to the DPT program. Please refer to the Participation in Commencement section of the Graduate School Requirements Applicable to All Master's Programs.

Established Procedures for Conduct of the Master's Thesis Examination

- A. **Establishment of the Thesis Examining Committee:** The Thesis Examining Committee is appointed by the Dean of Graduate Studies, in accordance with the policies listed below.
1. *Eligibility:* A student is eligible to be examined on a thesis if the student:
 - a) has met the graduate program requirements for a thesis examination including a properly formed Advisory Committee and approved thesis topic;
 - b) is in good standing as a graduate student at the University and has regular admission status;
 - c) is registered for at least one credit;
 - d) has a valid Graduate School approved Thesis Examining Committee;
 - e) has a 3.0 GPA in the graduate program in which the student is enrolled; and
 - f) if this is the second examination, the examination has been approved by the Graduate School.

The final oral examination shall be held when the student has completed the thesis to the satisfaction of the student's Advisor. However, a thesis draft which is not presented in the standard thesis format, or the research and conclusions are incomplete, shall not be considered completed by the Graduate School for purposes of the student's eligibility to be examined on the thesis.

2. *Thesis Examining Committee Membership:* The Committee must consist of a minimum of three members, at least two of whom must be regular or Associate Members of the UMES Graduate Faculty and at least one must be a full-time faculty in a UMES academic department. Additional Committee members may be invited to serve at the discretion of the program. Each member of the Thesis Examining Committee must be a member of the

UMES Graduate Faculty -- whether in a regular, Associate or Special Member category -- or an approved Inter-Institutional Graduate Faculty (IIGF) Member. An IIGF member may serve as Chair of the Committee. The Committee is usually composed of the original program of Study/Research Advisory Committee for the student.

3. *Nomination of the Thesis Examining Committee:* Membership on a Thesis Examining Committee requires nomination by the student's Advisor, concurrence (if required) by the graduate program coordinator in the student's graduate program, and approval by the Dean of Graduate Studies who appoints the Committee. The nomination of a Thesis Examining Committee should be provided to the Graduate School at least three weeks before the date of the expected thesis examination. The thesis examination cannot be held until the Graduate School approves the composition of the Thesis Examining Committee.
4. *Research Assurances:* The following research assurances must be approved prior to the initiation of any thesis-related research, and the approvals must be provided to the Graduate School at the time the student submits the Nomination of Examining Committee form.
 - a) If the thesis research involves the use of vertebrate animals, animal use protocols must be approved by the campus Animal Care and Use Committee.
 - b) If the thesis research involves human subjects, the research must be approved by the campus Institutional Review Board.
 - c) If the thesis research involves hazardous materials, either biological or chemical, or recombinant RNA/DNA, the research must be approved by the appropriate University Committee.

The UMES Office of Sponsored Programs is the contact office for guidance on and the processing of research assurances.

5. *Chair:* Each Thesis Examining Committee will have as Chair the student Advisor, who must be a Regular or Associate Member of the Graduate Faculty. Thesis Examining Committees may be co-chaired:
 - a) if co-advisement was approved at the time of the student's admission to Graduate School, or
 - b) if, upon written recommendation of the student's Advisor, concurrence (if required) of the graduate program coordinator, and with approval of the Dean of Graduate Studies.

At least one of the Co-Chairs must be a regular or Associate Member of the UMES Graduate Faculty.

6. *Special Members:* Individuals who have been approved for Special Membership in the UMES Graduate Faculty may be nominated to serve on Thesis Examining Committees. However, these individuals must be in addition to the required two regular or Associate Members of the UMES Graduate Faculty (see A-2 above).
7. *Service of Former UMES Faculty Members:* Graduate Faculty who terminate employment at UMES (and who do not have emeritus status) retain their status as members of the Graduate Faculty for a twelve-month period following their termination. Thus, they may serve as members and Chairs of Thesis Examining Committees during this twelve-month

period if they are otherwise eligible. After that time, they may no longer serve as Chairs of Thesis Examining Committees, although, if granted the status of Special Members of the Graduate Faculty, they may serve as Co-Chairs (see A-5 above).

Professor Emeriti and Associate Professor Emeriti of UMES may serve or chair Thesis Examining Committees provided they were regular or Associate Members of the Graduate Faculty at the time of retirement.

B. Procedures for the oral examination

1. *Oral Examination Requirement:* Each Master's thesis student is required to defend orally his/her Master's thesis as a requirement in partial fulfillment of the Master's degree. An additional comprehensive written examination may also be required at the option of the program.
2. *Committee Preparation:* The members of the Thesis Examining Committee should receive the thesis ten working days before the scheduled examination. Should the Thesis Examining Committee deem it reasonable and appropriate, it may require submission of the thesis more than ten working days in advance of the examination.
3. *Attendance at the Examination:* Oral examinations must be attended by all members of the student's officially established Thesis Examining Committee as approved by the Dean of Graduate Studies. All examinations must be open to UMES Graduate Faculty and the campus community. Should a last minute change in the composition of the Thesis Examining Committee be required, the change must be approved by the Dean of Graduate Studies in consultation with the graduate program coordinator (if required) and the Chair of the student's Thesis Examining Committee.
4. *Location of the Examination:* Oral examinations of theses must be held in University facilities that are readily accessible to all members of the Thesis Examining Committee and others attending the examination. The Chair of the Thesis Examining Committee selects the time and place for the examination, notifies the other members of the Committee and the candidate, and releases the public notice of the examination.

Under special circumstances as approved by the Dean of Graduate Studies, and if it can be logistically arranged, the interactive video network or other acceptable electronic medium may be used to accommodate an off-site Committee member. In this case, the Committee member must follow-up with a written recommendation to the Committee Chair.

5. *Invalidation of the Examination:* The Dean of Graduate Studies may void any examination not carried out in accordance with the procedures and policies of the Graduate School.

In addition, upon the written recommendation of the Thesis Examining Committee or any member thereof, and upon consultation with the Committee Chair, the Dean of Graduate Studies may rule an oral examination to be null and void.

6. *Conclusion of the Examination:* After the oral examination of the student, the Thesis Examining Committee discusses in closed session whether or not the thesis (including its examination) has been satisfactory. The Committee has the following alternatives:

- a) To accept the thesis without any recommended changes and sign the Report of Examining Committee.
- b) To accept the thesis with recommendations for changes, and, except for the Chair, sign the Report of Examining Committee. The Chair will check the thesis and, upon his/her approval, sign the Report of Examining Committee.
- c) To recommend revisions to the thesis and not sign the Report of Examining Committee until the student has made the changes and submitted the revised thesis for the Thesis Examining Committee's approval. The Thesis Examining Committee members sign the Report of Examining Committee if they approve the revised thesis.
- d) To recommend revisions and convene a second meeting of the Thesis Examining Committee to review the thesis and complete the student's examination.
- e) To rule the thesis (including its examination) unsatisfactory, and therefore, the student fails.

Following the examination, the Chair must inform the student of the outcome of the examination, which of the above alternatives has been adopted, and if other than alternatives "a" or "e", an expected time period in which the process is to be completed.

7. *Pass or Fail:*

- a) The student *passes* if all members of the Thesis Examining Committee accept the thesis (including its examination) as satisfactory.
- b) One or more negative votes constitutes a *failure* of the candidate to meet the thesis requirement. In cases of *failure*, the Thesis Examining Committee must specify in detail and in writing the nature of the deficiencies in the thesis and/or the oral performance that led to *failure*. This statement is to be submitted to the graduate program coordinator, the Dean of Graduate Studies and the student. A second examination may be permitted if the student will be in good standing at the time of the proposed second examination. A second examination requires the approval of the graduate program coordinator and the Dean of Graduate Studies. If the student fails this second examination, or if a second examination is not permitted, the student's admission to the graduate program is terminated.

Any disagreements on the thesis are referred to the Dean of Graduate Studies for resolution.

C. **Submission of the thesis:** See the *UMES Guide to the Preparation of Theses and Dissertations* for the details of this process (available for download at www.umes.edu/WorkArea/showcontent.aspx?id=27778).

- a) Two copies of the thesis, in a format approved by the Graduate School, are to be submitted to the Graduate School after final approval of the thesis by the Thesis Examining Committee.
- b) Additional copies may be required by individual programs.
- c) The final approved copies must be submitted to the Graduate School within 3 months of the oral examination for outcomes 6a and 6b above; and within 6 months for outcomes 6c and 6d above. The oral examination may be invalidated and the student required to defend the thesis for a second time should these deadlines be missed, except in extraordinary circumstances acceptable to the Graduate Studies Dean.

Established Procedures for Conduct of the Doctoral Dissertation Defense

- A. **Establishment of the Dissertation Examining Committee:** The Dissertation Examining Committee is appointed by the Dean of Graduate Studies, in accordance with the policies listed below.

1. *Eligibility:* A student is eligible to defend a dissertation if the student:
 - a) has advanced to Doctoral candidacy;
 - b) has met the graduate program requirements for a dissertation defense
 - c) is in good standing as a graduate student at the University, with a 3.0 cumulative GPA;
 - d) is registered for at least one credit, as applicable (refer to the Graduate School Catalog sub-sections on *Minimum Registration Requirements for Doctoral Candidates and Dissertation Research*);
 - e) has a valid Graduate School-approved Dissertation Examining Committee; and
 - f) if this is the second defense, the defense has been approved by the Graduate School.

The defense shall be held when the student has completed the dissertation to the satisfaction of the student's Advisor. However, a dissertation draft which is not presented in the standard dissertation format, or for which the research and conclusions are incomplete, shall not be considered complete by the Graduate School for purposes of the student's eligibility to defend the dissertation.

2. *The Dissertation:* The ability to do independent research and provide sufficient evidence of scholarship must be demonstrated by an original dissertation on a topic approved by the candidate's program Committee. For publication of the dissertation prior to its defense, refer to the Graduate School Catalog subsection on this subject.
3. *Dissertation Examining Committee Membership:* The Committee must consist of a minimum of five voting members. At least three of them must be regular members of the UMES Graduate Faculty and at least two must be full-time faculty in a UMES academic department unless otherwise appointed by the Dean of Graduate Studies by special permission.

At least one of the five must be a regular member of the Graduate Faculty in a department or graduate program at UMES external to the one in which the student is seeking the degree unless otherwise approved by special permission of the Dean of Graduate Studies. Additional Committee members may be required or invited to serve at the discretion of the program.

Each member of the Dissertation Examining Committee must be a member of the UMES Graduate Faculty; whether in a regular, Associate, or Special Member category, or an approved University System of Maryland Inter-Institutional Graduate Faculty (IIGF) member. An IIGF member may serve as Chair of the Committee.

4. *Nomination of the Dissertation Examining Committee:* Membership on a Dissertation Examining Committee requires nomination by the student's Advisor, the concurrence (if required) by the graduate program coordinator in the student's graduate program, and approval by the Dean of Graduate Studies who appoints the Committee. The nomination of a Dissertation Examining Committee should be provided to the Graduate School at

least three weeks before the date of the expected dissertation defense. The dissertation defense cannot be held until the Graduate School approves the composition of the Dissertation Examining Committee. In case of any unavoidable circumstances, a Committee member can be substituted by another graduate faculty member at the request of the Committee Chair and approval by the Dean of Graduate Studies.

5. *Research Assurances:* The following research assurances must be approved prior to the initiation of any dissertation-related research, and the approvals must be provided to the Graduate School at the time the student submits the Nomination of Examining Committee form.
 - a) If the dissertation research involves the use of vertebrate animals, animal use protocols must be approved by the campus Animal Care and Use Committee.
 - b) If the dissertation research involves human subjects, the research must be approved by the campus Institutional Review Board.
 - c) If the dissertation research involves hazardous materials, either biological or chemical, or recombinant RNA/DNA, the research must be approved by the appropriate University committee.

The UMES office of Sponsored Programs is the contact office for guidance on and the processing of research assurances.

6. *Chair:* Each Dissertation Examining Committee will have a Chair (usually the Advisor or major professor), who must be a regular member of the Graduate Faculty or, by special permission, has been otherwise appointed by the Dean of Graduate Studies. Dissertation Examining Committees may be co-chaired, if:
 - a) co-advisement was approved at the time of the student's admission to Graduate School, or
 - b) upon written recommendation of the student's adviser, concurrence of the graduate program coordinator (if required), and with the approval of the Dean of Graduate Studies.

At least one of the Co-Chairs must be a regular member of the UMES Graduate Faculty for the Marine-Estuarine-Environmental Sciences (MEES) program.

7. *Representative of the Dean of the Graduate Studies:* Each Dissertation Examining Committee shall have appointed to it a representative of the Dean of Graduate Studies to observe the process. The Dean's Representative should have some background or interest related to the student's research. The Dean's Representative must be a regular member of the UMES Graduate Faculty and from a department or graduate program other than the student's home department. The Dean's Representative is normally one of the five voting members of the student's Committee, unless circumstances warrant that the Dean's Representative be an external appointee, and in these instances, a non-voting member of the Committee.
8. *Special Members:* Individuals who have been approved for Special Membership in the UMES Graduate Faculty may be nominated to serve on Dissertation Examining Committees. However, these individuals must be in addition to the required three regular members of the UMES graduate faculty (see A-3 above) unless otherwise appointed by the Dean of Graduate Studies by special permission.

9. *Service of Former UMES Faculty Members:* Graduate Faculty who terminate employment at UMES (and who do not have emeritus status) retain their status as members of the Graduate Faculty for a twelve-month period following their termination. Thus, they may serve as members and Chairs (but not as Dean's Representatives) of Dissertation Examining Committees during this twelve-month period if they are otherwise eligible. After that time, they may no longer serve as Chairs of Dissertation Examining Committees, although, if granted the status of Special Members of the Graduate Faculty, they may serve as Co-Chairs (see A-6, above). Professors Emeriti and Associate Professors Emeriti may serve on Dissertation Examining Committees provided they were regular or Associate Members of the UMES Graduate Faculty at the time of retirement. Unless granted special permission by the Graduate Studies Dean, only those with regular membership in the Graduate Faculty can chair Dissertation Examining Committees or serve as the Dean's Representative

B. Procedures for the Oral Defense

1. *Oral defense requirement:* Each Doctoral candidate is required to defend orally his/her Doctoral dissertation in partial fulfillment of the Doctoral degree.
2. *Committee preparation:* Members of the Dissertation Examining Committee should receive the dissertation at least ten working days before the scheduled defense. Should the Committee or program deem it reasonable and appropriate, it may require submission of the dissertation more than ten working days in advance of the defense.
3. *Attendance at the defense:* Oral defenses must be attended by all members of the student's officially established Dissertation Examining Committee as approved by the Dean of Graduate Studies. All defenses must be open to UMES Graduate Faculty and the campus community. Should a last-minute change in the constitution of the Dissertation Examining Committee be required, the change must be approved by the Dean of Graduate Studies in consultation with the graduate program coordinator (if required) and the Chair of the student's Dissertation Examining Committee.
4. *Location of the defense:* Oral defenses must be held in University facilities that are readily accessible to all members of the Dissertation Examining Committee and others attending the defense. The Chair of the Dissertation Examining Committee selects the time and place for the examination, notifies the other members of the Committee and the candidate, and releases the public notice of the defense. Under special circumstances as approved by the Dean of Graduate Studies, and if it can be logistically arranged, the interactive video network or other acceptable electronic medium may be used to accommodate an off-site Committee member. In this case, the Committee member must follow up with a written recommendation to the Committee Chair.
5. *Notice:* Notice of the Doctoral Defense must be publicized in the student's graduate program/department at least five working days prior to the defense.
6. *The Dean's Representative:* The responsibilities of the Dean's Representative include ensuring that the procedures of the oral defense are in compliance with those of the Graduate School and reporting to the Dean of Graduate Studies any unusual problems experienced in the conduct of the defense. The Dean's Representative must be identified at the beginning of the defense.

7. *Invalidation of the Defense:* The Dean of Graduate Studies may void any defense not carried out in accordance with the procedures and policies of the Graduate School. In addition, upon recommendation of the Dean's Representative, the Dean may rule an oral defense to be null and void.
8. *Student presentation:* The student is permitted to briefly present a summary of the dissertation, emphasizing the important results and giving an explanation of the reasoning that led to the conclusions reached. The floor will then be open for questioning. This presentation is open to the public.
9. *Opportunity for Questioning by Members of the Dissertation Examining Committee:* The Chair invites questions in turn from each member of the Dissertation Examining Committee. The questioning may continue as long as the Dissertation Examining Committee feels that it is necessary and reasonable for the proper examination of the student. This portion of the defense is held in closed session.
10. *Conclusion of the defense:* After questioning of the student has been completed, the Dissertation Examining Committee discusses in closed session whether or not the dissertation (including its defense) has been satisfactory. The Committee has the following alternatives:
 - a) To accept the dissertation without any recommended changes and sign the Report of Examining Committee.
 - b) To accept the dissertation with recommendations for changes, and, except for the Chair, sign the Report of Examining Committee. The Chair will check the dissertation and, upon his/her approval, sign the Report of Examining Committee.
 - c) To recommend revisions to the dissertation and not sign the Report of Examining Committee until the student has made the changes and submitted the revised dissertation for the Dissertation Examining Committee's approval. The Dissertation Examining Committee members sign the Report of Examining Committee if they approve the revised dissertation.
 - d) To recommend revisions and convene a second meeting of the Dissertation Examining Committee to review the dissertation and complete the student's defense.
 - e) To rule the dissertation (including its defense) unsatisfactory, and therefore, the student fails.

Following the defense, the Chair, in the presence of the Dean's Representative, must inform the student of the outcome of the defense, which of the above alternatives has been adopted, and if other than alternatives *a* or *e*, an expected time period in which the process is to be completed.

11. *Pass or Fail:*

- a) The student passes if one member refuses to sign the Report, but the other members of the Dissertation Examining Committee agree to sign, before or after the approval of recommended changes.
- b) Two or more negative votes constitute a failure of the candidate to meet the dissertation requirement.
- c) In cases of failure, the Dissertation Examining Committee must specify in detail and in writing the nature of the deficiencies in the dissertation and/or the oral performance that led to failure. This statement is to be submitted to the graduate program coordinator, the Dean of Graduate Studies and the student.

- d) A second defense may be permitted if the student will be in good standing at the time of the proposed second defense. The time limits for the second defense to take place are no less than six months and no later than twelve months after the first defense. A second defense requires the approval of the student's Advisor, the graduate program coordinator (if required) and the Dean of Graduate Studies.
- e) If the student fails this second defense, or if a second defense is not permitted, the student's admission to the graduate program is terminated.

Any disagreements on the dissertation are referred to the Dean of Graduate Studies for resolution.

C. **Submission of the Dissertation:** See the *UMES Guide to the Preparation of Theses and Dissertations* for the details of this process.

- a) Two copies of the dissertation, in a format approved by the Graduate School, are to be submitted to the Graduate School after final approval of the dissertation by the Dissertation Examining Committee.
- b) Additional copies may be required by individual programs.
- c) The final approved copies must be submitted to the Graduate School within three months of the oral defense for outcomes 6a and 6b above, and up to twelve months for outcomes 6c and 6d above so long as the deadline for outcomes 6c and 6d is within the four year period after admission to candidacy for completion of the degree program. The oral defense may be invalidated and the student required to defend the dissertation for a second time should these deadlines be missed, except in extraordinary circumstances acceptable to the Graduate Studies Dean.

Other Graduate School Policy

Petition for Waiver or Partial Waiver of a Regulation

All policies of the UMES Graduate School have been formulated by the UMES Graduate Council, the governing body of the graduate school, with the goal of ensuring academic quality. These policies must be equitably and uniformly enforced for all graduate students. Nevertheless, circumstances occasionally occur which warrant individual consideration. Therefore, if a graduate student believes that there are compelling reasons for a specific regulation to be waived or modified, the student should submit the Graduate School's Petition form (PDF available for download at www.umes.edu/assets/0/232/1278/3114/115b44ba-0ccd-4329-be02-94edc44c324d.pdf), explaining the facts and issues, which bear on the case. In all instances, the Petition must be reviewed by the Academic Advisor and the graduate program coordinator, and if the Petition involves a course, by the course instructor. If these officials recommend approval, the Petition is then forwarded to the Graduate Studies Dean for final review and action.

Commencement

Application for Degree (diploma) must be filed with the Office of Admissions and Registration according to deadlines set by that office. If, for any reason, students do not complete the requirements for graduation in the semester for which they have applied for the diploma, they must reapply for it.

Academic regalia are required of all candidates at commencement exercises. Those who so desire may purchase or rent caps and gowns at the campus Follett Higher Education Group

Bookstore. Orders must be filed approximately thirteen weeks before the date of commencement, but may be cancelled later if students find themselves unable to complete the requirements for the degree. Students should consult the Bookstore on the exact dates for filing orders and for cancellation of orders.

Institutional Policies Governing Students

Graduate students are subject to State, University System and Campus policies governing employees, students and visitors to the campus. By their acceptance of admission and matriculation at UMES, students indicate their willingness to comply with these policies. These policies address such topics as smoking, use of alcoholic beverages, drug abuse, nondiscrimination, sexual harassment, handicapped access, vehicular traffic laws, registration and parking, theft or damage to University property, and federal regulations and compliance governing research and financial assistance/funding and academic honesty.

Students should familiarize themselves with the above policies.

Also particularly relevant are the University System of Maryland *Policy on Faculty, Student and Institutional Rights and Responsibilities for Academic Integrity* and the *UMES Policy and Procedures on the Disclosures of Student Records* (1992), which complies with the Family Educational Rights and Privacy Act. Students should direct specific inquiries and problems to the appropriate campus office.

Consult the annually issued UMES Student Handbook, which is a guide to all aforementioned University policies and academic/administrative policies and procedures applicable to undergraduate and graduate students (where policies and procedures are different for graduate students these are found in the Graduate School Catalog). University services and activities are also found in the handbook. The student code of conduct policy (latest issue of the UMES Student Judicial Manual) applies to graduate students.

Academic Honesty Policy

The campus policy on academic honesty, covering cheating, falsification and plagiarism governs the following:

1. All credit coursework for a student, including variable research credit courses for thesis, dissertation, research or Master's project.
2. Any capstone or culminating scholarly products resulting thereof as a partial requirement of the degree or program requirements (e.g., seminar and research action papers, theses, dissertations, applications, research projects and so forth).
3. Credit bearing courses for internships, clinical affiliations, practicums, and comprehensive examinations (as applicable).
4. Oral defenses of scholarly products.
5. Examinations not taken in the regular course credit setting but are or will become part of completing program requirements such as credit by examination and written comprehensive examinations.

SELECTED STUDENT SERVICES AVAILABLE TO GRADUATE STUDENTS

Office of the Registrar

www.umes.edu/Registrar

The Office of the Registrar is the official University repository of academic records. The services listed below are representative, but not limited to those offered by the Registrar's office.

- Issuance of Transcripts
- Enrollment Verifications
- Withdrawal from the University
- Graduation Audits
- Credit by Examination
- Coordination of Cooperative Programs
- Change of Major
- Degree Certification
- Course Withdraw
- Inter-Institutional Enrollment

Contact Information:

Student Development Center
Suite 1120, 1st Floor

Phone: 410-651-6413 / 410-651-6414

Health Center

www.umes.edu/studenthealth

The Charles R. Drew Student Health Center assists students in maintaining their physical well-being by providing basic health care services such as treatment for acute conditions, immunizations and screenings.

All registered students, including graduate, transfer and international students, regardless of number of credit hours being taken, are required to provide a completed health history form and proof of up-to-date immunization status for measles, mumps, rubella (MMR) and tuberculosis (TB) prior to registering for and/or attending classes. Students living in campus housing must also meet the meningitis requirement.

Registration blocks will be placed on students who have not submitted the required documents. This will prevent students from registering for/or attending classes until the records are received and processed. To avoid delays, students should submit the records as soon as possible.

The deadlines for submission are: August 1 for the Fall semester and January 1 for the Spring semester.

Students who encounter difficulty obtaining documentation should contact the Student Health Center for assistance.

A University-sponsored health insurance plan is available. Full-time international students (undergraduate and graduate) are automatically enrolled in the insurance plan unless they opt out. To opt out of the University health insurance plan, students must sign the insurance waiver in the Student Health Center and present proof of current valid health insurance coverage. Waivers must be completed by September 7 in the Fall and by February 7 in the Spring. If no waiver is completed, the student's account will be billed for insurance at the current rate.

Domestic graduate students (full or part-time) are eligible for the plan but must enroll directly. Copies of the insurance brochure may be obtained from the Student Health Center or accessed online at <http://njcservices.com/umes.htm> Students with questions about using the insurance should contact the Health Center staff.

Contact Information:

Charles R. Drew Health Center
1 Backbone Road
Phone: 410-651- 6597

Hours of Operation

Monday - Friday
8:00 am - 11:00 am (walk-in)
1:00 pm - 4:00 pm (by appointment)

For medical emergencies after these hours, students may seek assistance through Public Safety or Residence Life staff members.

University Counseling Services

www.umes.edu/counselingcenter

Counseling Services serves the UMES enrolled students who seek assistance with developmental and mental-health related concerns such as individual counseling, group counseling, couples counseling, psychiatric services, and referral services. The Center also serves the broader campus community by offering a wide variety of programs in direct support of the University's mission including workshops on improving study skills and communicating effectively. Counseling Services is composed of professional counselors and consulting psychiatrists who have years of experience working with college-aged students. The staff provides a confidential atmosphere and a safe environment in which students may explore and resolve issues of concern.

All services are free of charge.

Contact Information:

Student Development Center
Second Floor, Suite 2260
Phone: 410-651-6449

Hours of Operation:

Monday through Friday
8:00 a.m. - 5:00 p.m.

For after hour emergencies, Counseling Services may be reached through the University Police at 410-651-3300.

Student Services Center

www.umes.edu/StudentActivities

The Student Services Center (SSC) offers facilities and offices for registered student organizations at UMES. The SSC and the Office of Student Activities offer cultural, recreational and educational programs, events and activities for students, faculty and staff, as part of curricular program offerings. The Office also provides events management planning services for the University community. Programs and activities are designed for the education, development and enjoyment of all students. Lectures, movies, cultural forums, theatre arts, leadership development workshops, meetings, intramural sports and recreations are some of the many programs and activities sponsored in the Center and across the campus.

The Student Services Center is designed as a "one-stop-shop" for students needs. The building houses a variety of departments and services for students, including:

- a. the Office of Student Life and Enrollment Management;
- b. the Office of Campus Life;
- c. Career Services;
- d. Auxiliary Enterprises;
- e. the Student Government Association;
- f. International Student Programs;
- g. the campus post office;
- h. a bookstore;
- i. a game room with both billiards and a bowling center;
- j. a dining hall, a snack bar and lounges;
- k. a theatre and a ballroom;
- l. a resource center;
- m. an ATM (sponsored by the State Employees Credit Union of Maryland (SECU).);
- n. the Hawk Center.

Career Services Office

<http://www.umes.edu/careers>

The Office of Career Services assists graduate and undergraduate students as well as alumni with all aspects of career development. The staff provides individualized career counseling. Emphasis is placed on the preparation of resumes, interviewing techniques and other job search strategies.

The Office maintains a computerized job listing of current employment, employment directories and lists of prospective employers and many other career related resources. Referrals and on-campus interview services are also available to students and alumni registered with the Office. The Office also supplies information about internships, summer jobs and also programming for graduate/scholarship preparation and assistance.

The Office provides information about testing for the Graduate Record Examinations (GRE), the Law School Admission Test (LSAT), the Professional Assessments for Beginning Teachers (PRAXIS) and the College Level Examination Program (CLEP).

All students are strongly encouraged to register with the Office prior to graduation in order to establish a Credential Portfolio file and to become eligible for the services provided by the Office.

The Career Services Office also administers the Cooperative Education program, which has opportunities for graduate students. Interested students should contact the Office for details.

Contact Information:

Student Service Center, Suite 2158

Phone Number: 410-651-6447

Office of Services for Students with Disabilities

www.umes.edu/AccSupport/Default.aspx?id=15746

The Office maintains a comprehensive support network for students with disabilities. The Office is available for assistance with:

- a. information and referral on vocational rehabilitation and other community agencies or available resources;
- b. pre-admission and campus visits;
- c. specialized orientation to campus as needed;
- d. vocational counseling and career guidance referral;
- e. facilitating a positive work relationship between faculty, staff, and students with disabilities;
- f. information on classroom accommodations;
- g. advocacy.

Contact information:

Phone: 410-651-6461

Email: djoseph@umes.edu

Academic Support Services

www.umes.edu/accsupport

Consult the Academic Support Services Office for assistance with writing skills.

Contact Information

Center For Access and Academic Success

Student Development Center, Suite 2200

Phone: 410-651-6457

Email: CAAS@umes.edu

Athletic Center

The William P. Hytche Athletic Center includes an Olympic-size swimming pool, NCAA regulation indoor track, state-of-the-art exercise and fitness center, racquetball courts, dance studio, multi-sports arena, and academic classrooms.

Computing Resources

www.umes.edu/IT/Computing.aspx?id=1330

There are over sixteen computer departmental laboratories located in 10 buildings on campus. Additionally there is the Waters Hall Computing Center which has 5 computer laboratories, one of which is dedicated for graduate student use.

Contact Information:

Academic Computing Center, Waters Hall

Email: pataylor@umes.edu

Hours of Operation:

Monday-Thursday from 8:00 am. to 11:45 pm

Fri. from 8:00 am. to 4:15 pm

Sat. from 8:00 am. to 4:15 pm

Sun. from 2:00pm to 9:45 pm

GRADUATE RESEARCH & INSTRUCTION RESOURCES

The University Library Services

www.umes.edu/fdl

The Frederick Douglass Library houses a multiplicity of print and non-print resources to support the mission and academic programs of the University. The collection includes 213,143 volumes, 601 current periodical subscriptions, 35,773 bound periodicals and over a half million microfiche and microfilm collections. As a member of USMAI (University System of Maryland and Affiliated Institutions) consortium, the Library is affiliated with the University's eleven campuses and thirteen libraries for the purpose of sharing library resources. The integrated, comprehensive library system, ALEPH, makes it possible for patrons to have 24/7 access to USMAI library collections and electronic resources. These collections and resources include the library catalog and 124 research databases including many full text journals, books and newspapers.

The Library offers a library instruction program on three levels as well as a one credit Information Literacy course (LIBR100) to support the University's curriculum and the research needs of the students, faculty and staff. They are as follows:

1. Library Orientation: The most basic session that includes an introduction to a multidisciplinary database such as Academic Search Premier, the online catalog, a tour of the Library and available Library services.
2. Subject Orientation: Topic related instruction, which consists of database demonstrations related to the subject and an overview of specialized reference resources.
3. Professional level courses: These are designed for faculty and/or graduate level research. Instruction can be given for any level at the request of the faculty and/or student.

A very competent staff is also available to assist with information needs.

Contact Information:

Frederick Douglass Library
11868 Academic Oval

Hours of Operation:

Monday - Thursday: 8:00am - midnight

Friday: 8:00am - 5:00pm

Saturday: 10:00am - 7:00pm

Sunday: 3:00pm - 12:00am

Computer Labs close 15 minutes prior to the closing time.

Special Research Resources

The UMES campus is within a 2½ hour drive of one of the greatest concentrations of research facilities and intellectual talent in the nation in the Washington DC–Baltimore–Northern Virginia corridor. Libraries and laboratories, serving virtually every academic discipline, are within easy commuting distance. Opportunities abound for the exchange of ideas, information, and scholarship. Many of the libraries and laboratories are open to qualified UMES graduate students and others by special arrangement.

1. The federal sector possibilities for faculty and graduate student collaboration include the USDA's Agricultural Research Center (Beltsville, Maryland); the National Institutes of Health (for biomedical and behavioral research, headquartered in Bethesda, Maryland); the National Institute of Standards and Technology (Gaithersburg, Maryland); and the Naval Research Laboratory (Washington DC), among others.
 2. The State's concern with the commercial and recreational use of the Chesapeake Bay, as well as its preservation, has been a focus of the University of Maryland Center for Environmental Studies (CES). Two of the CES research facilities are located on the Chesapeake Bay, one of which is in Cambridge, Maryland, an hour away from UMES. UMES MEES program students may use CES faculty on their research committees, and access CES facilities and equipment.
 3. In addition to the UMES farm, graduate students in Agriculture have access to the research farms and facilities of the Research and Education Centers of the Maryland Agricultural Experiment Station/Cooperative Extension Service. The UMES Agricultural Research Program is a part of the Maryland Agricultural Experiment Station.
 4. The University System of Maryland jointly participates in the Chesapeake Research Consortium, Inc., a wide-scale environmental research program, with Johns Hopkins University, Virginia Institute of Marine Science and the Smithsonian Institution. The consortium coordinates and integrates research on the Chesapeake Bay, and is compiling a vast amount of scientific data to assist in the management and control of the area. Each participating institution draws on faculty expertise in a diversity of disciplines. The consortium provides research opportunities for UMES faculty and graduate students.
 5. The University of Maryland is among a select group of US universities and colleges to have attained the US Department of Commerce's designation as a Sea Grant College. The Maryland Sea Grant College, housed at the University of Maryland College Park campus, is a statewide program in marine research, education and outreach, focused primarily on the Chesapeake Bay.
 6. UMES is a member of the Maryland Space Grant Consortium in partnership with, Towson University, Morgan State University, the Johns Hopkins University, and the US Naval Academy.
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The UMES Office of Sponsored Research and Programs

www.umes.edu/OSP

The UMES Office of Sponsored Research and Programs (OSRP) assists faculty involved in graduate research and instruction by helping them in the preparation and submission of proposals, and in the administration of subsequent grant and contract awards from federal, state and private sponsors.

OSRP can be helpful to graduate faculty and/or graduate students in:

- a. identifying potential funding sources;
- b. maintaining contacts with potential sponsors;
- c. assisting with proposal development and the processing of proposals to sponsors;
- d. coordinating sponsor-required compliance review functions (e.g., for animal welfare, human subjects, biological and chemical hazards); and
- e. monitoring grant and contract activities to ensure that project expenditures are within the regulations and policies of the University System of Maryland, the State of Maryland, and the Federal Government.

OSRP assists with the review of financial support and other resources available for graduate students on specific sponsored projects of UMES faculty.

Contact Information:

Office of Sponsored Research and Programs
1120 Early Childhood Research Building

Phone: 410-651-6107

Email: Catherine Bolek, Director - csbolek@umes.edu

Hour of Operation:

Monday through Friday, 8:00am through 5:00pm

GRADUATE DEGREE PROGRAMS BY SCHOOL AND DEPARTMENT

School of Agricultural and Natural Sciences

DEPARTMENTS OF AGRICULTURE AND HUMAN ECOLOGY

- Food and Agricultural Sciences
- Food Science and Technology

DEPARTMENT OF NATURAL SCIENCES AND INTERDEPARTMENTAL

- Chemistry
 - Marine-Estuarine-Environmental Sciences
 - Professional Science Master's
 - Toxicology
-

School of the Arts and Professions

DEPARTMENT OF CRIMINAL JUSTICE

- Criminology & Criminal Justice

DEPARTMENT OF EDUCATION

- Counselor Education
- Special Education
- Master of Arts in Teaching
- Education Leadership

DEPARTMENT OF SOCIAL SCIENCES

- Organizational Leadership
-

School of Business and Technology

DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE

- Applied Computer Science

DEPARTMENT OF TECHNOLOGY

- Career and Technology Education
-

School of Pharmacy and Health Professions

DEPARTMENT OF PHYSICIAN ASSISTANT

- Master of Medical Science in Physician Assistant

DEPARTMENT OF PHYSICAL THERAPY

- Physical Therapy

DEPARTMENT OF REHABILITATION SERVICES

- Rehabilitation Counseling

SCHOOL OF PHARMACY

- Doctor of Pharmacy
-

University of Maryland Eastern Shore Graduate Degree Programs & Courses

School of Agricultural and Natural Sciences

www.umes.edu/SANS

Departments of Agriculture and Human Ecology

Degrees Offered

Master of Science (M.S.), Food and Agriculture Sciences
Doctor of Philosophy (Ph.D.), Food Science and Technology

M.S., Food and Agriculture Sciences

Objectives of the Program

The overall objective of the program is to provide the State of Maryland, the Eastern Shore region and the nation with persons possessing the M.S. degree who have the knowledge and skills necessary to fill critical employment needs in scientific, technological and economic areas related to food & agriculture. Specific objectives of the program:

- To provide students with competencies in research and scientific knowledge needed for gainful employment in the Food and Agricultural Sciences.
- To provide in the land-grant tradition, a quality education with research training at the Master's level within a framework of holistic and interdisciplinary agricultural science technology.
- To recruit minorities and women to pursue careers in agricultural professions where they have traditionally and historically been under-represented.
- To assist students in developing their skills in problem solving, analytical thinking, communication and leadership.

Description of the Program

The Departments of Agriculture and Human Ecology offer a graduate program leading to the degree of Master of Science (M.S.) in Food and Agricultural Sciences (FASC). Concentrations include: Agricultural Economics, Agriculture and Extension Education, Animal and Poultry Science, Food and Nutrition, Natural Resources Science and Plant and Soil Science. In typical situations, the prerequisite to graduate work is the completion of a curriculum substantially equivalent to that required of undergraduate students enrolled in the Departments of Agriculture and Human Ecology at UMES. A student may qualify for graduate study, however, even though his/her undergraduate degree has been earned in a discipline other than agriculture or human ecology. Supporting or prerequisite work may be required, depending upon the student's background and area of interest. A minimum cumulative grade point average of 3.0 (A=4.0) is required for Regular Admission. A student with a grade point average of 2.5 may be admitted on a provisional basis. Graduate Record Examination (GRE) scores (general test only), three letters of recommendation and a completed application form are required of all applicants. Foreign students must take the Internet Based Test (IBT) TOEFL and score a minimum of 80/120.

The program offers a thesis or non-thesis option for completion of degree requirements. The

thesis option is designed for students who wish to conduct a research project and is required of all students holding graduate research assistantships. Students are required to complete a minimum of 24 hours of course work and 6 hours of thesis credits for a total of 30 hours. The non-thesis option is designed for students who do not wish to complete a thesis research project. Students who choose this option must complete a minimum of 36 hours of course work which includes a "creative component" (e.g., scholarly paper).

Each student is assigned an advisor/ major professor according to his/her area of concentration. Major professors may be either regular or associate members of the UMES Graduate Faculty. The student, in consultation with the major professor, selects his/her Graduate Committee no later than the end of the second semester following enrollment. Each student's program of study is planned in conjunction with the major professor and Graduate Committee. For additional information on completion of degree requirements, students should consult the booklet, *Guidelines for the Graduate Degree Programs in Food and Agricultural Sciences and Food Science and Technology*. All students, regardless of the area of concentration or program option chosen, must maintain an overall 3.0 grade point average, complete degree requirements within 5 years of initial enrollment and pass a final oral examination.

Structure of the Program

Core courses

Research Methodology	3 credits
Statistics	3 credits
Seminar	Three 1-credit courses

Areas of Concentration

- Agricultural Economics
- Agriculture and Extension Education
- Animal and Poultry Science
- Food and Nutrition
- Natural Resources Science
- Plant and Soil Science

Thesis Option - Minimum of 30 credit hours

- Core courses – 9
- Concentration courses – 12
- Electives – 3
- Thesis – 6

Non-Thesis Option - Minimum of 36 credit hours

- Core courses – 9
- Concentration courses – 18
- Electives – 6
- Creative Component – 3

Application Deadlines

- Fall Semester - April 15
- Spring Semester - October 30
- Summer Sessions - April 15

Research Activities

Faculty in the Departments of Agriculture and Human Ecology conduct basic and applied research in each of the concentration areas.

Annual appropriations by the Cooperative State Research Extension and Education Service (CSREES)/USDA and extramural grants support research activities by faculty and graduate students. Faculty in the Departments of Agriculture and Human Ecology maintain close working relations with faculty at the University of Maryland College Park and other 1862 land-grant institutions, the Cooperative Extension Service and the Agricultural Experiment Station. A number of UMES faculty have access to and utilize facilities of the various units that comprise the Agricultural Experiment Station. Scientists with agricultural expertise from other University System of Maryland campuses, the USDA and the Co-op Fish and Wildlife Service may serve on graduate committees for students enrolled in the program. Faculty, staff and students also collaborate with scientists from USDA, as well as from universities outside the University System of Maryland.

Facilities and Equipment

Faculty in the Departments of Agriculture and Human Ecology maintain office space in Trigg Hall, the Crop and Soil Science Research Building, the Poultry Science Research Building, the Richard A. Henson Center, and the new Food Science and Technology Building.

Biotechnology and radio-immunoassay laboratories and nutrition laboratories are fully equipped with instrumentation for both basic and applied research. Laboratories in the Crop and Soil Science Building accommodate research efforts in agronomy, plant genetics and breeding, soil science, host-insect interactions, plant pathology and plant-environment interactions.

The UMES teaching and research farm possesses over 200 tillable acres for crop use. State-of-the-art animal facilities include a totally confined 60-sow farrow-to-finish swine unit (which is the only swine research facility operated within the University System of Maryland), a beef cattle farm, a 10,000 and 100,000 bird commercial broiler house, a closed-loop re-circulating aquaculture system and a 2.5 acre greenhouse facility.

Two computer laboratories (Trigg Hall and Richard A. Henson Center) are equipped with Gateway or Gateway compatible computers, laser jet printers, a color printer, color scanner, an auto-cad system, and various software for word processing, desktop publishing, graphics, spreadsheets, econometrics and other statistical work. These laboratories and the new Food Science and Technology building are connected to the UMES mainframe with capabilities for networking throughout the campus, state, region and nation.

Description of Courses

(NOTE: Credit Hours are given in parentheses)

Core Courses

(All students in the program are required to take these courses.)

AGSC 600, 601, 602 Agricultural Sciences Seminar (1)

Students report on and discuss recent literature and current investigations relative to food and agricultural sciences and preparation of reports on selected topics. Repeatable credit. Minimum of three (3) credit hours required.

AGSC 605 Statistics in Agricultural Research (3)

Emphasis is placed on techniques and application of statistical and experimental design, data acquisition, analysis, interpretation and presentation as it applies to the agricultural sciences.

AGSC 691 Research Methodology in the Agricultural Sciences (3)

Students will learn the basic principles of research methodology. Emphasis will be placed on techniques used in identifying problems, forming hypotheses, constructing and using data-gathering instruments, designing research studies, and employing statistical procedures to analyze data.

AGSC 799 Master's Thesis Research (1-6)

Agricultural Economics Courses

AGEC 423 Marketing Agricultural Products (3)

Discussions in this course emphasize characteristics of the demand for and supply of farm products, alternative marketing channels, services and costs involved in marketing.

AGEC 453 Agricultural Finance (3)

Agricultural finance in farm firms and financial institutions is studied, emphasizing financial reports and analysis, liquidity and risk. Also studied are the use of credit and other financial alternatives to acquire control of farm resources, credit sources and acquisition of capital, and decision-making.

AGEC 463 Agricultural Policy (3)

This course explains current policy issues, policy instruments and choices in US agriculture. It also describes the economic characteristics and problems of agriculture, evolution and significance of agricultural policies, the international dimension and domestic policies that affect agriculture.

AGEC 613 Quantitative Methods in Agricultural Economics (3)

The course addresses formulation, estimation, and testing of economic models, interaction between economic problems and specification of econometric models.

AGEC 623 Advanced Agricultural Marketing (3)

Emphasis in this course is placed on marketing theory, market structure conduct and performance, economics of control, interregional trade theory, governmental regulation and policy, and bargaining in agricultural markets.

AGEC 633 Advanced Agricultural Price Analysis (3)

Topics in this course include demand and price structures, price discovery, time series and agricultural price research methods, techniques for evaluating marketing behavior, market legislation and market development.

AGEC 653 Advanced Agricultural Finance (3)

Financial structure of agriculture, firm financial planning and management, financial intermediation in agriculture and agricultural finance in developing countries are the topics that are discussed in this course.

AGEC 663 Agricultural Policy and Rural Resource Development (3)

This course focuses on current issues in agricultural policy and rural resource development, application of welfare criteria and economic analysis to agriculture, food and rural development problems and policies.

AGEC 680 Individual Studies in Agricultural Economics (1-3)

The student is required to produce a scholarly paper, which provides a critique of a selected topic in agribusiness related areas. This can be used to satisfy the "creative component" requirement for students pursuing the non-thesis option.

AGEC 713 Economics of Agricultural Production (3)

Students learn about the use and application of production economics in the agricultural industry through graphical and mathematical approaches.

AGEC 773 Seminar/Group Study in Research Methods (3)

Students will be required to develop and present a thesis prospectus for this course, to include principles and application of the scientific method in developing a research proposal, data collection management and analysis, and thesis writing.

AGEC 813 Advanced Microeconomic Theory (3)

This is an advanced treatment of the theory of prices and markets. Discussions focus on analysis of the theory of the household and the firm, concepts of general equilibrium and welfare economics, and principles of efficient and equitable allocation of resources.

AGEC 814 Advanced Macroeconomic Theory (3)

This is an advanced treatment of an economy's overall performance, including fluctuations in economic activity, causes of inflation and unemployment, impact of fiscal and monetary policies on the economy's aggregate output.

Agriculture and Extension Education Courses

AEED 423 Extension Education (3)

The course focuses on the agricultural extension service as an educational agency. Students will learn the history, philosophy, objectives, policy, organization, legislation and methods used in extension work.

AEED 426 Development and Management of Extension Youth Program (3)

This course is designed for present and prospective state leaders of extension youth programs. It emphasizes program development, principles of program management, leadership development and counseling, science, career selection and citizenship in youth programs, field experience in working with low income families' youth, and urban work.

AEED 497 Conservation of Natural Resources (3)

Students learn about the state's natural resources: soil, water, fisheries, wildlife, forests and minerals. Natural resources problems and practices are covered. This course involves extensive field study. Methods of teaching conservation are included.

AEED 600 Seminar I (1)

This course focuses on reports and discussion of recent literature and current investigations relative to the agricultural sciences.

AEED 625 Administration and Supervision of Agriculture Programs (3)

Students learn about management principles and practices of planning, organizing, directing, staffing and evaluating as applied to administration and supervision of programs in agriculture.

AEED 626 Program Development in Agriculture and Extension Education (3)

Students learn about concepts in program planning and development and the framework for analysis of programs and their implementation in the education and extension services.

AEED 627 Program Evaluation in Adult & Continuing Education (3)

This course is designed for those who provide adult instruction in community colleges, university outreach programs, businesses and industries. This course will help learners to become more effective in evaluating educational programs, and will build upon current levels of instructional or administrative expertise in the adult education field.

AEED 630 Teaching – Learning in Adult & Continuing Education (3)

This course deals with theory, principles and procedures of teaching and learning in adult and continuing education.

AEED 663 Development Leadership (3)

This course focuses on principles and practices of leadership development. The organization, implementation, and evaluation of individual and group leadership development in agriculture are covered.

AEED 691 Research Methodology in the Agricultural Sciences (3)

This course focuses on principles, applications and techniques used in identifying problems, forming hypotheses, developing and using data gathering instruments, designing research studies, employing statistical procedures to analyze data, and organizing materials for thesis writing.

AEED 699 Special Problems (1-3)

Emphasis on a specific topic within the student's area of interest is the focus of this course. Choice of topic, hours and credit must be made in consultation with the instructor prior to registration. A written report and an oral presentation of the topic studied will be required.

AEED 789 Special Topics (1-3)

The course may be repeated to a maximum of nine credits provided content is different each offering.

AEED 798 Seminar in Research (1-8)

Students learn about problems in the organization, administration and supervision of the several agencies of extension and/or agricultural education. This course is repeatable to a maximum of eight credit hours.

AEED 799 Master's Thesis Research (1-6)

Animal and Poultry Science Courses

ANPT 424/624 Animal and Avian Health and Diseases (4)

The study of parasitic, viral, bacterial and protozoal diseases of mammalian and avian species will be covered. Methods of disease prevention, control and eradication will also be discussed.

ANPT 611 Poultry Diseases and Hygiene (4)

Students will study the parasitic, viral, bacterial and protozoan diseases of domestic poultry. Methods of disease prevention, control and eradication will also be discussed.

ANPT 614 Advanced Animal Avian Physiology (4)

This course covers an in depth presentation of major organ systems and their interaction in the maintenance of homeokinesis.

ANPT 621 Applied Poultry Nutrition (3)

Students will learn how to apply the basic principles of nutrition to the avian species. Nutritional requirements of poultry, deficiency diseases, least cost formulations and effects of environment on avian nutrition will be discussed.

ANPT 622 Analytical Laboratory Methods (2)

The application of analytical laboratory techniques used in biomedical research will be explored.

ANPT 634 Advanced Animal and Avian Diseases (4)

Students will study the nutritional and metabolic diseases and the isolation and cultivation of macro-and microscopic parasites inclusive of gross and microscopic pathology.

ANPT 642 Advanced Non-Ruminant Nutrition (3)

The application of basic principles of nutrition to commercial non-ruminant animals will be discussed. Factors affecting nutritional requirements, effects of environment on nutrition and least cost formulations will also be covered.

ANPT 680 Individual Studies in Animal and Poultry Science (1-3)

Student is required to produce a scholarly paper, which provides a critique of a selected topic in Animal and Poultry Science. This can be used to satisfy the "creative component" requirement for students pursuing the non-thesis option.

Food and Nutrition Courses

NUTD 600 Pre-professional AP-4 Practice Program in Dietetics (1-5)

This is an in-service course restricted to dietitians.

NUTD 640 Nutrition & Human Development (3)

Course covers the role of nutrients in physiological systems and biochemical processes as related to the perspective of human growth and development across the lifespan.

NUTD 642 Nutritional Counseling (3)

Assessment, planning, implementation and evaluation of nutritional counseling and educational techniques are examined.

NUTD 644 Special Problems in Nutrition (3)

This is an assessment of nutritional status and needs of various groups such as the aged, infants and children and adolescents. Emphasis is placed on development and management of nutrition programs to meet specific needs through the actions of community agencies.

NUTD 646 Clinical Nutrition (3)

Metabolism in disease and the adaptation of diet in the treatment or prevention of disease are studied.

NUTD 650 Intermediary Metabolism (3)

The course covers the major routes of carbohydrates, lipids and protein metabolism with particular emphasis on metabolic shifts and their detection and significance.

NUTD 654 Nutritional Biochemistry (4)

The course reviews recent developments in nutritional sciences designed to acquaint students with laboratory procedures in nutritional biochemistry and physiology, including the identification and measurements of nutrients and their metabolites in foods, tissue and body fluids and human and animal experiments in nutrition. Special emphasis is placed on the relationship between biochemistry and nutrition.

NUTD 656 Nutrition Laboratory (1-3)

Digestibility studies are conducted with ruminant and monogastric animals. The proximate analysis of various food products and feeding trials are used to demonstrate classical nutritional deficiencies in laboratory animals.

NUTD 660 Protein and Amino Acids in Nutrition (3)

This is an advanced study of the roles of amino acids in nutrition and metabolism. Protein digestion, absorption, anabolism, catabolism and amino acid balance are examined.

NUTD 664 Vitamin and Mineral Metabolism (3)

This is an advanced study of the fundamental role of vitamins in nutrition, including chemical properties, absorption, metabolism, excretion and deficiency syndromes. Basic nutritional data on minerals are presented.

NUTD 670 Advanced Food Safety (3)

The course emphasizes current trends in a number of areas: food safety and emerging food borne pathogens, regulating food safety, traditional and rapid microbiological methods, relationship of environmental factors to occurrence, growth and survival of microorganisms in foods, mechanisms of control, HACCP, risk assessment, sanitation and food safety education. Special emphasis is placed on actual food borne outbreaks. Prerequisite: BIOL 301 or AMIC 324 or permission of the instructor.

NUTD 680 Individual Studies in Food & Nutrition (1)

The student is required to produce a scholarly paper which provides a critique of a selected topic in Food and Nutrition. This can be used to satisfy the "creative component" requirement for students pursuing the non-thesis option.

Natural Resources Science Courses

NRES 683 Principles of Watershed Management (3)

This is a course designed to acquaint students about how watersheds work, how they are managed, and how their management affects the ecology of the Chesapeake Bay, Coastal Bays and the Atlantic Ocean. Prerequisites: CHEM 111, CHEM 113, BIOL 111, BIOL113, SOIL 203, AGRN 423; or consent of instructor.

NRES 404/BIOL 404 Conservation Biology (3)

This course is a multi-disciplinary approach to conservation of natural resources. Course topics examine basic genetic and ecological principles, importance of biodiversity, concept of island biogeography as it applies to the course topic, endangered species conservation, and the value of protected areas. Strong emphasis will be placed on sociological, economic, and political components of conservation. Students will prepare three written reports on current conservation issues. Prerequisites: BIOL 111, BIOL 113, BIOL 112, BIOL 114, BIOL 402 or consent of instructor.

NRES 473/673 Ornithology (3)

This course covers general biology, taxonomy, and natural history of birds, with an emphasis on North American families. Cross-listed with NRES 473. Prerequisites: BIOL 111, BIOL 113, BIOL 112, BIOL 114 or consent of instructor.

AGRN 483 Principles of Geographic Information Systems (3)

This course is designed to provide students with an overview of the applicability and use of Geographic Information Systems (GIS); students will become competent with ArcView®, a GIS software package from Environmental Systems Research Institute (ESRI), Inc. Students will also learn the basics of data management, data accuracy, spatial analysis, and data presentation.

ANPT 403/NRES 403 Advanced Aquaculture (3)

The course covers the fundamentals of commercial fish and other marine animal production, including principles of pond and tank production, management, nutrition and disease.

BIOL 431 Mammalogy (4)

This course is a detailed investigation of mammal biology, with emphasis on special physiological and ecological adaptations, ecological specializations and biogeography of mammals.

ENVS 684 Natural Resource Management (3)

Discussions revolve around the availability, use, abuse, depletion and pollution of various natural resources humans need for survival. The cost-benefit analyses and systems management concepts for natural resource conservation enabling us to save the "earth" for future generations will be addressed. Prerequisites: B.S. in Biology, Chemistry, Environmental Science, Agricultural Sciences or consent of the instructor.

BIOL 688F Fish Physiology (1-4)

This is an overview of fish physiology, which fishery biologists and others can supplement with readings in current texts, reviews and research articles. Applicable points of general and comparative physiology are included. Summaries of important anatomic considerations are included where relevant, but the course is primarily for those who have already completed courses in general physiology, chemistry, biochemistry and fish anatomy. It is an IVN offered course.

CHEM 670 Advanced Biochemistry (3)

The course covers the classification, chemistry and metabolism of protein, amino acids, carbohydrates and lipids. Prerequisite: One semester of Biochemistry.

NRES 799 Master's Thesis Research (1-6)

Plant and Soil Science Courses

AGRI 615 Advances in Plant Genetics & Breeding (3)

Discussion of special topics in genetics and breeding for resistance to pest and other stress factors are covered.

AGRI 625 Plant, Soil-Water Relationships (3)

This course involves a study of soil biology, ecology, root morphology and anatomy affecting mineral nutrition and plant-water relations.

AGRI 638 Advanced Horticultural Crop Production (3)

Physical, chemical and biological factors affecting horticultural crops will be covered. Emphasis will be placed on post-harvest physiology.

AGRI 684 Recombinant DNA Technology (3)

This is a laboratory course to introduce the basic principles of gene cloning, give essential background on working with *E. coli*, utilize different cloning systems and employ methods utilized for DNA sequencing.

AGRN 423/653 Soil Fertility (3)

This course provides an in-depth knowledge of relationships of soil mineralogy, texture, organic matter and pH to soil fertility. The use of organic and commercial fertilizers in crop production, and their effects on the environment are emphasized and explored.

AGRN 623 Advanced Soil Chemistry (3)

This course provides an in-depth knowledge of clay-mineral properties and use of x-ray diffraction and electron micrographic analysis in their identification. The impact of clay-colloid chemistry in everyday life and special topics in soil chemistry related to clays and clay minerals are also explored.

AGRN 633 Soil Water Pollution (3)

This course is designed to provide students with knowledge of the reaction and fate of pesticides, agricultural fertilizers, industrial and animal wastes in soil and water. Their relationship to the environment is heavily emphasized.

PLSC 474/674 Plant Pathology (4)

The course will examine causes of diseases in agronomic and horticultural crops to include symptom and sign recognition, isolation, enumeration and management of diseases in the landscape and field crops. Lab exercises will include preparation of a journal-type manuscript based on an individual research project. Cross-listed with PLSC 474.

PLSC 603 Ecology of Plant-Microbial Systems (3)

The course provides an in-depth study of the degradation of pollutants in plant-microbial systems and the role of plant-microbial interaction on the attenuation of environmental contaminants. Plant and microbial-mediated mechanisms of pollutant transformation will be covered. The role the rhizosphere as a unique environment for the detoxification of aggressive compounds will be emphasized.

PLSC 606 Crop Physiology and Ecology (3)

This course involves in depth discussion of ecological factors affecting crop growth, development and productivity.

PLSC 680 Individual Studies in Plant and Soil Science (1-3)

The student is required to produce a scholarly paper, which provides a critique of a selected topic in Plant and Soil Science. This can be used to satisfy the "creative component" requirement for students pursuing the non-thesis option.

For information on this program, please contact:

Graduate Coordinator
Food and Agricultural Sciences Program
Trigg Hall, Room 1107
University of Maryland Eastern Shore
Princess Anne, Maryland 21853
Email: rbdadson@umes.edu

Ph.D. Food Science and Technology

Objective of the Program

The Food Science and Technology (FDST) Program is part of the Department of Agriculture, Food and Resource Sciences in the School of Agricultural and Natural Sciences. The mission of the FDST Doctoral program is to prepare students for successful careers and life-long learning experiences within the food industry, academia and government. Specially, the program aims:

- To meet the need for highly trained food scientists, including food safety professionals, by providing a multi-disciplinary education and intensive research experiences in food science and technology.
- To provide in the Land Grant tradition a national and international Center of Excellence in Food Science and Technology that will be used for teaching, research and outreach to include the education and training of personnel who are or will be involved in the food related sectors of agriculture.
- To create new opportunities and training for UMES students to develop their skills and competencies in problem solving, critical and analytical thinking and communications, with an emphasis on food safety and food quality systems.

Admission Requirements

Regular Admission may be granted to applicants with a baccalaureate and a Master's degree (thesis option) in either food science or related disciplines (nutrition, microbiology, chemistry, biology, animal and poultry science, environmental science, plant and soil science, veterinary medicine, etc.). GRE scores (General Test) may also be considered.

Applicants may be considered for admission into the Ph.D. program with a minimum of 30 credit hours beyond the B.S. degree, or only the B.S. degree, and may be admitted:

1. on a provisional basis with final acceptance to the Ph.D. program contingent upon successful completion of a probationary period, usually the second semester after matriculation, and on the recommendation of the student's Graduate Committee; or
2. admitted to Regular Status based on a high GPA (3.5/4.0), strong background in the food sciences and potential demonstrated in GRE scores (General Test), and strong support of recommenders that the applicant has the ability to complete the Doctoral degree.

Provisional Admission may be granted to applicants with the baccalaureate and the Master's degree, or the baccalaureate degree, who need prerequisite coursework or are pending award of the Master's degree (See Graduate School subsection on *Provisional Admission Status*). International students must take the Test of English as a Foreign Language (TOEFL) and score a minimum of 213 (computer test). International applicants must also submit documentation that they will be financially able to support their studies.

Additionally, to be admitted to the FDST program, each applicant must submit a brief description of his or her intended dissertation research proposal with the completed application package. If admitted, the student in consultation with his/her academic adviser and Graduate Dissertation Advisory Committee, will decide on the research proposal.

The FDST Executive Committee will subsequently review the dissertation proposal to determine the appropriateness of the intended research for the FDST program.

Application Deadlines

- Fall Semester - April 15
Spring Semester - October 30
Summer Sessions - April 15

Program Retention and Graduate Committee Role

The program requires completion of a dissertation as partial fulfillment for the Doctoral degree. Each student is initially assigned a major Advisor who is responsible for advising the student on all aspects of the student's progress throughout the program.

The major Advisor must be a Regular member of the University of Maryland Eastern Shore Graduate Faculty.

The student must have a major professor (Regular Graduate Faculty Status) and select a Graduate Committee no later than the end of the second semester of enrollment. Before the end of the second semester of enrollment, each student's program of study is planned in consort with the major professor (Advisor) and the Graduate Committee, including any transfer credits to be applied to the degree program. The Graduate Committee must have five members, three of whom must hold UMES Regular or Associate Graduate Faculty status membership, and a majority of the Committee must be UMES full-time faculty in academic departments. The major professor chairs the Committee. Annual student progress reviews will be conducted by the Committee to ensure satisfactory progress of students toward degree completion. All students must maintain a cumulative 3.0 GPA, pass a written comprehensive examination and complete degree requirements, including dissertation within seven years of initial enrollment if full-time, otherwise nine years if part-time.

Exit Degree Requirements

The Ph.D. requires a minimum of 36 credits beyond the M.S. level (or 66 credits minimum beyond the baccalaureate degree), with at least 24 credits of course work and 12 credits of dissertation research; those with only a Bachelor's degree will need additional coursework to meet the 66 credits minimum. Of the minimum 24 credits of course work, there are 9 credit hours of core courses and 15 credit hours of electives. Twelve credits of course work must be at the 600 level or above. Formal application for advancement to candidacy in the Doctoral program requires successful completion of both the comprehensive examination and an oral defense of the dissertation proposal. The Graduate Committee administers the comprehensive examination, defense of the dissertation proposal, oversees the student's dissertation research, and administers the dissertation seminar and final dissertation defense (see the *Graduate School's Established Procedures for Conduct of the Doctoral Dissertation Defense* in this Catalog – Pg 49).

Full-time students must be advanced to candidacy, i.e., taken and passed the comprehensive examination and dissertation proposal defense no later than four years after matriculation. Part-time students follow the Graduate School's time limits for Doctoral degrees (5 years to Advancement to Candidacy, 4 years to final dissertation submission).

For further information and forms, students should consult the booklet *Guidelines for the Graduate Degree Programs in Food and Agricultural Sciences and Food Science & Technology*; the Graduate School booklet on *Guidelines for Graduate Student Academic Advisement*, and the sections in this Catalog on the *Graduate School Requirements Applicable to the Ph.D. Degree*, the *Established Procedures for Conduct of the Doctoral Dissertation Defense*, *Minimum Registration Requirements*, *Minimum Registration Requirements for Doctoral Candidates and Dissertation Research*.

Credit Requirements and Distribution

(NOTE: Credit Hours are given in parentheses)

Core Requirements: (9)

- FDST 700 Seminar in Food Science & Technology (3)
- AGSC 605 Statistics in Agricultural Research (3)
- AGSC 691 Research Methodology in the Agricultural Sciences (3)

Dissertation: (12)

- FDST 899 Doctoral Dissertation Research (1-12)

Electives: (Select 15 credits from the list below)

- AGRI 684 Recombinant DNA Technology (3)
- ANPT 622 Analytical Laboratory Methods (2)
- ANPT 611 Poultry Diseases and Hygiene (4)
- ANPT 614 Advanced Animal and Avian Physiology (4)
- ANPT 624 Animal & Avian Health and Diseases (4)
- ANPT 634 Advanced Animal and Avian Diseases (4)
- BIOL 601 Environmental Microbiology (4)
- CHEM 670 Advanced Biochemistry (3)
- CHEM 621 Advanced Environmental Chemistry (4)
- CSDP 604 Computer Methods in Statistics (3)
- CSDP 658 Computer Applications in Agriculture (3)
- FDST 493 Food Chemistry (3)
- FDST 680 Food Policy Regulations (3)
- FDST 692 Advanced Food Microbiology (3)
- FDST 693 Food Microbiology Lab (2)
- FDST 801 Food Quality Assurance (3)
- FDST 802 Advanced Food Toxicology (3)
- FDST 805 Food Processing (3)
- NUDT 654 Nutritional Biochemistry (4)
- NUDT 670 Advanced Food Safety (3)

Students not having a prior statistics course will be required to complete a prerequisite statistics course.

Students who have previously completed some core requirement courses will take different courses, or if eligible to transfer a research methods or statistics course will be advised and assisted by the major Advisor in identifying an alternate course.

Course Descriptions

(NOTE: Credit Hours are given in parentheses)

FDST 700 Seminar in Food Science and Technology (1)

This course is designed to build communications skills for graduate students. Presentations, both verbal and written, are prepared and given by students following an extensive review of the technical literature. Seminar topics to be presented include the specific research area of the student as well as more general topics in the food science field. A minimum of three (3) credit hours is required of all students in the program.

AGSC 605 Statistics in Agricultural Research (3)

Emphasis is placed on techniques and application of statistical and experimental design, data acquisition, analysis, interpretation and presentation as applied to the Agricultural Sciences.

AGSC 691 Research Methodology in the Agricultural Sciences (3)

Students will learn the basic principles of research methodology. Emphasis will be placed on techniques used in identifying problems, forming hypotheses, constructing and using data-gathering instruments, designing research studies, and employing statistical procedures to analyze data.

AGRI 684 Recombinant DNA Technology (3)

This is a laboratory course to introduce the basic principles of gene cloning, give essential background on working with E.coli, utilize different cloning systems and employ methods utilized for DNA sequencing.

ANPT 424/624 Animal and Avian Health and Diseases (4)

The study of parasitic, viral, bacterial and protozoal disease of mammalian and avian species will be covered. Methods of disease prevention, control and eradication will also be discussed.

ANPT 611 Poultry Diseases and Hygiene (4)

Students will study the parasitic, viral, bacterial and protozoan diseases of domestic poultry. Methods of disease prevention, control and eradication will also be discussed.

ANPT 614 Advanced Animal and Avian Physiology (4)

This course covers an in depth presentation of major organ systems and their interaction in the maintenance of homeokinesis.

ANPT 622 Analytical Laboratory Methods (2)

The application of analytical laboratory techniques used in biomedical research will be explored.

ANPT 634 Advanced Animal and Avian Diseases (4)

Students will study the nutritional and metabolic diseases and the isolation and cultivation of macro-and microscopic parasites inclusive of gross and microscopic pathology.

BIOL 601 Environmental Microbiology (4)

Topics include microbial ecology of plants and animals, aquatic microbial ecology (including medical implications), soil microbial ecology, biodegradation, microbial insecticides, gastrointestinal microbiology, microbiology of foods and environmental problems management. Each student will be required to complete an independent research project. Prerequisite: General Microbiology

CHEM 670 Advanced Biochemistry (3)

The course covers the classification, chemistry and metabolism of protein, amino acids, carbohydrates and lipids. Prerequisite: One semester of Biochemistry.

CHEM 621 Advanced Environmental Chemistry (4)

The origin, transport and effects of atmospheric and aquatic pollutants are studied, with emphasis on energy-related pollutants which include coal, oil and synfuels. Prerequisites: One year of General Chemistry, one semester of Organic Chemistry and one semester of Analytical Chemistry or permission of the instructor.

CSDP 604 Computer Methods in Statistics (3)

This course is an introduction to the principles and applications of probability and statistics needed in graduate studies in various academic areas and to the computer realization of these methods. The course begins with a brief intensive review of basic statistical principles. Prerequisites: One Semester of calculus.

CSDP 658 Computer Applications in Agriculture (3)

Current topics include expert systems for small farm applications, farm-record management, and special planning tools for agriculture.

NUTD 654 Nutritional Biochemistry (4)

The course reviews recent developments in nutritional sciences, designed to acquaint students with laboratory procedures in nutritional biochemistry and physiology, including the identification and measurements of nutrients and their metabolites in foods, tissue and body fluids and human and animal experiments in nutrition. Special emphasis is placed on the relationship between biochemistry and nutrition.

NUTD 670 Advanced Food Safety (3)

The course emphasizes current trends in number of areas: food safety and emerging food borne pathogens, regulating food safety, traditional and rapid microbiological methods, relationship of environmental factors to occurrence, growth and survival of microorganisms in foods, mechanisms of control, HACCP, risk assessment, sanitation and food safety education. Special emphasis is placed on actual food borne outbreaks. Prerequisite: BIOL 301 or AMIC 324 or permission of the instructor.

FDST 493 Food Chemistry (3)

This course presents the chemistry of food components including water, carbohydrates, liquids, proteins, vitamins, and minerals, as well as additives including preservatives, colorants, flavors, antioxidants and sweeteners. Functionality and interaction of components and their importance to quality and wholesomeness of foods will be discussed. Prerequisites: CHEM 212 or permission of instructor.

FDST 680 Food Policy Regulations (3)

The course focuses on food and nutrition policy development, guidelines that govern compliance and enforcement rules in inspection, labeling, import and export and federal and state food regulations. Emphasis is given to HACCP and food safety education.

FDST 692 Advanced Food Microbiology (3)

This course is designed to provide the microbiologist and/or food scientist with extended education and training in food microbiology. Emphasis on spoilage and pathogenic microorganisms in food includes detection, identification, characterization, and control methods utilized. Ecology and survival strategies of pathogens in foods and virulence mechanisms of food borne pathogens are being discussed. Prerequisites: BIOL 301 or AMIC 324

FDST 693 Food Microbiology Laboratory (2)

The course is designed to introduce techniques for detecting and enumerating microorganisms in foods. Conventional and rapid microbiological methods, immunoassays and molecular techniques will be applied to determine the microorganisms and their end products in foods.

FDST 801 Food Quality Assurance (3)

This course provides understanding of food quality control/assurance programs and compliance with government regulation. Topics presented include International Standards for Quality Management Systems, ISO 9000, Good Manufacturing Practices (GMP), Total Quality Management (TQM) and Hazard Analysis Critical Control Point (HACCP). The class also covers factors affecting the quality of food products, such as appearance, flavor, texture, nutritional value, safety and wholesomeness as well as principles of statistical quality control. Prerequisite: FDST 493

FDST 802 Advanced Food Toxicology (3)

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. Prerequisite: permission of instructor

FDST 805 Food Processing (3)

This course integrates principles of food chemistry, food microbiology, food engineering, nutrition, statistics and sensory evaluation through discussion of food processing operations, such as processing of fruit and vegetables, dairy, seafood, fats and oils, beverages, and chocolate manufacture. Food sanitation as well as food packaging will be discussed as general topics. Prerequisites: Permission of instructor.

FDST 899 Doctoral Dissertation Research (1-12)

Repeatable credit.

For information on the FDST program, please contact:

Jurgen Schwarz, Ph.D.

Program Director – FDST Program

Center for Food Science and Technology

University of Maryland Eastern Shore

Princess Anne, MD 21853

Email: jschwarz@umes.edu

Phone: 410-651-7963

Department of Natural Sciences and Interdepartmental

Degrees Offered

Professional Science Master's, Quantitative Fisheries and Resource Economics

Master of Science (M.S.), Chemistry

Master of Science (M.S.), Marine-Estuarine-Environmental Sciences

Doctor of Philosophy (Ph.D.), Marine-Estuarine-Environmental Sciences

Master of Science (M.S.), Toxicology

Doctor of Philosophy (Ph.D.), Toxicology PSM, Quantitative Fisheries and Resource Economics

Objective of the Program

Professional Science Master's (PSM) degree programs provide an alternate professional career path for bachelor's degree holders in the Science, Technology, Engineering and Mathematics (STEM) disciplines to help meet staff needs of industries, consulting firms and governmental agencies, and have been endorsed by the National Research Council (NRC 2008). The PSM program provides students with quantitative, communication and leadership skills and the knowledge required to obtain careers in natural resources, with a focus on fisheries management and conservation.

Admission Requirements

The general admission requirements of the PSM degree program will be similar to those of other M.S. or Ph.D. programs in Science, Technology, Engineering, or Mathematics (STEM) disciplines at UMES. Applicants must have earned a bachelor's degree in any of these disciplines with a minimum cumulative GPA of 3.0 on a 4 point scale.

Application materials can be obtained online at www.umes.edu/grad or, by calling 410-651-6507/8626/7966.

Applicants must complete:

- a) Application Forms.
- b) Certification of Finance Form (for international applicants only).
- c) Evaluation/Recommendation.
- d) Maryland Residency Status, and the Statement of Purpose Form.

Completed forms and a non-refundable application fee of US\$30.00 must be submitted to the UMES Graduate School. Domestic students must have their official transcripts sent directly by the issuing institution to the Graduate School. International students must visit www.wes.org and request an evaluation of their official transcript to be sent to the Graduate School.

Course Requirements

(NOTE: Credit Hours are given in parentheses)

Core Courses – Total of 19 Credit Hours - All students in the program are required to take these courses. (*New courses)

MEES 699 Special Problems: Internship Experience/Non-thesis project (3)

Students will be required to complete an internship at any of the state or federal agencies or at an approved environmental or natural resources consulting firm. Interns will be required to spend up to 250 hours in order to earn 3 non-thesis project credits. Alternatively, students may complete fewer hours per week over an entire semester for a total equivalent of 3 months. A minimum of 150 hours of experience at an internship site is required. Students will work with potential supervisors at the internship site to develop a project based on mutual interest. Students will be required to write a proposal describing their internship duties that will be presented to faculty and students. Students will work with the internship supervisor to determine and complete a form that will list the tasks to be accomplished on a weekly basis. Deliverables will be sent to the Internship Supervisory Committee on a monthly basis. Interns will be required to prepare and submit reports on their projects at the end of their internships. A special symposium will be organized during which students will make oral presentations to fellow students and professors on their experiences and knowledge gained at the internship site.

MEES 642 Fish Population Dynamics & Stock Assessment (4)

In this course, the effects of alternative management actions and environmental factors on the abundance and biomass of fish populations will be discussed. The course will begin with an overview of population modeling by reviewing essential mathematical concepts and biostatistics in the areas of algebra, beginning calculus, differential equation and descriptive statistics. Then, students will be taught the basic fish population characteristics and life histories including growth, mortality, fecundity, recruitment, biomass, and age structure. Finally, students will learn how to use various mathematical models to estimate population parameters and predict yield under different management scenarios. Topics to be covered include: estimation of fish abundance, population growth and mortality rates, stock identification and dynamics and stock recruitment relationships. Other topics to be covered are fish production models, catch at age analysis, and the problems in fisheries management.

**MEES 643 Risk and Decision Analysis in Natural Resources Management (3)*

This course will enable students to develop skills for managing natural resources with relevant decision frameworks reflecting uncertainty and risk about future events. The decision frameworks involve making tradeoffs across options and time using quantitative methods of risk assessment and decision analysis taking uncertainty into account. The course also considers the types of variability and risks faced by resource managers for several natural resources including forests, waters, wild life, and fisheries.

MEES 688A Scientific Communications (3)

This course is intended for graduate students in basic and applied sciences, and other technical disciplines such as engineering and technology. The course will address important writing concepts, content, organization, format, and style applied to professional scientific communications such as peer-reviewed manuscripts, science articles and reports for magazines, posters, proposals for funding agencies, theses, and dissertations. Topics such as oral presentations, ethics and research and publications, writing critiques of scientific articles and reports, and preparing cover letters, curriculum vitae, teaching and research statements for positions in academia and industries will also be covered.

ORLD 617 Personnel Development, Management, and Evaluation (3)

This course covers leadership strategies required in recruitment, development, and in-service effective use of personnel. It focuses on the evaluation techniques that promote a highly motivated personnel with a subsequent professional delivery system.

BUAD 300 Business Ethics (3)

The purpose of this course is to assist students in understanding ethical implications in the decision-making process and to assume their role as managers with a sense of a broader purpose impacted by moral consciousness. Concepts and principles are discussed in light of problem situations with ethical implications with a focus on the development of critical and analytical thinking. Prerequisite: Sophomore Standing.

Quantitative Fisheries Science Concentration Required Courses – Total 18 Credit Hours (*New courses)

MBF 613 Population Dynamics (UM-RSMAS) (3)

The objectives of the course are: 1) to introduce students to the theory and practice of the quantitative characterization of the processes that regulate, control and affect populations of harvested marine animals, and 2) to train students to use population dynamic models to answer resource management questions. Students will be expected to familiarize themselves with basic theories of marine population dynamics, including mathematical derivations of basic population models. They will understand the relative importance of different biological processes in explaining the dynamics of essential “population level” characteristics, and develop an understanding of the impact of fishing and the ecosystem on the dynamics of marine populations. Furthermore, students will learn to use statistical and modeling tools to develop hypotheses, estimate parameters, and make predictions about the dynamics of fished systems. They will acquire knowledge of the basic concepts required to support single species management, and the basic models that support current population assessment models. Finally, they will be able to explain the link between single species management and ecosystem management. The course objectives will be met by a combination of theoretical lectures, weekly assignments, and interactive computer sessions.

MEES 631 Fish Ecology (3)

This course will examine the patterns of fish diversity. There will also be an analysis of the effects of environmental factors (abiotic and biotic) on the survival, growth, and reproduction of fish, as well as the evolution of life history patterns in fish. To be covered also will be aspects of population dynamics of fish including quantitative methods for estimating abundance, growth, mortality and production, and stock-recruitment relationships. There will also be discussions on the impacts of anthropogenic factors on essential fish habitat and fish.

**MEES 644 Multivariate Statistics (3)*

Students will learn various types of multivariate statistical methods including, factor analysis, multidimensional scaling, and cluster analysis. Knowledge from this course will enable students to summarize data and reduce the number of variables necessary to describe the data. The use of Multivariate Statistics will allow students to analyze complex sets of data from their disciplines, determine if multiple independent variables exist in the data set; and, if the data set contains dependent variables that are correlated with one another.

**MEES 641 Fisheries Survey Sampling (3)*

This course will train students in methods of estimating abundance, mean size, proportions, and other parameters of fish and wildlife populations. Students will learn theory and techniques for different sampling strategies including random, stratified, systematic, cluster, adaptive, regression and ratio estimators, as well as procedures for estimating variance, confidence intervals, relative error, and sample sizes for each method. Problems and examples will be based on real-world data sets drawn from marine fisheries research, with emphasis on trawls, dredges, traps, or video surveys, and will be analyzed using Microsoft Excel.

MBF 672 Bayesian Statistics (UM-RSMAS) (3)

This course will cover Bayesian statistical methods from the theory to the practical use of statistics packages such as WinBUGS. Topics will include development of prior probability density functions, numerical methods for integrating posterior probability density functions, diagnostics of convergence, and methods for model selection and model averaging. Examples will be taken from marine science and will include Bayesian meta-analysis of life history parameters, fisheries stock assessment models, tag-recapture models, molecular biology, decision analysis and estimation of animal abundance from surveys.

MBF 614 Advanced Fisheries Modeling (UM-RSMAS) (3)

This is an advanced population dynamics course that presents a synthesis of mathematical and computer-intensive models to assess and manage population (i.e., fish, shellfish, marine mammal and sea turtle) responses to exploitation. It covers a rigorous quantitative development of modeling concepts and stock assessment techniques including: stock production (surplus production), structured analytical yield (yield-per-recruit and age-size structured assessments), stock and recruitment, and, dynamic structured methods. Additionally, it will examine equilibrium and non-equilibrium approaches to data assimilation and parameter estimation, simulation modeling, decision theory, adaptive control, and risk assessment. Specific population modeling and resource allocation case studies from regional, federal and international fishery management institutions will be examined. The course has lecture and computer-based laboratory components.

**MEES 648 Ecosystem modeling for fisheries (3)*

This course is arranged so that students learn (or review) the basics of the traditional fisheries modeling and management methods and are introduced to the ideas of ecosystem-based management and modeling in the first week. Subsequent weeks build on the basics to more complex and realistic models. The first week is focused on traditional methods. These methods are rooted in population dynamics and harvest and tend to have a top-down view of the ecosystem. In Week 2, students are introduced to extended stock assessment methods building on what they learned in the first week. Some fisheries stock assessments now are beginning to incorporate environmental factors and other explicit sources of mortality (e.g., predation mortality) besides fishing and natural mortality. These approaches are basically top-down but with some potential bottom up factors affecting a population. In week 3, students will shift gears and focus on individual-based models that are focused on mostly bottom up effects – i.e. how physical features and habitat influence growth and reproduction of individual fish and how that extrapolates to the whole. Finally, in week 4, students would focus on whole ecosystem models, this framework allows the incorporation of bottom-up and top-down effects on a stock and an ecosystem. The model discussed in Week 1 and 2 are more suitable for tactical management; the models discussed in Weeks 3 and 4 are more suitable for strategic management.

**MEES 640 Introduction to Environmental and Resource Economics (3)*

Environmental and resource economics is the study of how economic forces and institutions affect the environment and are in turn affected by them. This course provides an introduction of major topics in the field, such as pollution, climate change, biodiversity, and fisheries. Students will learn basic market theory and the significance of market failures in the environmental context, and will study policy responses to these market failures, both the theory and the practice. Economics helps understand behavior and helps guide policy by identifying trade-offs, not by picking the best trade-off. The goal of the course is to make students aware of the importance of economics arguments they may encounter in the context of environmental policy discussions.

Resource Economics Concentration Required Courses – Total 19 Credit Hours (*New courses)

**MEES 647 Research Methods in Env. & Natural Resources Economics (3)*

This course will cover the practice and methods of applied research in environmental and natural resources economics. Topics include philosophical foundations, research project design, reporting research results, and criticism of proposals and research papers. This course is specifically designed for students who are majoring in fisheries and resource economics, but is open to any student interested in research methods.

**MEES 649 Economics of Renewable Resources (3)*

This course intends to provide theoretical framework of natural resource economics. It will cover the major areas of renewable resources including the use and conservation of forest, marine and mineral resources, and the valuation of renewable resource assets. There will be several reading materials assigned for each lecture.

**MEES 650 Econometrics (4)*

This course is an introduction to the use of multiple regression methods for analyzing data in economics and related disciplines. It addresses the multivariate analysis of quantitative data at the intermediate level. The primary focus is to use statistical packages for calculating multivariate statistics and the utilization of the statistical output in research findings.

**MEES 652 Marine Resource Policy (3)*

Coastal estuarine and marine systems are some of the most biologically dynamic systems in the world serving as nursery grounds for many of the nation's important recreational and commercial fisheries. These systems are also some of the most attractive as areas for urban and suburban development as such highly sensitive to anthropogenic effects. Many of the marine fisheries whose young utilize coastal systems for development and growth are significantly impacted by environmental declines which reduce recruitment to offshore marine stocks. Add to this the demands for fish, shellfish and plant products from the sea which have also significantly impacted the fisheries and offshore ecosystems there comes a need for a concerted look at how marine resource policy is developing and how it will be implemented. In addition the potential economic value of offshore marine areas is not confined to biological resources and is now being explored as areas for energy production (tidal and wind generators), oil exploration, military uses, reefs for attracting fish and so on. It is highly likely that like zoning practices on land our coastal aquatic areas will also be subject to development of exclusive rights and zoning for specific purposes. The intent of this course is to inform the student of the current and proposed uses for our estuarine and marine areas, the sciences that are needed to develop the information that is to be used in policy development and how marine policy is being developed and in some cases how it should be developed.

AGEC 813 Advanced Microeconomic Theory (3)

This is an advanced treatment of the theory of prices and markets. Discussions focus on analysis of the theory of the household and the firm, concepts of general equilibrium and welfare economics, and principles of efficient and equitable allocation of resources.

**MBF 672 Bayesian Statistics (3)*

This course will cover Bayesian statistical methods from the theory to the practical use of statistics packages such as WinBUGS. Topics will include development of prior probability density functions, numerical methods for integrating posterior probability density functions, diagnostics of convergence, and methods for model selection and model averaging. Examples will be taken from marine science and will include Bayesian meta-analysis of life history

parameters, fisheries stock assessment models, tag-recapture models, molecular biology, decision analysis and estimation of animal abundance from surveys.

Program Degree Requirements

The program provides the student with the knowledge and skills (quantitative, communication, leadership) needed to:

1. Conduct assessments of living marine resources;
2. Evaluate the impacts of alternative management actions, anthropogenic activities, and climate variability and change on yield, as well as the consequent socio-economic effects on fishermen.

The degree program requires completion of 37 credit hours for the Quantitative Fisheries Area of Concentration or 38 credit hours for the Resource Economics Area of Concentration. This includes a non-thesis research project to be completed as part of an internship. Of the 37/38 credit hours, 3 credits will be for a non-thesis research project, a component of the 3-month internship requirement. In addition, 3 credits will be for a Business Ethics course and 3 credits for a Personnel Development and Evaluation course. These will be used to fulfill the business management and leadership training requirements of the program. The professional communications skills (effective oral presentation and scientific writing) component of the program will be acquired through a 3-credit graduate Scientific Communications course. Students will also submit reports of work done in partial fulfillment of science courses and the internship requirement. They will make oral presentations of their internship duties to faculty and students at the end of the internship experience.

A program of study will be developed by the Advisory Committee and approved by the Chairman of the Department of Natural Sciences. This may include prerequisites and required core courses. Although graduate courses taken elsewhere may serve to fulfill requirements, only six credits of such courses may be transferred. Transferable credit hours must be approved by the Chairman of the Department of Natural Sciences. Courses used to satisfy requirements for a previously awarded degree may not be used for credits.

Non-Thesis Option

A non-thesis research project is completed as part of an internship.

Impact on Students' Technological Fluency

Students in the Program will be required to be competent in scientific computer applications such as Excel to process scientific data, SigmaPlot to produce graphs, Microsoft PowerPoint for the development of quality presentations, Microsoft Publisher to create poster presentations, and Microsoft Word in the preparation of manuscripts. Students must also be proficient in performing literature searches online using various databases.

Expected Student Learning Outcomes

1. To provide students with excellent theoretical knowledge and technical background in quantitative fisheries and resource economics.
2. To enhance the communications skills (oral and written) of the students.
3. To provide student leadership, project management and organizational skills.
4. To foster through internships and other projects the development of collaborative and teamwork skills.
5. To enhance student's knowledge of professional ethics.

Quality of Program and Support Faculty

All graduate faculty members possess a terminal degree in an area of fisheries and/or resource or agricultural economics, and supporting areas. (*Affiliate faculty from NOAA or University of Miami-RSMAS)

For further information please contact:

Dr. Paulinus Chigbu

PSM Program Director

Phone: 410-651-3034

Email: pchigbu@umes.edu

M.S., Chemistry

Objective of the Program

The Master of Science (M.S.) Program in Chemistry provides the educational opportunity to prepare students, especially those from underrepresented minority groups and women, for employment and continued development of student research training in the disciplines of chemistry.

Program Degree Requirements

The goal of the Program is to provide a challenging educational opportunity that will prepare students for careers in research, industry, and for entrance into Doctoral degree programs. To accomplish this goal, the Program will:

- Impart the skills necessary to succeed in academic, professional, and social environments that will facilitate lifelong learning.
- Teach students to assume leadership roles in professional activities and organizations that advance the chemical sciences.

Students will be required to interview at least three graduate faculty members in the DNS during their first semester and select a graduate Advisor by the end of the second semester. The student will complete the "Advisor Selection Form" at the conclusion of their interviews. The graduate Advisor will appoint a permanent committee, the Advisory Committee, by the end of the second semester by completing the "Committee Selection Form" and returning it to the DNS Chairman.

A program of study will be developed by the Advisory Committee and approved the DNS Chairman. This may include any missing prerequisites, and required core courses. The total number of required course credit hours may exceed the usual 30 hour minimum for the M.S. Degree Program in Chemistry in some cases. Although graduate courses taken elsewhere may serve to fulfill requirements, only six credits of such courses may be transferred. Transferable credit hours must be approved by the DNS Chairman. Courses used to satisfy requirements for a previously awarded degree may not be used for credits.

Students enrolled in the Program must successfully complete a series of cumulative exams beginning in their third semester of registration in the graduate program. A student will be required to accrue a minimum of 12 points in a series of seven consecutive cumulative exams (3 points each) to attain candidate status. Failure to pass the cumulative exams will result in disqualification from the Program.

Students will be required to successfully complete 30 credit hours for the Program in the following areas:

- 12 credit hours of Core Courses*
- 9 credit hours of Electives
- 3 credit hours of Graduate Seminars
- 6 credit hours of Thesis Research.
- Elective courses must be at the 600 level to fulfill credit hour requirements.
- Up to 3 credit hours of seminar courses may be applied to the Program degree requirements.

Credit Requirements and Distribution

(NOTE: Credit Hours are given in parentheses)

Core Courses

CHEM 620 Advanced Inorganic Chemistry (3)
CHEM 632 Advanced Organic Chemistry (3)
CHEM 670 Advanced Biochemistry (3)
CHEM 680 Quantum Mechanics (3)
CHEM 690 Principles of Chemical Separations (2)
CHEM 695 Applied Spectroscopy (3)
CHEM 799 Masters Thesis Research (6)

Electives

CHEM 697 Dept. of Natural Sciences Graduate Seminar (1)
CHEM 601 Chemical and Statistical Thermodynamics (3)
CHEM 622 Bioinorganic Chemistry (3)
CHEM 621 Advanced Environmental Chemistry (3)
CHEM 671 Protein Chemistry and Enzymatic Catalysis (3)
CHEM 672 Carbohydrate Chemistry (3)

A grade of B or better must be earned in each course to receive credit toward graduation. A student will not be permitted to graduate with a grade of I on his/her transcript. If a student's grade point average falls below a 3.0 at any time, the student will be placed on academic probation and subject to review by their Advisory Committee and the DNS Chairman. The Advisory Committee and Chairman will ultimately decide the fate of the student.

The proposed Program offers the Thesis Option only. The Advisory Committee will administer the thesis defense after all other degree requirements, as enumerated above, have been fulfilled. The Advisory Committee will also decide the outcome of the candidate's defense examination. The student is required to provide each Committee member with a copy of his/her thesis two weeks prior to his/her defense. One copy each of the successfully defended thesis must be submitted to the Graduate School and Department of Natural Sciences offices.

Information Technology

Students in the Program will be required to be competent in programs commonly used in science such as Excel to process scientific data, SigmaPlot to produce graphs and develop calibration models, Microsoft PowerPoint for the development of quality presentations, Microsoft Publisher to create poster presentations, CHEMDRAW for the creation of molecular structures, and Microsoft Word in the preparation of manuscripts. Student must also be proficient in online literature searches using various databases. The president assures that the institutional library resources meet the new program goals.

Graduate Chemistry Courses by Title

(NOTE: Credit Hours are given in parentheses)

CHEM 620 Advanced Inorganic Chemistry (3)

This course is intended for first or second year graduate students. Students should gain knowledge of Inorganic Chemistry to solve practical problems. Solids, Symmetry, Ligands, and Chemistry of Main Group and Transition Elements will be covered.

CHEM 632 Advanced Organic Chemistry (3)

Advanced Organic Chemistry addresses two fundamental needs. First, the students will acquire the latest knowledge and expertise in the utilization of modern analytical instrumentation routinely in research laboratories, namely multidimensional NMR and MALDI-TOF Mass Spectrometry. Secondly, this course will provide an in-depth study of reaction mechanisms of the most fundamental reaction in Organic Synthesis, namely the different ALDOL reactions. The course also highlights the latest advances in synthesis, the newly introduced coupling protocols such as the "Heck", the "Suzuki-Miyaura", and the "Negishi" coupling reactions as well as other elegant technologies in the field of study.

CHEM 697 Dept of Natural Sciences Graduate Seminar (1)

Students will be required to present two seminars during the course of the program. Topics for the seminars shall comprise a report on the student's thesis research and a paper selected from a high impact journal dealing with current discoveries and innovations in chemistry and biochemistry. The course grade will be based on evaluations from faculty. Grading will be based on organization, clarity of presentation, knowledge of the subject and scientific merit.

CHEM 680 Quantum Mechanics (3)

This course will cover Schroedinger Equation, particles in a potential well, angular momentum, variation method, and time-independent perturbation theory. It will also discuss the application of quantum mechanical principles to current problems in chemistry such as: thermodynamic properties of gases, chemical bonding and Born-Oppenheimer Approximation, and molecular spectra.

CHEM 690 Principles of Chemical Separations (2)

Chemical separations play a central role in many areas of chemistry and other disciplines. For example, the cleaning up of polluted water or soil, the treatment of discharge streams from chemical processes, or modification of a specific process to decrease its environmental impact. Thus, this course will focus on the use of separation technology as a unit operation in chemical and environmental applications. Specifically, this course will describe how property differences are used to generate separations, the use of separating agents, and the selection criteria for particular separation techniques. The general approach for each technology is to present the chemical and/or physical basis for the process and explain how to evaluate it for design and analysis. Topics covered in this class will include: 1. Separations as unit operations; 2. Separations analysis fundamentals; 3. Distillation; 4. Extraction; 5. Absorption and stripping; 6. Adsorption; 7. Ion exchange; 8. Membranes.

CHEM 695 Applied Spectroscopy (3)

This course involves a practical approach to the application of spectroscopic techniques such as infrared ultraviolet/visible, nuclear magnetic resonance and mass spectroscopy as tools to solving problems in biochemistry, chemistry, and other related fields of study.

CHEM 799 Masters Thesis Research (6)

Students who are working on their Master of Science thesis register in this course which will count towards the partial fulfillment of curriculum requirements for the MS degree in Chemistry. The student is required to prepare a proposal for a detailed research study, have that proposal approved by an appropriate faculty Thesis Committee, complete the proposed study, and write and defend the completed Thesis in a final oral examination. The work will be conducted independently by the student outside the context of structured class meetings. The student's role is to identify an appropriate research question, develop a systematic research plan to address it, and then execute this plan themselves, collecting, analyzing and interpreting the resulting data and writing them up in standard scholarly format. The faculty

advisor's role is to provide guidance in these various steps where appropriate, such as in helping to identify the research question and in providing feedback on the student's proposed research design, its execution, and the data.

CHEM 601 Chemical and Statistical Thermodynamics (3)

This course will cover statistical mechanics, three laws of thermodynamics and chemical kinetics. It includes the discussion of reversible and irreversible thermodynamics of gases, liquids, solution and solids. Reactions and determination of rate laws for simple and complex reaction will be examined. Application of these principles to gases, solution, mixtures, and solid will be discussed.

CHEM 622 Bioinorganic Chemistry (3)

This course deals with the functions of metallic elements in biology. These functions range from simple structural roles to much more complex roles when they transfer electrons and break bonds. Consequently the roles of metal ions and a variety of non-metals in crucial life processes will be discussed. This course will also examine the physical methods and techniques used in this field (e.g. EXAFS, ESR, Mossbauer, and NMR). In-depth discussion will also cover metalloenzymes and metal complexes used as imaging agents.

BCHM 671 Protein Chemistry and Enzymatic Catalysis (3)

The course involves the study of the structures and functions of proteins. Emphasis will be placed on the application of the structure-function relationships to the development of experimental protocols for studies in biochemical research.

BCHM 672 Carbohydrate Chemistry (3)

The course involves detailed studies of the structures and cellular functions of carbohydrates and glycoconjugates of plants and animals. The course will place special emphasis on techniques for the analysis and biosynthesis of complex carbohydrate structures and the relevance of the techniques to biomedical research.

Introduction

The University of Maryland Eastern Shore (UMES) offers graduate programs leading to the degrees of Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) in the Marine-Estuarine-Environmental Sciences (MEES). The mission of the MEES Program is to train graduate students in the overall environmental sciences. There is a clear need for scientists with training in this area, given the multitude of environmental problems faced by society today. The interests of students in the program are diverse, but generally center on some aspect of the interaction between biological and physical or chemical systems. The analysis of this interaction may be anything from a study of molecular mechanisms to an assessment of the economics of an environmental impact. To ensure that all students in the program have some understanding of the breadth of information in the field of environmental sciences, each student is required to have course work in a variety of areas.

The interests of faculty and students within the MEES Program have led to six formally defined Areas of Specialization (AOS), from which a student may choose. The AOSs are:

1. Ecology
2. Environmental Chemistry
3. Environmental Molecular Biology and Biotechnology
4. Environmental Science
5. Fisheries Science
6. Oceanography.

Each student will choose an AOS when applying, and both admission and program requirements will depend on the AOS and the student's background and interests.

The strongest concentrations at UMES are in the areas of Ecology, Environmental Chemistry, Environmental Science and Fisheries Science, with Environmental Molecular Biology and Biotechnology under development and strengthening.

General Information and Program Overview

The MEES Program is a University System of Maryland (USM) interdisciplinary graduate degree program. Courses taken by MEES students are taught on participating USM campuses and USM research laboratories. A course taught at a USM campus is available to enrolled graduate students through the intercampus enrollment process.

Applicants as well as matriculated students to the program should consult the MEES program website for additional information and details on the program which are not covered in the MEES program section of this Catalog, and for any updates to the program after the time of printing. The MEES program comprehensive website is www.mees.umd.edu.

Overall Degree Program

Admission

Applicants will be considered for admission and advising on participating campuses by faculty associated with an appropriate Area of Specialization (AOS) based on the applicant's requests. Applicants are free to apply to more than one AOS, if so desired. Prospective students may apply through either the University of Maryland Baltimore County Graduate School, the University of Maryland Graduate School at College Park, or the Graduate School at UMES. In general, a student who has identified a specific member of the faculty with whom to work should apply to the campus where that faculty member is affiliated. A student may also apply

to a particular campus due to geographic considerations. See the UMES contacts for inquiries and application at the end of this section.

Applicants to the MEES Program will be considered at both the M.S. and Ph.D. levels. In the event an applicant to the Ph.D. program has only a BA or B.S. degree, admission may initially be to the M.S. program with the final acceptance to the Ph.D. program contingent on successful completion of a probationary period (usually one year) and on the recommendation of the student's Research Advisory Committee.

An Admissions Committee from each AOS has been established to evaluate the applications of prospective students based on the following criteria:

1. The applicant's research interests must be clearly stated and relevant to one or more of the MEES AOS.
2. The academic preparation of the applicant must be consonant with stated interests and AOS requirements.
3. The undergraduate GPA must be at least 3.0, although some students with a GPA of 2.5 may be provisionally accepted based on related research or work experience.

Applicants must submit the following required documents as part of their application for graduate study in the MEES Program:

1. Graduate Record Examination Scores. Only the General Test is required, although one of the Advanced Tests is strongly recommended. (See the AOS prerequisites).
2. Transcripts of all college-level work.
3. A brief essay clearly defining areas of research interest and research objectives preferably including the AOS of interest. The essay should be carefully prepared, not in outline form, and will assist with identification of an Academic Advisor should the applicant be judged admissible.
4. Three letters of recommendation from persons familiar with the academic work of the applicant.

The initial screening of an applicant's credentials is done by the Admissions Committee of the appropriate AOS. Each AOS has course prerequisites (described in subsequent subsections). Applicants missing several of these prerequisite courses may be offered provisional acceptance. Applicants missing four or more prerequisites will generally not be admitted, and should plan to take some of those courses before re-applying.

Receipt of the application will initiate the search for an appropriate faculty member to serve as the Academic Advisor for the student. No student will be admitted to the Program for whom an Advisor has not been identified in advance. Hence, if prior discussions have taken place between an applicant and a member of the faculty regarding the faculty member serving as Advisor to the student, that fact should be mentioned in the application and the potential Advisor should forward a letter of agreement. The student will be matriculated on the degree-granting campus of his/her Advisor, following admission of the applicant by the respective Graduate School.

Application Deadlines

Fall Semester - February 1
Spring Semester - September 1

Application Deadlines For International Applicants

Fall Semester - February 1
Spring Semester - June 1

Advisors and Research Advisory Committees

Upon admission to the MEES Program, students are assigned to an Academic Advisor. This person will be responsible for advising on all aspects of the student's progress through the program. Any request for a change of Advisor must be submitted to and be approved by the AOS Committee and the MEES Program Director (Central Office).

In certain situations, a student may want a second Academic Advisor. This might happen if, for instance, the professor most familiar with the student's work will have only an Associate Graduate Faculty status. In this case, it is possible to set up a Co-Advisor team of two professors who jointly serve in the role of Advisor (the other having Regular Graduate Faculty status).

Due to the expected divergent interests and goals of students in the MEES Program, as well as the dispersion of campuses and laboratories, the early formation of a Research Advisory Committee is mandatory to develop an individual program. During the first semester of enrollment in the MEES Program, the student and the Advisor must form this Committee and submit its membership to the AOS Committee Chairperson for approval. The Committee should meet during the first semester, and must make its written recommendations for a program of study before the end of the second semester.

A Master's Research Advisory Committee will consist of three members, all of whom must be Regular or Associate members of a University System of Maryland (USM) campus Graduate Faculty. A Ph.D. Research Advisory Committee must have five members, three of whom must be Regular or Associate faculty as above. The Ph.D. Research Advisory Committee can consist of a minimum of three members, who are UMS graduate faculty, until the Comprehensive Examinations, at which time, it must have all five members. The student's Advisor will serve as Chair of this Committee. The membership of the Research Advisory Committee should not be drawn entirely from a single laboratory or department. Replacement of Committee members is expected, as needed, based on the Advisor's recommendation.

The program of study is laid out by the Research Advisory Committee in the first or second semester and will include any missing prerequisites [all prerequisites must be completed within the first year in the program], all required core courses, and any specialized courses the Committee believes the student needs. Total required and suggested courses will often exceed the general credit minimum (30 for M.S. and 36 for Ph.D.). The program of study must then be approved by the appropriate MEES AOS Committee.

The Research Advisory Committee is responsible for initial approval of the student's area of research. Once the student has chosen an area of research, a proposal should be written up and discussed with the Research Advisory Committee. This preliminary research proposal should be brief (3-5 pages), but should cover as specifically as possible the student's research interests. Students in the Ph.D. program will later develop a more comprehensive research proposal which they must defend before advancement to candidacy. Students in the M.S.

program will develop a more complete Thesis Proposal to submit to their Research Advisory Committee as described below. The approved preliminary proposal should be filed with the MEES Program Director's office by the end of the second semester following entry into the MEES Program.

An M.S. student's Research Advisory Committee will approve the Thesis Proposal and the Thesis Defense. Master's students are not required to take Comprehensive Examinations. For Ph.D. students, the Research Advisory Committee will administer the Defense of the Dissertation Proposal, oversee the student's research, and administer the Dissertation Defense. Once formulated, the names of the Research Advisory Committee members must be submitted to an AOS Committee Chairperson for approval.

Annual progress reviews initiated by the Advisor will be conducted through the MEES Program Central Office and the AOS Committees to ensure satisfactory progress of MEES students toward degree completion (coursework and research direction).

MASTER OF SCIENCE REQUIREMENTS

The specific requirements for the MEES M.S. degree program are as follows:

Course Work

1. A minimum of 30 credits with 24 credits of course work and 6 credits of graduate research. Of the 24 course credits, 12 of them must be at the 600 level or higher. Exceptions and waivers for equivalent courses taken at other institutions may be used to meet prerequisite requirements of the student's AOS upon approval of the appropriate AOS Committee. Although graduate courses taken elsewhere may serve to fulfill AOS requirements, only six credits from such courses may be identified as transfer credits. Courses used to fulfill requirements for a previously awarded degree cannot be used for transfer credits.
2. One seminar course (MEES 608 or equivalent) must be taken for each year in residence (on average) for a total of 2.
3. One approved Statistics course (400 level or higher) is required.
4. One graduate course representing significant interdisciplinary breadth, preferably outside the student's AOS is required.
5. One course or seminar in Environmental Management (a 3-4 credit course can satisfy '4' above) is required.

Thesis Defense

An oral defense of the thesis, administered according to Graduate School procedures will take place at the completion of the research project. This defense will be conducted by the Research Advisory Committee and will be administered once all other degree requirements have been fulfilled. The thesis defense will generally last no longer than two hours, but the time will be long enough to ensure an adequate examination. The RAC also approves the thesis, and it is the candidate's obligation to see that each member of the Committee has at least *two weeks* in which to examine a copy of the thesis prior to the time of the defense. The RAC may conclude that the candidate has passed or failed. A student may be conditionally passed with the provision that minor changes in the thesis be made by the student and approved by the major Advisor. A student who fails may, at the discretion of the Committee

and with approval of the MEES Program Director and the UMES Graduate Studies Dean, be permitted to stand a second defense after acting on suggestions for improvement of the thesis (e.g., collection of more data, use of different statistical analysis, rewriting of the discussion, etc.), at such time as the Advisor considers appropriate. Once the thesis has been successfully defended, one copy must be supplied to the UMES MEES Office in addition to the copies required by the Graduate School.

DOCTOR OF PHILOSOPHY REQUIREMENTS

The specific requirements for the MEES Ph.D. degree program are as follows:

Course Work

1. The student must complete a minimum of 36 credits, with at least 24 credits of coursework and 12 credits of dissertation research. Twelve credits of coursework must be at the 600 level or above. Credits used to obtain a M.S. degree at a USM campus or other college/university cannot be transferred to the Ph.D. program. However, if a student has completed a M.S. degree, up to 16 credits of appropriate courses can be waived by petition to the AOS Committee.
2. One seminar course (MEES 608 or equivalent) is required for each year in residence (on average) for a total of 4.
3. One approved Statistics course (600 level or higher) is required.
4. One graduate course representing significant interdisciplinary breadth, preferably outside the student's AOS is required.
5. One course or seminar in Environmental Management is required (a 3-4 cr. course can satisfy '4' above).

Examinations

Formal application for advancement to candidacy for the Doctoral degree requires successful completion of both a Comprehensive Examination and an oral defense of the Dissertation Proposal. The Comprehensive Examination must be passed before the student can defend the Dissertation Proposal.

1. *Comprehensive Examination:* The MEES Program Central Office has both general MEES and specific AOS Committee guidelines available for comprehensive examinations.

The RAC is responsible for administering the comprehensive examination. Since this examination must be successfully completed before the dissertation proposal can be defended, it is in the student's best interest to take the comprehensive examination as early as possible in the program. The exam must be taken by the end of the student's fifth semester. This examination is intended to determine whether the student demonstrates sufficient evidence of scholastic and intellectual ability in major and related academic areas. The examination will not be a defense of the research proposal. Areas of the examination will be chosen by the student with the Committee's approval, from a general list formulated by the AOS Committee. One area of the examination must be chosen for interdisciplinary breadth (e.g., relating to the interdisciplinary course from the core curriculum).

The examination will include a combination of written and oral sections. The RAC will determine whether the student passes (a minimum of four affirmative votes is required), or fails. If failed, the examination may, at the recommendation of the RAC, be taken again. In this case the examination should be repeated within one year, but no sooner than six months, after the initial examination. If the examination is failed a second time, admission will be cancelled. Any conditional passing of the examination must be satisfied before the examination can be rendered "successfully completed." The MEES Program Director's office must be notified at least two weeks in advance of the pending examination. A report of the examination will be filed with the Director's Office following the examination.

The USM interactive video network system may be used for oral comprehensive examinations and dissertation proposal defenses but all Committee members, the student and the Graduate Studies Dean must agree to this use. Phone/conference calls are not acceptable alternatives.

2. *Dissertation Proposal Defense:* The proposal defense is an oral examination on the research proposal administered by the Research Advisory Committee. At least two weeks prior to the examination, the student must supply the Committee members with a formal research proposal in which is detailed: background information, research progress to date (if any), specific objectives, and experimental design of the proposed research. The Committee is expected to examine the student on all aspects of the proposed research to determine whether the research plan is sound, and whether the student has the proper motivation, intellectual capacity and curiosity, and has, or can develop, the technical skills necessary to successfully pursue the Ph.D. degree. The student passes if there are at least four affirmative votes. If failed, the student must re-define the proposal within one year. A second failure will result in cancellation of admission.

The research proposal should be defended within one year of unconditionally passing the oral and written comprehensive examination and at least one year before projected completion of the degree requirements. The MEES Program Director's Office must be notified of the pending examination several weeks prior to its administration, and a report of the examination must be filed with the Director's Office following the examination.

At the successful completion of this defense, the student officially applies for *Advancement to Candidacy for the Ph.D. Degree* and should submit the necessary form to the UMES MEES Program Office for transmission to the UMES Graduate School. Students must be admitted to candidacy at least six months prior to the Defense of the Dissertation (final defense).

Dissertation Seminar and Defense of the Dissertation Research

A candidate for the Ph.D. degree will present a public seminar on the dissertation research during the academic year in which the degree will be awarded. The seminar should, under normal circumstances, be given within five weeks in advance of the day of the oral final examination. The student and the Advisor will be responsible for initiating arrangements through the UMES MEES Office for the date and advertisement of the seminar. The seminar will be open to faculty, students, and other interested parties.

The final oral defense of the dissertation is conducted by a Committee of the graduate faculty appointed by the Graduate Studies Dean (this is usually the Research Advisory Committee plus a Graduate Studies Dean's representative). Nominations for membership on this Committee are submitted on the designated form to the UMES Graduate School by the student's Advisor. This is done by the third week of the semester in which the student expects to complete all requirements, but no later than two months prior to the defense (see the UMES Graduate

School's calendar for Commencement Fall or Spring semester). The time and place of the examination are established by the Chair of the Committee. The student is responsible for distributing a complete, final copy of the dissertation to each member of the Committee at least two weeks before the examination date. Announcement of the final examination will be made through the UMES MEES Office to all members of the MEES faculty at least two weeks prior to the examination. All final oral examinations are open to all members of the graduate faculty and students, although only members of the Examining Committee may question the candidate. After the examination, the Committee deliberates and votes in private. Two or more negative votes constitute failure. The student may be examined no more than twice.

Following successful completion of the final examination, a final copy of the dissertation must be supplied to the UMES MEES Office, in addition to those required by the UMES Graduate School.

Areas Of Specialization (AOS)

A. Ecology

The MEES Program provides access to a strong curriculum of interdisciplinary graduate training and research in ecology. Within this Area of Specialization (AOS), numerous scientists throughout the University System of Maryland (USM) are actively involved in teaching and research, with collaboration common between these scientists and those in the other areas of MEES.

Ecology is a broad discipline encompassing terrestrial, aquatic, estuarine and marine environments. Specific areas of study include behavioral, community, evolutionary, marine, benthic, limnological, systematic, and physiological ecology. Variations and/or combinations of one or more of these sub-disciplines are common (e.g. Marine Benthic Community Ecology as one area of study, or the Evolution of Terrestrial Communities as another). Students successfully completing this AOS could go on to academic appointments in a variety of departments (e.g. Environmental Sciences, Ecology, Biology, Zoology, Botany, etc.), or work for environmental consulting companies, as well as federal or state government agencies.

Due to the nature of the MEES Program, heavy emphasis is placed on the student's unique research goals in this AOS. As such, core course requirements are kept to a minimum. The remainder of a student's course load is determined by that student and his/her Research Advisory Committee on the basis of the individual's research topic and previous academic experience. The USM has a wide and diverse set of course offerings in ecology and related areas, so it should be possible for students in almost any area of ecology to create a beneficial program of study.

The MEES Program Ecology faculty believe that graduate students should be well-trained in the following five important areas:

1. Scientific method and experimental design.
2. Statistical methods and use of computers for statistics, database manipulation, and modeling.
3. Ecological theory and mathematical modeling.
4. Field techniques in ecology.
5. Scientific writing.

Prerequisites

A Bachelor's degree with courses equivalent to an undergraduate General Biology degree, including:

1. Two semesters of Calculus.
2. Two semesters of Introductory Chemistry.
3. Two semesters of Organic Chemistry or Biochemistry.
4. Two semesters of Physics.
5. Two semesters of Introductory Biology.
6. One Ecology course and two other Advanced Biology courses.

Core Courses and Other Requirements (M.S. and Ph.D.)

1. Population Biology – including mathematical modeling (600 level, 3-4 credits).
2. Ecosystem Ecology and/or Community Ecology (600 level, 3-4 credits).
3. A specialized field or laboratory-based Ecology course is recommended.
4. A course from one of the other MEES AOSs (from an approved list).
5. A course in Statistics/Biostatistics (600 level for the Ph.D.; 400 level for the M.S.).
6. One graduate level seminar for each year in residence (on average).
7. One course or seminar in Environmental Management, Policy, Ethics or Philosophy of Science, (400 or 600 level, 1-4 credits).
8. Courses in Experimental Design and Analysis and in Scientific Writing are also strongly recommended.

B. Environmental Chemistry

The objective of the Environmental Chemistry Area of Specialization (AOS) is to train research scientists to apply basic chemical principles to the study of the environmental behaviors of natural and anthropogenic chemicals. Environmental Chemistry includes interdisciplinary studies which integrate across subjects such as geochemistry, analytical chemistry, transport processes, and toxicology to determine the cycling and impact of chemicals in the natural environment.

As both the Master's and Ph.D. are research-oriented programs, emphasis is placed on learning and applying the scientific method, employing strong quantitative approaches and developing effective scientific writing skills. Students graduating from MEES through this AOS will find professional positions in federal, state and local government agencies (such as EPA, FDA, NIH), private chemical and manufacturing industries, academic institutions, and consulting firms.

Prerequisites

A Bachelor's degree in the Natural Sciences or Engineering, including:

1. Two semesters of Calculus.
2. Two semesters of Physics.
3. Two semesters of General Chemistry.
4. Two semesters of Biology.
5. Two semesters of Organic or other Advanced Chemistry (e.g. Biochemistry).

Core Courses and Other Requirements (M.S. and Ph.D.)

1. One fundamental and one advanced course in Environmental Chemistry or Geochemistry (one 400-600 level, one 600-700 level 3-4 credits).
2. One course in Physical Transport Processes (600 level, 3-4 credits).

3. One course in Aquatic Toxicology or Ecology (600 level, 3-4 credits).
4. One 400 or 600 level course from one of the other MEES AOSs (from an approved list).
5. One course or seminar in Environmental Management, Policy, Ethics, or Philosophy of Science (a 3-4 credits. Course can satisfy '4' above) (400 or 600 level).
6. A course in Statistics or Applied Mathematics (600 level for the Ph.D.; 400 level for the M.S.).
7. One graduate level seminar for each year in residence (on average).
8. One or more courses in Physical Chemistry are strongly encouraged (2-4 credits each).
9. Courses in Experimental Design and Analysis and in Scientific Writing are also recommended.

C. **Environmental Molecular Biology/Biotechnology**

Molecular approaches pervade every biological discipline, and each MEES campus has distinguished, energetic faculty that emphasize molecular mechanisms of ecological interactions and dynamics. Expertise includes molecular microbial ecology and physiology; bioremediation; molecular endocrinology of fish growth, development and reproduction; environmental stressors contributing to fish physiological dysfunction and oncogenesis; mechanisms and stressors of nitrogen fixation; molecular models of marine surface colonization; molecular cues of organism to organism interaction, and invertebrate immunity. Faculty in this area frequently study macromolecular environmental interactions using recombinant DNA and hybridoma approaches. The Environmental Molecular Biology and Biotechnology Area of Specialization encourages interaction between campuses, and is synergistic with other AOSs.

Several campuses in the University System of Maryland (USM) have facilities specializing in Molecular Biology and Biotechnology, such the Center of Marine Biotechnology of the Maryland Biotechnology Institute, the campuses at Baltimore, Baltimore County and College Park, and facilities underway at UMES.

Prerequisites

A Bachelor's degree in the Natural Sciences or Engineering including:

1. Four semesters of Biology including Biochemistry.
2. Two semesters of Physics.
3. Four semesters of Chemistry.
4. Two semester of Calculus.
5. Two semester of Molecular Biology or Molecular Genetics.

Core Courses and Other Requirements (M.S. and Ph.D.)

1. One course in Molecular Biology/ Genetics (600 level, 3-4 credits).
2. One course in Cell Biology/Physiology (600 level, 3-4 credits).
3. One course in Ecology (400 or 600 level, 3-4 credits).
4. One course in Advanced Chemistry or Biochemistry (400 or 600 level, 2-4 credits).
5. One elective 400 or 600 level course.
6. One course or seminar in Environmental Management, Policy, Ethics or Philosophy of Science (a 2-4 credits course can satisfy '5.' above) (400 or 600 level).
7. A course in Statistics/Biostatistics (600 level for the Ph.D.; 400 level for the M.S.).
8. One graduate level seminar for each year in residence (on average).
9. Courses in Experimental Design and Analysis and in Scientific Writing are also recommended.

Note: For the M.S. degree, only three of the first four requirements must be fulfilled (Nos. 5 through 8 are required for all students).

D. Environmental Science

This AOS provides broad training in the Environmental Sciences. Some students do not want to specialize to the extent the other AOSs require, but would like to gain experience and take courses in a variety of scientific, economic, and social disciplines related to the natural environment. These requirements are also very appropriate for students wishing to specialize in Environmental Management. The relevant graduate training will provide advanced courses in five distribution areas:

1. Biology - Courses in the biological sciences in which the emphasis is on ecology, especially at the population, community, and ecosystem levels.
2. Chemistry - Courses in chemistry as applied to organisms or to the environment, with an emphasis on pollution or environmental toxicology courses.
3. Physical Sciences and Technology - Courses dealing with the physical world or with the application of physical principles or technology to biological or environmental problems.
4. Management, Economics, and Policy - Courses dealing with the interaction of economic, legal, political, and/or social institutions with the biological, chemical or physical environment.

E. Subprogram in Environmental Management: Science and Policy at Participating Campuses

The primary content of this option within the Environmental Science AOS will focus on developing professionals in the field of environmental management, at the M.S. and Ph.D. levels. Students successfully completing this degree will normally pursue careers in the government or private industry, especially with organizations having strong environmental interests or programs. It is also anticipated that students desiring to work in foreign countries, and foreign students, will take part in this program.

Although the Environmental Management option is open to students at the Master's level, students completing advanced degrees in Applied Ecology and Conservation Biology (M.S., Frostburg State) or Sustainable Development and Conservation Biology (M.S., Maryland, College Park) as well as at other graduate Environmental Management programs within or outside of the USM could logically pursue a Ph.D. within this AOS. It is also expected that students with strong interests in Restoration and Landscape Ecology or in Environmental Science and Policy would matriculate within the Environmental Science AOS with an emphasis in Environmental Management.

Prerequisites

An undergraduate degree in the Natural Sciences or Engineering, including:

1. Two semesters of Calculus.
2. Two semesters of Introductory Chemistry.
3. Two semesters of Physics.
4. Two semesters of Introductory Biology (or high placement test, high GRE Biology scores).
5. Ecology and other advanced Environmental Science courses are recommended.

Core Courses and Other Requirements (M.S. and Ph.D.)

1. One approved course from three of the four distribution areas (Biology, Chemistry, Physical Science or Management) for M.S. students, and from each of the four distribution areas for

Ph.D. students. One of these courses can be at the 400 level, the others will be at the 600 level or above.

2. A course in Statistics/Biostatistics (600 level for the Ph.D.; 400 level for the M.S.).
3. One graduate level seminar for each year in residence (on average).
4. One or more courses in Computer Science or Computer Applications are strongly recommended.
5. Courses in Experimental Design and Analysis and in Scientific Writing are also recommended.

F. Fisheries Science

Fisheries Science is multidisciplinary, drawing expertise from the biological, physical and social sciences. Fisheries scientists study populations and communities of aquatic resources, their responses to exploitation and changes in environmental conditions, and their management. Research is quantitative and may be either basic or applied. A diversity of faculty talent exists within the USM to provide graduate students with a strong education in Ecology, Biology and Management of fish and invertebrate resources.

The multidisciplinary nature of fisheries science requires broad training in areas that may include Ecology, Oceanography, Aquaculture, Economics, Mathematics, Seafood Technology, Pathology and Diseases, and Management Science. Students will select a curriculum, with assistance from their Research Advisory Committees, to best achieve their academic and professional goals. The faculty recognizes that flexible, yet rigorous, curriculum choices are important for students in Fisheries Science.

The program in Fisheries offers both M.S. and Ph.D. degrees. Graduates at either level may expect to find challenging career opportunities. Most career opportunities in Fisheries Science are in the government and academic sectors, although in recent years private businesses, research firms and aquaculture businesses offer increasingly diverse career choices.

The course work and research undertaken by MEES students in this AOS emphasize the following three fields of study:

1. *Fisheries Ecology*: This field provides basic studies in fish and invertebrate population biology, food webs, recruitment and life history processes, predator-prey and competitive interactions, diseases, and effects of habitat conditions.
2. *Fisheries Management*: This field provides basic and applied studies on the effects of exploitation, pollution and habitat change on fish and invertebrate populations; assessment of resources and their potential yields; and development of models and information useful for management of living aquatic resources. Students with outstanding credentials in economics, mathematics, or operations research may request the Fisheries AOS to waive certain prerequisites.
3. *Fisheries Aquaculture*: This field contributes to the research on the culture of aquatic organisms and the development of aquaculture systems. This is a broad disciplinary area that includes ecology, physiology, chemistry, genetics, seafood technology, diseases and pathology, engineering, economics and management under its auspices.

Prerequisites

A Bachelor's degree in the Natural Sciences or other field with a strong quantitative emphasis, including:

1. Two semesters of Calculus.
2. Two semesters of Introductory Chemistry.
3. Two semesters of Organic Chemistry, Biochemistry, or Physics
4. Two semesters of Introductory Biology (or high placement test, high GRE Biology scores).
5. Advanced Biology courses, such as Ecology and Ichthyology, are recommended.

Core Courses and Other Requirements (M.S. and Ph.D.)

Five core courses will be offered, and at least three must be successfully completed by all students entering the Fisheries Science AOS. The requirements may be waived if equivalent course work has been obtained elsewhere, or if the student and his/her Research Advisory Committee successfully petition the Fisheries Science AOS Committee.

1. *Fisheries Science and Management* – This course covers the basic principles of aquatic productivity, fish and invertebrate population biology, the harvest and conservation of resources, assessment of yield potentials, and fishery management practices.
2. *Fisheries Ecology* - This course covers the biological processes that affect the productivity, abundances, and distributions of fish and invertebrate resources. The course include life history theory, predator-prey relationships, bioenergetics, trophic ecology, and zoogeography.
3. *Aquaculture* - This course covers the theory and practices of modern aquaculture of fishes and invertebrates. The course include coverage on water quality, production systems, extensive and intensive approaches, culture genetics, and fish diseases and management.
4. *Quantitative Fisheries Science* – This course covers factors affecting the stability and resilience of exploited marine and estuarine populations. Basic ecological models and applied fisheries models are presented in theoretical and practical frameworks. It is recommended that either Fisheries Science and Management or Fisheries Ecology is taken prior to this course.
5. *Graduate Level Course in Oceanography (physical, chemical or biological) or Stream Ecology* – The courses cover major and minor elements, composition of seawater, seawater ionic structure and interactions, nutrient distributions, biogeochemical cycles and the biology of marine organisms. Students will obtain most of their academic course work from a broad array of relevant courses presently available throughout the USM. Each student and his/her RAC will design a course of study to be approved by the Fisheries AOS. Curricular requirements are purposely flexible, yet rigorous, to accommodate the diverse needs of students in fisheries science.

In addition, the following core courses are required:

6. A 400 or 600 level course from one of the other MEES AOSs (from an approved list, which can include 2, 4, and 5 above).
7. One course or seminar in Environmental Management (1 or 4 above satisfies this requirement; any such 3-4 credits course can satisfy 6 above).

8. A course in Statistics/Biostatistics (600 level for the Ph.D.; 400 level for the M.S.).
9. Courses in Experimental Design and Analysis and in Scientific Writing are strongly recommended.
10. One graduate level seminar for each year in residence (on average).

G. Oceanography

In the past decade, the University System of Maryland (USM) has emerged as a nationally and internationally recognized center for oceanographic research. Laboratories of the USM Center for Environmental Studies and at the College Park campus have been most active in this field. The current expertise in oceanography in the USM lies in the subfields of Biological and Physical Oceanography and the cross disciplinary studies of Marine biogeochemistry.

The expertise in Biological Oceanography includes water column nutrient cycling and trophic dynamics (comprising the entire pelagic food web and fishes) benthic ecology, and theoretical ecosystem analysis. The expertise in physical oceanography is in large scale flows and global circulation problems, estuarine and coastal circulations, mixing, transport and numerical modeling. Physical and biological oceanographers work closely together to understand the dynamics of estuarine, coastal, and ocean systems. It should be noted that there is also considerable strength in marine chemistry in the USM; some courses are available in the MEES Oceanography track, but the MEES track in Environmental Chemistry currently has a more diverse listing and greater program strength in this area.

Students in this AOS have access to extensive oceanographic facilities throughout the USM as well as the opportunity to work with some of the University's outstanding faculty in oceanography with global scale programs. Fundamental courses in the four major subfields of oceanography are required to provide interdisciplinary breadth, but a degree in the Oceanography AOS emphasizes the student's independent research. Students graduating from the Oceanography AOS can expect to find jobs in universities, oceanographic laboratories, government agencies, and consulting firms.

Physical Oceanography

Prerequisites

A bachelor's degree in a Physical Science, including:

1. Two semesters of Calculus.
2. Two semesters of Physics.
3. One or two additional advanced mathematics courses.
4. One or two additional advanced physical science courses.
5. Two semesters of Introductory Biology and/or Chemistry are highly recommended.

Core Courses and Other Requirements (M.S. and Ph.D.)

1. One 3-credit course in Physical Oceanography (MEES 661 or equivalent).
2. One 3-Credit course in Biological Oceanography (MEES 621 or equivalent).
3. One 3-credit course in Chemical Oceanography (CHEM 723 or equivalent).
4. Two 3-credit courses in Oceanography or related fields (400 or 600 level) including:
 - a. One course in rotating fluid dynamics;
 - b. One course in non rotating fluid dynamics.
5. A course in Statistics/Biostatistics (600 level for the Ph.D.; 400 level for the M.S.).

6. One course or seminar in Environmental Management, Ethics or Philosophy of Science.
7. One graduate level seminar for each year in residence (on average).
8. Courses in Experimental Design and Analysis and in Scientific Writing are also recommended.

Biological Oceanography

Prerequisites

A Bachelor's degree equivalent to the University of Maryland College Park undergraduate Biology degree, including:

1. Two semesters of Calculus.
2. Two semesters of Introductory Chemistry.
3. Two semesters of Organic Chemistry or Biochemistry.
4. Two semesters of Physics.
5. Two semesters of Introductory Biology.

Core Courses and Other Requirements (M.S. and Ph.D.)

1. One 3-credit course in Physical Oceanography (MEES 661 or equivalent).
2. One 3-Credit course in Biological Oceanography (MEES 621 or equivalent).
3. One 3-credit course in Chemical Oceanography (CHEM 723 or equivalent).
4. Two 3-credit courses in Oceanography or related fields (400 or 600 level) including a recommended additional interdisciplinary course although MEES 661 can satisfy the MEES requirement for interdisciplinary breadth.
5. A course in Statistics/Biostatistics (600 level for the Ph.D.; 400 level for the M.S.).
6. One course or seminar in Environmental Management, Ethics or Philosophy of Science.
7. One graduate level seminar for each year in residence (on average).
8. Courses in Experimental Design and Analysis and in Scientific Writing are also recommended.

Course Offerings

(Note: Credit hours given in parentheses)

BIOL 600 Marine & Estuarine Ecology (4)

Discussion topics include marine environment, adaptations of populations, structure of marine ecosystems, dispersion of marine organisms, migration, nutrition cycles, productivity and catches of fish, food chains and models of the sea. Prerequisite: An introductory Biology, Botany or Zoology course and a course in Ecology.

BIOL 601 Environmental Microbiology (4)

Topics include microbial ecology of plants and animals, aquatic microbial ecology (including medical implications), soil microbial ecology, biodegradation, microbial insecticides, gastrointestinal microbiology, microbiology of foods and management of environmental problems. Each student will be required to complete an independent research project. Prerequisite: General Microbiology

BIOL 621 Environmental Endocrinology (3)

Topics include impact of environmental factors on endocrine and neuroendocrine systems in various animal species; hormonal and adjustments to environmental stress; and review of pertinent scientific literature. Prerequisite: One year of Biology and one semester of Biochemistry.

BIOL 633 Adaptations to the Marine Environment (3)

Topics include physiological adaptation, perception of the environment, feeding and energy budgets, gases and respiration, circulation, reproduction and development. An independent research project is required. Prerequisite: One year of college Biology and one year of college Chemistry or permission of the instructor.

BIOL 661 Community Ecology (4)

This course is an in-depth study of the biology of communities with emphasis on factors that regulate abundance, diversity and stability of communities. Current theories on community dynamics will be combined with field experiences and detailed analyses of selected field projects.

BIOL 662 Population Ecology (4)

The course is an in-depth study of the biology of populations with emphasis on population structure, factors that regulate populations, and the effect of individual behavior on population characteristics. Field studies and computer simulations will explore selected areas of study.

BIOL 681 Barrier Island Management (4)

The course is an in-depth view of barrier island ecosystems and management problems in general, and Assateague Island National Seashore, in particular. Research design and problem-solving of actual problems facing the National Park Service will be emphasized.

BIOL 683 Wildlife Management (4)

Students will develop an understanding of the principles and practices associated with wildlife management. Emphasis will be placed on research design, sampling techniques, field research and statistical analyses. Students will practice field techniques during labs, analyze results and develop wildlife management recommendations as part of the semester project.

BIOL 688B Ichthyology (4)

This is an advanced course in ichthyology covering fish systematics, classification, phylogenetics, and evolution. Regional and global zoogeographic patterns of distribution of taxa will be discussed from both an historical and contemporary perspective. Emphasis is placed on comparative fish anatomy and taxonomy of local marine, estuarine and freshwater fishes and the field collection, handling and preservation of fishes. Prerequisite: An upper division graduate or undergraduate level course in general ichthyology, fish biology, fish ecology, physiology or behavior.

BIOL 688F Fish Physiology (1-4)

The course is an overview of fish physiology which fishery biologists and others can supplement with readings in current texts, reviews and research articles. Applicable points of general and comparative physiology are included. Summaries of important anatomic considerations are included where relevant, but the course is primarily for those who have already completed courses in general physiology, chemistry, biochemistry and fish anatomy. It is an IVN offered course.

CHEM 621 Advanced Environmental Chemistry (4)

The origin, transport and effects of atmospheric and aquatic pollutants are studied, with emphasis on energy-related pollutants including coal, oil and synfuels. Prerequisites: One year of General Chemistry, one semester of Organic Chemistry and one semester of Analytical Chemistry or permission of the instructor.

CHEM 632 Applied Water Chemistry (3)

The course studies the chemistry of both municipal and industrial water treatment processing. Topics include water softening, stabilization, chemical destabilization of colloidal materials, ion exchange, disinfection, chemical oxidation and oxygenation reactions. Prerequisites: B.S. in Biology, Chemistry or Environmental Science. One year of undergraduate courses in Analytical Chemistry and Environmental Science. Permission of instructor required.

CHEM 670 Advanced Biochemistry (3)

The course covers the classification, chemistry and metabolism of protein, amino acids, carbohydrates and lipids. Prerequisite: One semester of Biochemistry.

CSDP 604 Computer Methods in Statistics (3)

The course is an introduction to principles and applications of probability and statistics needed in graduate studies in various academic areas and to computer realization of these methods. The course begins with a brief intensive review of basic statistical principles. Prerequisite: One semester of calculus.

ENVS 437/637 Environmental Soil Chemistry (3)

The course extends the concepts of chemistry and physics to the physical, chemical and biochemical characteristics of soil/water systems and their implications for managing contaminants, pesticides and agricultural inputs. Prerequisites: Senior standing or Graduate status. Co-Requisite: ENVS 438/638

ENVS 438/638 Environmental Soil Chemistry Laboratory (2)

This is a companion laboratory to ENVS 437/637. The course studies determination of soil properties such as salinity, pH and redox potential, organic matter content, surface area, carbonates and lime requirements, including quality assurance and GIS-based chemical data acquisition.

ENVS 488/688 Coastal Ecology (3)

This course provides an overview of ecological principles as they apply to coastal and estuarine environments. The major coastal ecosystems will be discussed and emphasis will be placed on sandy and rocky coasts, marshes, subtidal environments, coastal shelf systems and upwelling, sea grass beds, coral reefs and the rocky intertidal. The effects of detritus, primary and secondary biomass production, plankton, nekton, benthos, and fish stock production will be explored and related to physical processes of the coast. Graduate student credit will require the in-depth research of a topic relevant to coastal ecology and selected in consultation with the instructor. Once approved, the graduate student must research the topic, write a referenced report, and make an oral presentation to the class. Prerequisite: ENVS 201 General Oceanography; BIOL 201 Marine Zoology, or permission of the instructor.

ENVS 611 Water Pollution (4)

Biological, chemical and physical impurities in water with emphasis on agricultural, industrial and municipal waste pollution including acid mine drainage, detergents and eutrophication, thermal pollution, oil spills and other non-point source pollution will be studied. Further study will include the physical and biochemical processes for wastewater treatment, sludge handling and disposal and land disposal of wastewaters. Prerequisites: B.Sc. in Biology, Chemistry or Environmental Science. One year of undergraduate courses in Water Pollution and Environmental Science.

ENVS 634 Air Pollution and Control (4)

Classification of atmospheric pollutants and their effects on visibility, inanimate and animate receptors will be discussed. Evaluation of source emissions and principles of air pollution control, e.g., meteorological factors governing the distribution and removal of air pollutants, air quality measurements and air pollution control legislation will also be studied. Prerequisites: B.Sc. in Biology, Chemistry or Environmental Science. One year of undergraduate courses in Air Pollution and Environmental Science.

ENVS 639 Sources and Effects of Pollutants (3)

The course is a study of the sources, fate and effects of various toxic pollutants on man and the environment with emphasis on aquatic and atmospheric pollutants. Prerequisites: B.Sc. in Biology, Chemistry or Environmental Science with some background in environmental pollution or consent of the instructor.

ENVS 641 Environmental Toxicology (3)

Organisms in the atmosphere, hydrosphere and lithosphere and the effects of foreign chemical and other stress on their health and well-being will be discussed. Prerequisites: B.Sc. in Biology, Chemistry or Environmental Science with some background in environmental pollution or consent of the instructor.

ENVS 660 Earth Science (4)

This is an interdisciplinary course designed to show how geology, meteorology, physical geography, soil science, astronomy and oceanography are interrelated in the study of earth and its environment in space. Prerequisites: One year of Chemistry and one year of Physics.

ENVS 684 Natural Resource Management (3)

Topics include discussion of the availability, use, abuse, depletion and pollution of various natural resources humans need for their survival. The cost-benefit analyses and systems management concepts for natural resource conservation enabling us to save the 'earth' for future generations will be addressed. Prerequisites: B.S. in Biology, Chemistry, Environmental Science or Agricultural Sciences or consent of the instructor.

PHYS 621 Physical Principles of Environmental Instrumentation (3)

The course is a discussion of advanced physical concepts and their applications in instrumentation used in contemporary research. Construction details and the computer interfacing of selected instruments will also be discussed. Prerequisites: One year of Physics and one year of Calculus.

MEES 608 MEES Seminar (1)

This is repeatable credit with different topics.

MEES 610 Experimental Design Seminar (1)

The course is an exploration of research issues in experimental design. Seminar format includes student presentations and literature searches. Prerequisite: course in basic statistics or permission of instructor.

MEES 698 Special Topics in MEES (1-3)

This is repeatable credit with different topics.

MEES 699 Special Problems in MEES (1-3)

Special problems in areas related to the natural sciences, agriculture and nutrition are explored.

MEES 799 Master Thesis Research (1-6)

This is repeatable credit.

MEES 899 Doctoral Dissertation Research (1-12)

This is repeatable credit.

The following undergraduate courses are available for MEES graduate students to take. No more than 12 credits of 400 level courses may be used towards the minimum 24 credits of course work required.

BIOL 402	Ecology
BIOL 420	Animal Histology
BIOL 431	Mammalogy
BIOL 436	General Endocrinology
BIOL 440	Plant Physiology
BIOL 441	Comparative Physiology
BIOL 451	Conservation Biology
BIOL 461	Invertebrate Zoology
BIOL 488	Wildlife Ecology
CHEM 401	Principles of Physical Chemistry I
CHEM 402	Principles of Physical Chemistry II
ENVS 411	Water Pollution & Purification
ENVS 434	Air Pollution
MATH 410	Mathematical Statistics

Graduate statistics options include AGSC 605 Statistics in Agricultural Research and CSDP 604 Computer Methods in Statistics. Variable credit MEES 688 experimental courses may be offered periodically with specialty topics of various faculty members.

Facilities, State-Of-The-Art Equipment and Field Sites

Excellent research laboratories exist on campus in the G. W. Carver Science Hall. Research laboratories are also located in Trigg Hall and on the campus farm (Department of Agriculture). For a listing of the laboratories and major equipment and the UMES MEES faculty, see the website: www.umes.edu/sciences/mees/mees.html. UMES is uniquely situated for studying marine and estuarine habitats. Students have access to the Chesapeake Bay and the Atlantic Ocean, as well as rivers, ponds and marshes.

External Support of Research Activities

UMES faculty have received funding for research from a number of federal and state agencies and private organizations, including the National Science Foundation, National Institutes of Health, US Department of Agriculture, National Oceanic and Atmospheric Administration, US Department of the Interior, Environmental Protection Agency, Mid-Atlantic Fisheries Development Foundation, National Aeronautics and Space Administration, US Forest Service, Agency for International Development and the Maryland Department of Natural Resources.

UMES Combined B.S./M.S. Degree Program

UMES offers a combined B.S./M.S. degree program in the Environmental Sciences area (Environmental Chemistry or Marine Science option). This is an accelerated program designed

to enable students to obtain both the B.S. degree and the M.S. degree in five years. The curricula for the two degrees are administered under the auspices of the undergraduate Environmental Science Program and the graduate MEES program. The combined degree program offers an option or track in either Environmental Chemistry or Marine Science. This is an undergraduate admission into the B.S. degree program in Environmental Science, which allows for subsequent application for admission to the MEES graduate program in pursuit of the M.S. degree in Marine- Estuarine-Environmental Sciences.

MEES Program Time Limits

- Full time Master's students will be limited to four years in which to graduate.
- Full time Doctoral students will be limited to 7 years in which to graduate. Students must be advanced to candidacy, i.e., taken and passed the written and oral comprehensive examination and the dissertation proposal defense, within 6 semesters after initial enrollment.
- Part-time Doctoral and Master's MEES students will follow the Graduate School's time limits for Master's degrees (5 years) and Doctoral degrees (5 + 4 years).
- An extension of these time limits may be granted upon request of the student's Research Advisory Committee, and with the approval of the MEES Program Director and the UMES Graduate Studies Dean.

For more information, please contact

Graduate Coordinator - MEES Program
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Princess Anne, MD 21853
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Website: www.mees.umd.edu

Objective of the Program

UMES offers graduate programs leading to the degrees of Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) in Toxicology. The mission of the Toxicology Program is to provide educational and professional training in mechanistic and applied fields of environmental and mammalian toxicology. Graduates of the Toxicology Program will conduct research, teach, and provide technical support to federal, state, and local governments, industry, and public interest groups in areas including: evaluation and testing of harmful effects of chemical, physical, and biological agents on living organisms, mechanisms of toxicity, prevention of chemical induced diseases, risk assessment, and environmental protection through governmental regulations for the control and monitoring of hazardous chemicals.

There are four formally defined Areas of Specialization (AOS), within the Toxicology Program from which a student may choose as follows:

1. Chemical Carcinogenesis.
2. Analytical Toxicology.
3. Aquatic Toxicology.
4. Molecular & Mechanistic Toxicology.

General Information and Program Overview

The UMES Toxicology Program is part of the University System of Maryland's (USM) Program which encompasses faculty and resources on the campuses in Baltimore, College Park, Baltimore County, the Eastern Shore, and the Chesapeake Biological Laboratory of the USM Center for Environmental Science. Courses taught at USM campuses may be available to Toxicology Program students through inter-institutional enrollment.

Applicants and enrollees into the program should consult the Toxicology Program website for additional information and details of the Toxicology Program which are not covered in this section of this Catalog, and for any updates to the program after the time of printing. The comprehensive website for the Toxicology program (all participating units) is: www.medschool.umaryland.edu/departments/epidemiology/grad_tox.html

Admission

Beyond the Graduate School's minimum admission requirements, applicants should have earned a B.S. or BA in Chemistry, Biology, Pharmacy, or a related field. Students are expected to have completed the following courses or equivalents:

1. cell and molecular biology;
2. organic chemistry;
3. physical chemistry;
4. quantitative analysis;
5. calculus;
6. two semesters of undergraduate or graduate level biochemistry; and
7. one semester of undergraduate or graduate level physiology.

Specific requirements include a minimum cumulative GPA of 3.0, a combined verbal and quantitative GRE score of 1100 or higher, and a minimum internet based TOEFL score of 55 or computer based TOEFL score of 213.

Applicants to the Toxicology Program will be considered at both the M.S. and Ph.D. levels. In the event an applicant to the Ph.D. track has only a BA or B.S. degree, admission may initially be to the M.S. track with the final acceptance to the Ph.D. track contingent on successful completion of a probationary period (usually on year) and on the recommendation of the student's Research Advisory Committee.

An Admissions Committee has been established to evaluate the applications of prospective students based on the following criteria:

1. Applicant's research interests must be clearly stated and relevant to one or more of the Toxicology Program's AOS.
2. The academic preparation of the applicant must be consonant with stated interests and AOS requirements.
3. The undergraduate cumulative GPA must be at least 3.2, although some students with a GPA below 3.2 may be provisionally accepted on the basis of related research or work experience.
4. Applicants must submit the following required documents as part of their application for graduate study in the Toxicology Program:
 - a. GRE Scores (Only the General Test is required, although one of the Advanced Tests is strongly recommended).
 - b. Official college transcripts.
 - c. A brief essay clearly defining areas of research interest within the offered AOS. The essay will assist with identification of an Academic Advisor should the applicant be judged admissible.
 - d. Three letters of recommendation from persons familiar with the academic/research work of the applicant.

The initial screening of an applicant's credentials is done by the Admissions Committee at UMES. Students missing prerequisite courses may be offered provisional admission.

Receipt of the application will initiate the search for an appropriate faculty member to serve as the Academic Advisor for the student. No student will be admitted to the Toxicology Program for whom an Advisor has not been identified. Hence, if prior discussions have taken place between an applicant and a member of the faculty regarding that faculty member's service in an advisory capacity, that fact should be stated in the application and the faculty member should forward a letter of agreement to the Dean of Graduate Studies at UMES.

Application Deadlines

Domestic

Fall Semester – February 1
Spring Semester – September 1

International

Fall Semester – December 1

Spring Semester – June 1

Advisors and Research Advisory Committees

Upon admission to the Toxicology Program, students will be assigned to an Academic Advisor. Any request for a change of Advisor must be submitted to and approved by, the Toxicology Program Committee and the Toxicology Program Coordinator.

In certain situations, a student may request a second Academic Advisor. This might happen if, for instance, the professor most familiar with the student has only an Associate Graduate Faculty status. In this case, it is possible to set up a co-advisor team of two professors who jointly serve in the role of Advisor (the other having Regular Graduate Faculty status).

Due to the expected divergent interest and goals of students in the Toxicology Program, as well as the dispersion of campuses and laboratories, the early formation of a Research Advisory Committee (RAC) is mandatory. During the first semester of enrollment in the Toxicology Program, the student and the Advisor must form this Committee and submit its membership to the Toxicology Program Committee for approval. The RAC should meet during the first semester, and must make its written recommendations for a program of study before the end of the second semester.

A Master's RAC will consist of three members, all of whom must be Regular or Associate members of a University System of Maryland (USM) campus Graduate Faculty. A Ph.D. RAC must have five members, three of whom must be Regular or Associate faculty. The Ph.D. RAC can consist of a minimum of three members who are USM graduate faculty until the Comprehensive Examinations, at which time it must have all five members. The student's Advisor will serve as Chair of this Committee. The membership of the RAC should not be drawn entirely from a single laboratory or department. Replacement of Committee members is expected, as needed, based on the Advisor's recommendation.

The program of study will be planned by the RAC in the first or second semester and will include any missing prerequisites (all prerequisites must be completed within the first year in the program), all required core courses, and any specialized courses the Committee thinks the student needs. Total required and suggested courses will often exceed the general credit minimum (36 for M.S. and 42 for Ph.D.). The program of study must then be approved by the Toxicology Program Committee.

The RAC is responsible for initial approval of the student's area of research. Once the student has chosen an area of research, a proposal should be written and disseminated to the RAC. This preliminary research proposal should be brief, yet concisely state the student's research interests. Students in the Ph.D. track will later develop a more comprehensive research proposal which they must defend before advancement to candidacy. Students in the M.S. track will develop a more complete thesis proposal to submit to their RAC as described below. The approved preliminary proposal should be filed with the Toxicology Program Coordinator by the end of the second semester following entry into the Toxicology Program.

An M.S. student's RAC will approve the thesis proposal and the thesis defense. Master's thesis students are not required to take comprehensive examinations. For Ph.D. students, the RAC will administer the defense of the dissertation proposal, oversee the student's research, and administer the dissertation defense.

Annual progress reviews initiated by the Advisor will be conducted through the Toxicology Program Committee and the Coordinator to ensure satisfactory progress of Toxicology students toward degree completion (coursework and research direction).

Toxicology Degree Requirements

The Toxicology Program course curriculum is designed to provide essential core knowledge in Toxicology, together with elective courses that offer students the opportunity to specialize in their area of interest.

Course Curriculum

Course Requirements for M.S. (thesis option)

(Note: Credit hours given in parentheses)

a. 12 credits in Toxicology

TOXI 601 Advanced Toxicology I (3)
TOXI 602 Advanced Toxicology II (3)
TOXI 608 Research in Toxicology (2 to 4)
TOXI 609 Methods in Toxicology (1 to 3)
TOXI 611 Exposure, Risk and Public Health (2)
TOXI 618 Toxicology Seminar (once per year) (1)
TOXI 625 Aquatic Toxicology (cross listed as MEES 743) (3)
TOXI 799 Thesis Research (repeatable) (1 to 6)

b. 3 credits in each of the following 2 areas:

Biochemistry/Pharmacology

CHEM 670 Advanced biochemistry I (3)

Environmental/Analytical Chemistry

CHEM 621 Advanced Environmental Chemistry (3)

c. 3 credits in Statistics

CSDP 604 Computer methods in statistics (3)

d. 9 credits in Elective Courses

ENVS 603 Ecotoxicology (3)
FDST 802 Advanced Food Toxicology (3)
CHEM 671 Advanced Biochemistry II (3)
TOXI 625 Principles of Aquatic Toxicology (3)
MEES 698/498 Chesapeake Bay Health (3)
TOXI 611 Exposure, Risk and Public Health (2)

Course Requirements for M.S. (non-thesis option)

(Note: Credit hours given in parentheses)

a. 12 credits in Toxicology

TOXI 601	Advanced Toxicology I (3)
TOXI 602	Advanced Toxicology II (3)
TOXI 608	Research in Toxicology (2 to 4)
TOXI 609	Methods in Toxicology (1 to 3)
TOXI 611	Exposure, Risk and Public Health (2)
TOXI 618	Toxicology Seminar (once per year) (1)
TOXI 625	Aquatic Toxicology (cross listed as MEES 743) (3)

b. 3 credits in each of the following 2 areas:

Biochemistry/Pharmacology

CHEM 670 Advanced biochemistry I (3)

Environmental/Analytical Chemistry

CHEM 621 Advanced Environmental Chemistry (3)

c. 3 credits in Statistics

CSDP 604 Computer methods in statistics (3)

d. 9 credits in Elective Courses

ENVS 603	Ecotoxicology (3)
FDST 802	Advanced Food Toxicology (3)
CHEM 671	Advanced Biochemistry II (3)
TOXI 625	Principles of Aquatic Toxicology (3)
MEES 698/498	Chesapeake Bay Health (3)
TOXI 611	Exposure, Risk and Public Health (2)

Course Requirements for Ph.D.

(Note: Credit hours given in parentheses)

a. 12 credits in Toxicology

TOXI 601	Advanced Toxicology I (3)
TOXI 602	Advanced Toxicology II (3)
TOXI 608	Research in Toxicology (2 to 4)
TOXI 609	Methods in Toxicology (1 to 3)
TOXI 611	Exposure, Risk and Public Health (2)
TOXI 618	Toxicology Seminar (once per year) (1)
TOXI 625	Aquatic Toxicology (cross listed as MEES 743) (3)
TOXI 899	Dissertation Research (repeatable) (1 to 12)

b. 3 credits in each of the following 2 areas:

Biochemistry/Pharmacology

CHEM 670 Advanced biochemistry I (3)

Environmental/Analytical Chemistry

CHEM 621 Advanced Environmental Chemistry (3)

c. 3 credits in Statistics

CSDP 604 Computer methods in statistics (3)

d. 9 credits in Elective Courses

ENVS 603	Ecotoxicology (3)
FDST 802	Advanced Food Toxicology (3)
CHEM 671	Advanced biochemistry II (3)
TOXI 625	Principles of Aquatic Toxicology (3)
MEES 698/498	Chesapeake Bay Health (3)
TOXI 611	Exposure, Risk and Public Health (2)

Thesis Defense

An oral defense of the thesis, administered according to Graduate School procedures, will take place at the completion of the research project. This defense will be conducted by the RAC and will be administered once all other degree requirements have been fulfilled. The RAC also approves the thesis. It is the candidate's obligation to see that each member of the Committee has at least *two weeks* in which to examine a copy of the thesis prior to the time of the defense. The RAC may conclude that the candidate has passed or failed. A student may be conditionally passed with the provision that minor changes in the thesis be made by the student and approved by the major Advisor. A student who fails may, at the discretion of the Committee and the UMES Graduate Studies Dean, be permitted to stand a second defense after acting on suggestions for improvement of the thesis (e.g., collection of more data, use of different statistical analysis, rewriting of the discussion, etc.), at such time as the Advisor considers appropriate. Once the thesis has been successfully defended, copies required by the Graduate School must be submitted.

Examinations

Formal application for advancement to candidacy for the Doctoral degree requires successful completion of both a written comprehensive examination and an oral defense of the dissertation proposal. The written comprehensive examination must be passed before the student can defend the dissertation proposal.

a. *Comprehensive Examination*

The RAC is responsible for administering the written comprehensive examination. This examination must be successfully completed before the dissertation proposal can be defended. The exam must be taken by the end of the student's fifth semester. This examination is intended to determine whether the student demonstrates sufficient evidence of scholastic and intellectual ability in major and related academic areas. The examination will not be a defense of the research proposal. The RAC will determine whether the student passes (a minimum of four affirmative votes is required), or fails. If failed, the examination may, at the recommendation of the RAC, be taken again. In this case, the examination should

be repeated within one year, but no sooner than six months, after the initial examination. If the examination is failed a second time, admission will be cancelled. Any conditional passing of the examination must be satisfied before the examination can be rendered "successfully completed".

The USM interactive video network system may be used for dissertation proposal defenses but all Committee members, the student and the Graduate Studies Dean must agree to this use. Phone/conference calls are not acceptable alternatives.

b. Dissertation Proposal Defense

The proposal defense is an oral examination on the research proposal administered by the RAC. At least two weeks prior to the examination, the student must supply the Committee members with a formal research proposal which includes: background information, research progress to date (if any), specific objectives, and experimental design of the proposed research. The RAC is expected to examine the student on all aspects of the proposed research to determine whether the research plan is sound, whether the student has the proper motivation, intellectual capacity and curiosity, and has, or can develop, the technical skills necessary to successfully pursue the Ph.D. degree. The student passes if there are at least four affirmative votes. If failed, the student must re-defend the proposal within one year; a second failure will result in cancellation of admission.

The research proposal should be defended within one year of unconditionally passing the written comprehensive examination and at least one year before projected completion of the degree requirements.

At the successful completion of this defense, the student officially applies for *Advancement to Candidacy for the Ph.D. Degree* and should submit the necessary form to the UMES Graduate School. Students must be admitted to candidacy at least six months prior to the defense of the dissertation (final oral defense).

c. Dissertation Seminar & Defense of the Dissertation Research

A candidate for the Ph.D. degree will present a public seminar on his/her dissertation research during the academic year in which the degree will be awarded. The seminar should, under normal circumstances, be given within five weeks in advance of the day of the oral final examination. The student and the Advisor will be responsible for initiating arrangements for the date and advertisement of the seminar. The seminar will be open to faculty, students, and other interested parties.

The final oral defense of the dissertation is conducted by a Committee of the graduate faculty appointed by the Graduate Studies Dean (this is usually the RAC plus a Graduate Studies Dean's representative). Nominations for membership on this Committee are submitted on the designated form to the UMES Graduate School by the student's Advisor. This is done by the third week of the semester in which the student expects to complete all requirements, but no sooner than two months prior to the defense (see the UMES Graduate School's calendar for commencement schedule). The time and place of the examination are established by the Chair of the Committee. The student is responsible for distributing a complete, final copy of the dissertation to each member of the Committee at least two weeks before the examination date. Announcement of the final examination will be made to all members of the Toxicology faculty at least two weeks prior to the examination. All final oral examinations are open to all members of the graduate faculty and students, although only members of the Examining Committee may question the candidate. After the examination, the Committee deliberates

and votes in private. Two or more negative votes constitute failure. The student may be examined no more than twice. Following successful completion of the final examination, copies of the dissertation required by the Graduate School must be submitted.

Core Courses

(Note: Credit hours given in parentheses)

TOXI 601 & 602 Toxicology (3 + 3)

A two-semester course covering basic principles of toxicology and mechanisms by which chemicals cause diseases and environmental damage. Topics include target organ toxicity, major classes of toxic agents, and mechanisms of cell injury and cell death. The course is offered in sequence in fall and spring semesters.

CSDP 604 Computer Methods in Statistics (3)

This course is an introduction to the principles and applications of probability and statistics needed in graduate studies in various academic areas and to the computer realization of these methods. The course begins with a brief intensive review of basic statistical principles. Prerequisites: One semester of calculus.

CHEM 670 Advanced Biochemistry (3)

The course covers the classification, chemistry and metabolism of protein, amino acids, carbohydrates and lipids. Prerequisite: one semester of biochemistry.

TOXI 604 Biochemical Pharmacology (3)

This course covers biochemical and molecular mechanisms of drug, xenobiotic, and hormone action on cells and tissues. Emphasis will be on the methodology used in pharmacological research. Topics include mechanisms of drug metabolism, enzymes as targets of drug action, interactions of drugs with channels and carriers, and drugs that interact with nuclear receptors. Offered spring semester in even-numbered years.

TOXI 609 Methods in Toxicology (1-3)

Students become familiar with laboratory methods used by faculty members to study the effect of toxins and environmental pollutants on living systems. The course is repeatable credit. Permission and credit are arranged individually.

TOXI 618 Seminar in Toxicology (1)

Students, guests, and faculty members review and discuss original works and recent advances in toxicology. The course is repeatable credit

TOXI 799 Thesis Credit (1-6)

This is repeatable credit.

TOXI 899 Dissertation Credit (1-12)

This is repeatable credit.

Elective Courses

(Note: Credit hours given in parentheses)

ENVS 603 (3)

This course cuts across traditional subject boundaries by integrating different disciplines such as chemistry and biochemistry through ecology and statistics. It provides students with a distinct approach for solving marine environmental pollution issues stemming from stable pollutants and how they interact with biotic and abiotic components of the marine ecosystem. Prerequisites: CHEM 112, CHEM 211, BIOL 112, Math 210

CHEM 621 Advanced Environmental Chemistry (4)

The origin, transport, and effects of atmospheric and aquatic pollutants are studied, with emphasis on energy-related pollutants including coal, oil and synfuels. Prerequisites: One year of general chemistry, one semester of organic chemistry and one semester of analytical chemistry or permission of the instructor.

ENVS 622 Solid and Hazardous Waste Management (3)

The course introduces fundamentals of solid and hazardous waste management that include their source, characterization, collection, transportation, storage and final disposal. It also deals with resource recovery and utilization, risk assessment, biological, physical and chemical waste treatment methods/technologies and various waste legislation and implementation. The course includes field trips to landfills, recycling facilities and waste-to-energy facilities. A project paper and oral presentation are required. Prerequisite: Graduate standing in the Science or Engineering.

FDST 802 Advanced Food Toxicology (3)

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. Prerequisite: permission of instructor.

TOXI 607 Forensic Toxicology (3)

Lectures include discussion of principles underlying forensic and clinical toxicology, mechanism of action of drugs and other poisons, methods of detection and quantitation of drugs and poisons in tissues and body fluids, and interpretation of analytical procedures for the detection and estimation of drugs and chemicals in biological samples. The course is offered fall semesters in even-number years.

TOXI 611 Exposure, Risk and Public Health (2)

This course is open to graduate students in toxicology, epidemiology, public health, nursing and related fields of interest.

TOXI 615 Toxic Cell Injury (2)

Lectures will concern the mechanisms of cell injury from toxic agents and the integration of ideas from TOXI 601 and 602 and use a cell biology approach to understanding how organic and inorganic toxicants produce cellular damage.

TOXI 620 Joint Environmental Law-Toxicology Seminar Series on Special Topics (2)

This course examines real-world problems involving toxic chemicals from both the legal and scientific perspectives. Law and toxicology students work as teams to develop innovative approaches to solving complex problems of regional and national interest. Topics include the effects of toxic chemicals on the Chesapeake Bay and public health problems associated with lead exposure.

TOXI 625 Principles of Aquatic Toxicology (3)

The course covers toxicology testing methods, chemical disposition in aquatic species, metabolism, and biochemical effects at the subcellular level. Consideration will be given to the effects and mechanisms by which chemicals produce toxic effects in aquatic organisms. The course is offered spring semesters.

TOXI 675 Reproductive and Developmental Toxicology (2)

This course provides an overview of normal and abnormal male and female reproduction as well as embryo, fetal, and neonatal development. Regulatory toxicology issues, in particular the risk assessment process, are discussed.

MEES 698 Chesapeake Bay Health

This course is designed to provide students with a broad perspective on the subject of environmental health issues pertinent to the Chesapeake Bay. It is a comprehensive course in which a definitive description of basic concepts and principles, laboratory testing and field situations, as well as examples of typical data and their interpretation and use by industry and water resource managers, will be discussed.

Facilities, Instrumentation and Field Sites

State-of-the-art research facilities and instrumentation are found in G.W. Carver Hall, Richard Hazel Hall and Trigg Hall on the UMES Campus.

External Support of Research Activities

UMES faculty have received funding for research from a number of federal and state agencies and private organizations including: National Science Foundation, National Institutes of Health, US Department of Agriculture, National Oceanic and Atmospheric Administration, US Department of the Interior, Environmental Protection Agency, Mid-Atlantic Fisheries Development Foundation, National Aeronautics and Space Administration, US Forest Service, Agency for International Development and the Maryland Department of Natural Resources.

Toxicology Program Time Limits

- Full time Master's students will be limited to four years in which to graduate.
- Full time Doctoral students will be limited to 7 years in which to graduate. Students must be advanced to candidacy, i.e., taken and passed the written and oral comprehensive examination and the dissertation proposal defense within 6 semesters after initial enrollment.
- Part-time Doctoral and Master's Toxicology students will follow the Graduate School's time limits for Master's degrees (5 years) and Doctoral degrees (5 + 4).
- An extension of these time limits may be granted upon request of the student's RAC, and with the approval of the Toxicology Program coordinator and the UMES Graduate Studies Dean.

For additional information on the program, please contact

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School of The Arts and Professions

www.umes.edu/sap

Department of Criminal Justice

Degree Offered

Master of Science (M.S.), Criminology and Criminal Justice

M.S., Criminology and Criminal Justice

Objectives of Program

The Master of Science in Criminology and Criminal Justice (MCCJ) is a program designed to produce quality-based and critically-oriented scholars in criminology and criminal justice, with an in-depth knowledge of the functioning of the criminal justice system. The Criminology and Criminal Justice Program is interdisciplinary and seeks qualified students with baccalaureate degrees in criminal justice and other disciplines as well as professionals in the field who desire to further their degrees in criminal justice. The program also prepares students for Doctoral work in the discipline. Graduate education in Criminal Justice at UMES, the only such program on the Eastern Shore of Maryland, will be useful to criminal justice agencies in the state. Graduate education in the discipline has become the generally sought academic experience for optimum performance within the criminal justice system.

The major objectives of the Master of Science in Criminology and Criminal Justice are to:

1. Enhance students' knowledge in criminology and criminal justice with the potentialities and opportunities for Doctoral work and advancement of this body of knowledge.
2. Provide students with the skills to engage in original and independent scholarly research in criminology and criminal justice.
3. Enhance students' capacity to critically evaluate the criminal justice system and to hold management and research positions in the public and private sectors.
4. Increase students' knowledge of qualitative and quantitative research in criminology and criminal justice and provide them with the necessary skills to be effective researchers, program evaluators, consultants in the field, and users of existing criminological research data.
5. Assure that students acquire an understanding of an integrative minority perspective in criminological thought.
6. Increase students' knowledge and appreciation of various theoretical explanations of criminal behavior.

Description of the Program

All Master's degree students are required to take five core courses (MCCJ 600, 620, 625, 631, 640). A grade of "B" (3.0) or better must be achieved in each core course. Each Master of Science degree student may specialize in one concentration area. These include Criminology

and Research (CR), Law Enforcement and Courts (LEC), and Corrections and Delinquency Prevention (CDP). The Master of Science degree is granted upon completion of one of two program options.

Thesis Option

The thesis option requires the successful completion of twenty-four (24) semester hours of course work and a minimum of six (6) hours of credit on an original thesis. This research-oriented option of thirty (30) credit hours is designed for students who anticipate pursuing their academic career to the Doctoral level. Students electing this option must form a Thesis Committee. A minimum committee consists of a major professor and two additional faculty members, all of whom must be a UMES graduate faculty member. The major professor and one member of the Thesis Committee should be selected from the Department of Criminal Justice Faculty. The third Committee member must be selected from campus approved graduate faculty. A successful oral defense of the thesis is required. Students are encouraged to review the department's Comprehensive Examination-Thesis Policy prior to beginning work on the thesis.

Course Work Option

The course work option requires that the student completes thirty-six (36) credit hours of course work. This option does not require completion of a major paper.

Structure of the Program

Core courses include the following:

(NOTE: Credit Hours are given in parentheses)

MCCJ 600	Proseminar in Criminology and Criminal Justice (3)
MCCJ 620	Theoretical Perspectives on Crime and Justice (3)
MCCJ 625	Research Methods in Criminology and Criminal Justice (3)
MCCJ 631	Applied Statistics in Criminology and Criminal Justice (3)
MCCJ 640	Minorities, Crime, and Justice (3)

Areas of concentration

Criminology and Research - CR

Law Enforcement and Courts - LEC

Corrections and Delinquency Prevention - CDP

Thesis Option - Minimum of 30 credit hours

- Core courses – 15
- Concentration courses – 6
- Electives – 3
- Thesis – 6

Non-Thesis Option (Course Work) -Minimum of 36 credit hours

- Core courses – 15
- Concentration courses – 18
- Electives – 3

Graduate Student Responsibility (Thesis Option)

Each student will select a major professor according to his/her area of concentration. Major professors must be selected from the faculty of the Criminal Justice Department who are

associate/regular members of the UMES Graduate Faculty. The student, in consultation with his/her major professor, selects the Thesis Committee. The Committee includes a major professor from the Department of Criminal Justice and two other faculty members, one of whom must come from the Criminal Justice Department. A student may select an associate or regular member of the Graduate Faculty from another discipline.

Thesis option graduate students are responsible for all aspects of the preparation of the thesis, including the following:

1. Subject matter and content.
2. Organization and format.
3. Editorial, linguistic and bibliographic quality.
4. Quality of text, illustrations and duplication.
5. Quality of data, evidence and logical reasoning presented.
6. Proper processing and submission of the final copies of the document to the graduate school.

The Thesis Advisory Committee's Responsibility

The Chair and to a lesser extent, the other members of the Advisory Committee, are responsible for the following aspects of the thesis and the related or associated research experience:

1. Approval of the subject matter and methodology of the thesis research.
2. Approval of the organization, content and format of the thesis,
3. Review of and comment on drafts of various aspects of the thesis.
4. Evaluation of the thesis as a basis for certification that the student has fulfilled the degree requirements.
5. Encouragement of and advice to the student and review of manuscripts based on the thesis research for publication in scholarly journals.

Admissions Requirements and Guidelines

All requirements of the University, as set forth in this Catalog, must be met prior to admission into the MCCJ program in the Department of Criminal Justice. The admissions criteria for Regular Admission status are:

1. A baccalaureate degree from a regionally accredited 4-year college or university, or the equivalent from a foreign country.
2. A minimum cumulative grade point average (GPA) of 3.0 (on a 4.0 scale) on undergraduate coursework.
3. Successful completion of the Graduate Record Examination (GRE) [General Test]. Acceptance of the scores will be determined by the Admissions Committee.
4. Three letters of recommendation from person capable of adequately assessing the applicant's potential for success in the program.
5. An interview by the Admissions Committee.

Provisional Admission

Applicants who fail to meet any of the above requirements may be admitted on a provisional basis. Provisional admission consideration will be based on fulfillment of all the following:

1. A minimum cumulative GPA of 2.7 (on a 4.0 scale) on all undergraduate coursework.

2. Registration will not be allowed for more than 9 credit hours in the first semester in the program, and a minimum grade of "B" in all courses must be maintained.
3. Three letters of recommendation from persons capable of adequately assessing the applicant's potential for success in the program.
4. Successful completion of the GRE (general test) within the timeframe presented in the Department's Graduate Program Policy and Procedures document.

Application Deadlines

Fall Semester - April 15
Spring Semester - October 30
Summer Sessions - April 15

Academic Probation, Suspension and Dismissal

Academic probation follows the policy of the Graduate School as set forth in this Catalog.

The Department's policy on academic suspension for this program is that a student may be suspended from the program if he/she:

1. earns two "C" grades; or
2. has a cumulative GPA of less than 3.0.

Removal of Academic Suspension is as follows. A suspended student may be conditionally readmitted after:

1. sitting out for one calendar year; and
2. retaking the GRE test.

The Department's policy on academic dismissal from this program is that a student shall be dismissed from the program if he/she:

1. makes three grades of "C" or less in one semester, and
2. makes two "C" grades in one semester while in Provisional Admission status.

Non-Degree Registration

A student who has not been formally admitted into the Criminal Justice Graduate program may be allowed to take no more than six (6) credit hours of classes per semester as a non-degree seeking student. Such grades earned will not in any way count toward qualifying conditions for admission into the program. Non-degree seeking students are admitted by the Graduate School and follow the policy for the Advanced Special status student set forth in this Catalog.

Retention and Exit Requirements

All students, regardless of area of concentration or program option chosen, must maintain a cumulative 3.0 or better grade point average, complete degree requirements in five (5) years or less, and successfully pass a written comprehensive examination. The written comprehensive examination may be attempted a maximum of two times. Comprehensive examinations are given each October and April. The Department of Criminal Justice's Comprehensive Examination Procedures will govern conduct of the examination.

Employed Professionals

The MCCJ Program acknowledges the correlation between theory and research on the one hand and practical application on the other. The MCCJ Program strongly invites criminal justice practitioners and other professionals to enroll in the program. The overall objective is to prepare practitioners for advanced administrative positions in criminal justice and other related agencies. Students may elect to complete the program requirements for graduation

on either a full-time or part-time basis (five-year limit for the duration of the program). The program courses will to the extent possible be offered in the evenings in order to accommodate employed practitioners. Courses may also be offered on weekends.

Financial Assistance

UMES recognizes the high cost of education and makes every effort to offer financial assistance, through a variety of programs, to qualified students. In addition, federal loans are available to graduate students through the university's financial aid office. For additional information about loans and other sources of aid, contact the Financial Aid Office.

Faculty of The Department of Criminal Justice

The Department of Criminal Justice is interdisciplinary with faculty holding advanced degrees in various disciplines, including law, sociology, public administration, and criminology. All resident faculty in the department are expected to teach in both the graduate and undergraduate programs. All faculty members, except adjunct lecturers, provide student counseling and serve as advisors to students in the department.

Description of Courses

(NOTE: Credit Hours are given in parentheses)

Core Courses

(All students in the program are required to take these courses.)

MCCJ 600 Proseminar in Criminology and Criminal Justice (3)

This course is designed as an in-depth analysis of criminological issues and components of the criminal justice system for students with diverse undergraduate backgrounds. It employs an integrated systems approach toward thinking about crime and its causes and covers the history of criminological thought as well as multidisciplinary attempts at crime explanation.

MCCJ 620 Theoretical Perspectives on Crime and Justice (3)

This course is a survey of criminological theories with emphasis on crime causation and justice. Included are sociological, economic, geographic, and political theories of law formation and law breaking; development of physiological, genetic, psychological, and psychiatric perspectives of criminal behavior and the relationship between theory and policy.

MCCJ 625 Research Methods in Criminology and Criminal Justice (3)

This course provides an introduction to the research methodology used in studying crime and criminological issues.

MCCJ 631 Applied Statistics in Criminology and Criminal Justice (3)

This is an advanced applied social statistics course with computer applications, using examples from criminological issues and crime-related data. Statistical procedures to be studied – descriptive and inferential statistics and linear regression techniques—are those typically used to analyze data to understand and explain criminological issues.

Prerequisite: Undergraduate or graduate introduction to statistics

MCCJ 640 Minorities, Crime, and Justice (3)

This course considers the relationships among race, ethnicity, and crime in the justice system. The effect of social policy on racial and ethnic inequality is studied, and theories of ethnic and racial justice are presented in terms of their effect on crime and criminal justice.

Supportive Courses

(NOTE: Courses for different areas of concentrations are designated as follows: CR=Criminology and Research; LEC=Law Enforcement and Courts; and CDP=Corrections and Delinquency Prevention)

MCCJ 642 Women, Crime, and Justice (3) CR

This course explains theories of gender, society, and their relationship to crime are explored. Empirical knowledge of causal theories will be used to explore reasons for female involvement in the criminal justice system. An exploration of the meaning and application of justice for women will also be included.

MCCJ 644 Organized Crime (3) CR; LEC

This course provides the student with both an historical and contemporary analysis of organized crime and the fight against organized crime in the United States; considers factors that led to the rise of organized crime in the United States at the turn of the 20th Century and how those factors continue to influence organized crime today. It also considers multiple theories of organized crime and explores many of the methods used by law enforcement to curtail/eliminate organized crime.

MCCJ 646 Special Topics in Criminology and Criminal Justice (3) CR; LEC; CDP

This course analyzes current research and policy issues of priority from a range of perspectives in criminology and criminal justice (focus of course is on specific research expertise of faculty and importance of justice issues).

MCCJ 648 Criminal Justice Administration (3) CR; LEC; CDP

This course acquaints students with a basic understanding of organization/administrative theory and behavior and their assumptions. The course will explore administrative theories within a criminal justice context as students learn the impact of organization structure, environment, and behavior on such issues as leadership, control, and decision making.

MCCJ 650 Private and Industrial Security (3) CR; LEC; CDP

This course deals with historical, philosophical, and modern perspectives of private and industrial security - survey of its principles, its legal authority and its effects on society in general. Included in the course are institutional security, challenges of violence in the workforce, industrial and retail security, various forms of preventing losses, and risk management.

MCCJ 652 Survey of the Correctional Field (3) CDP

This course examines the dynamics of American correctional techniques and rationale from the 1700's to date. It familiarizes students with the history, philosophy, and evolution of correctional practice in America.

MCCJ 654 History of African American Criminological Thought (3) CR; LEC; CDP

This course is designed to provide the student with knowledge of and understanding of African American perspectives on criminology and criminal issues. The course is intended to give graduate students perspectives that are often omitted from mainstream undergraduate criminal justice curriculums. The materials used in this course are relatively broad covering both historical and contemporary African American thought. The perspectives considered have analyzed the issues with an emphasis on how they impact and are impacted by race.

MCCJ 656 Law Enforcement (3) LEC; CDP

This course analyzes the problems, practices, and philosophies of law enforcement in contemporary society. It gives special attention to particular areas, such as personnel selection, police-community relations, crisis intervention, patrol intervention, police brutality, and criminal profiling.

MCCJ 658 Law and Courts (3) LEC; CDP

This course considers the definitions and development of criminal law, criminal procedure, criminal rights, and constitutional theory and practice. It also examines the structure, functions, and operations of the courts, with special emphasis on principles of legality as provided by the US constitution.

MCCJ 659 Theories of Juvenile Delinquency (3) CR; LEC; CDP

This course examines theories of juvenile delinquency, environmental influences on juvenile offenders, control, and corrections of the juvenile offender. It will investigate the special forms of justice applied to non-adults by arrest, detention, adjudication and juvenile corrections.

MCCJ 700 Public Policy in Criminal Justice System (3) CR; LEC; CDP

This course examines the assumptions, context, and environment for the formulation and implementation of public policy. The issues of morality and politics will provide a subtext for discussion and analysis of contemporary public policy. There will also be a discussion and identification of stakeholders.

MCCJ 710 Law and Social Control (3) CR; LEC; CDP

Select topics in Law and Social Control are examined in this course. Topics -- which may vary from semester to semester--include mental illness and the law, individual rights and public welfare, comparative criminal law and procedure, sanction law and public order, authority and power, and indirect social control in criminal justice.

MCCJ 720 Seminar in Community Policing (3) LEC

This course focuses on the problems and practices of contemporary law enforcement and uses current scholarship to understand police-community relations.

MCCJ 730 Seminar in Terrorism (3)

This course is a review of historical and contemporary knowledge on the many terrorism crime relationships. It includes a survey of the literature that examines patterns of terrorism, domestic, global, and technological terrorism and a review of articles that examine theories, causes, ideology, typologies, security problems, media, structure, and issues in counterterrorism.

MCCJ 734 Directed Individual Study (1-3) CR; LEC; CDP

This course involves study under the supervision and guidance of a faculty member.

MCCJ 740 Comparative Criminology and Criminal Justice (3) CR; LEC; CDP

This course examines criminal justice institutions comparatively in several countries. The purpose will be to describe the variety of criminal justice experience, to understand the determinants of these variations, and enhance the understanding of what works, what doesn't, and why in the criminal justice system.

MCCJ 750 Seminar in Probation and Parole (3) CDP

This course is an in-depth examination of selected area within the broader field of corrections. Specific attention will be paid to analysis of theories and practice of probation and parole, responses of paroling authorities to public pressures, and court controls and their implications for rehabilitative efforts. It assesses the feasibility and effectiveness of treatment of individuals under sentence in the community.

MCCJ 760 Qualitative Methods in Criminology (3) CR; LEC; CDP

This course is an examination of ethnographic and qualitative fields methods and their application to problems of crime and criminal justice. It is focused on familiarizing students with the nature and utility of qualitative fieldwork in various areas of criminological research.

MCCJ 770 White Collar and Governmental Crimes (3) CR; LEC; CDP

Special topics in White Collar and Governmental Crimes are examined in this course from a criminological perspective. White collar crimes and government crimes include fraud, embezzlement, price-fixing, antitrust violations, income - tax evasion, misuse of public funds, and abuse of political and legal powers.

MCCJ 780 Seminar in Criminological Theory and Research (3) CR

This course is an exploration of the etiology of crime, theory development and crime causation. Emphasis will be placed on theoretical perspectives, research, and ideological dialectics. Bio-criminology, employing an integrated systems approach, will also be examined.

MCCJ 782 Advanced Seminar in Police and Society (3) CR; CDP

This course is a survey of literature examining historical and current issues and problems in policing with emphasis on the legal aspects of law enforcement.

MCCJ 786 Field Practice in Criminal Justice (1-3) CR; LEC; CDP

This course involves firsthand experience in the day-to-day operation of a criminal justice program under the guidance and supervision of a faculty member and a practitioner in the field.

MCCJ 790 Master's Comprehensive Examination (0) (s/u grade only)

This course is required of all students involved in the Master of Science program with the consent of the major professor. Students must be registered for at least one class when taking the comprehensive examination.

MCCJ 799 Master's Thesis (1-6) CR; LEC; CDP

This course is required of all students involved in preparation, data collection, and writing of the Master of Science (MS) thesis.

For further information on this program, please contact

Graduate Program Coordinator (MCCJ)

Hazel Hall

Department of Criminal Justice

University of Maryland Eastern Shore

Princess Anne, MD 21853

Email: dlspinner@umes.edu

Department of Education

Degrees Offered

Master of Education (M.Ed.), Counselor Education

Master of Education (M.Ed.), Special Education

Master of Arts in Teaching (M.A.T)

M.Ed., Counselor Education

Objective of the Program

The Counselor Education program offers graduate work leading to a Master of Education (M.Ed.) degree. The school counseling program is approved by the Maryland State Department of Education to meet competency area requirements for school certification (K-12). The program prepares students to become entry-level, human development specialists. The M.Ed. level program constitutes the initial professional preparation for students desiring employment in public or private schools or non-educational agencies. The course of study is based on the Council for the Accreditation of Counseling and Related Educational Programs (CACREP) national standards. The state's Essential Dimensions of Teaching (EDoT) standards are also addressed as appropriate.

The general objectives of the program are:

1. To help students develop personal and interpersonal qualities and skills that are necessary to function in helping others.
2. To provide students with the competencies needed to demonstrate knowledge and skills that are necessary for counselors in school settings and human development specialists in non-school settings.

Accreditation

UMES' Teacher Education and School Counseling Programs are accredited by the National Council for Accreditation of Teacher Education (NCATE) and approved by the Maryland State Department of Education (MSDE).

Admission Criteria

The Counselor Education Program Admissions Committee recommends students to the UMES Graduate School for admission to the program. Entrance requirements include:

1. Bachelor's degree from an accredited institution.
2. Course preparation in education, psychology and human development. Students are expected to have completed the following undergraduate courses prior to entry into the program: Human Growth and Development; Tests and Measurements; Introduction to Special Education; and Introduction to Psychology. Students who have not completed course work in these areas may be required to do so before being admitted to the program, and/or be required to take EDGC 610 Advanced Psychology.
3. 3.0 average or better on a 4.0 scale in undergraduate course work.

4. Three letters of recommendation from persons capable of assessing the applicant's potential for success in a Counselor Education graduate program.
5. An interview with the Admissions Committee.

Application Deadlines

Fall Semester - May 1st
Spring Semester - November 1st
Summer Session - April 1st

Provisional Admission

Applicants who possess an overall GPA of between 2.5 to 2.99 will be admitted to Provisional Status. Provisional Status students must maintain a 3.30 average in the first nine approved credit hours of graduate level courses in Guidance and Counseling.

A student who is considered to have potential for success, but lacks adequate course preparation for Guidance and Counseling, may be asked to complete additional courses to enhance their background in related fields.

Exit Requirements

1. A 100 clock hour practicum and a 400 clock hour Internship are required for all students. The practicum and internship are supervised counseling experiences in which students are required to integrate and apply the knowledge and skills acquired throughout the program. Students seeking certification as a school counselor are placed in school settings at the elementary/middle and high school levels where they can participate in all activities that a professional school counselor is expected to perform. Other students are placed in appropriate agencies where they can participate in all activities expected by a community counselor. Application to take the practicum must be filed with the department one semester before the student plans to take it. Approvals of Advisor and the program coordinator are required.
2. A written comprehensive examination is required to ensure the mastery of the program competencies. Core courses must be completed before the comprehensive examination is taken.
3. The completion of a seminar paper demonstrating research competency is required. The Advisor for the paper, the Graduate Program Coordinator, and the Chair of the Education Department must approve this paper.
4. The M.Ed. degree student must maintain a 3.0 grade point average. No grade in any program course which is lower than a "C" is acceptable for retention in the program.
5. A minimum of 48 credit hours is required for completion of the Master's degree program in Guidance and Counseling.

Counselor Education Courses

(NOTE: Credit Hours are given in parentheses)

Based upon the applicant's background and interests, a course of study will be planned with the Advisor that is congruent with the student's career goals. Curriculum options are: (1) School Counseling K-12; or (2) Community Counseling.

Counselor Education School Program (K-12)

Core Course/Competency Requirements

- EDGC 601 Introduction to Guidance & Counseling (3)
- EDGC 604 Theories and Techniques of Counseling (3)
- EDGC 605 Individual and Group Appraisal (3)
- EDGC 606 Clinical Applications of Counseling (3)
- EDUC 620 Human Growth and Development (3)
- EDGC 631 Career and Life Development (3)
- EDGC 640 Group Processes in Counseling (3)
- EDGC 643 Counseling Children and Adolescents (3)
- EDGC 645 Cross Cultural Perspectives in Counseling (3)
- EDGC 660 Crisis Management in Counseling (3)
- EDGC 670 Ethical, Legal & Professional Issues in Counseling (3)
- EDGC 677 Practicum in School Counseling (3)
- EDUC 690 Introduction to Behavioral Research (3)
- EDGC 697 Advanced Practicum in Counseling (3)
- EDGC 698 Seminar in Guidance and Counseling (2-6)
Elective (3)

Community Counseling

Core Course/Competency Requirements

- EDGC 602 Introduction to Community Counseling (3)
- EDGC 604 Theories and Techniques of Counseling (3)
- EDGC 606 Clinical Applications in Counseling (3)
- EDGC 612 Marriage and Family Counseling (3)
- EDUC 620 Human Growth and Development (3)
- EDGC 631 Career and Life Development (3)
- EDGC 640 Group Processes in Counseling (3)
- EDGC 645 Cross Cultural Perspectives in Counseling (3)
- EDGC 655 Social Diversity in Counseling (3)
- EDGC 660 Crisis Management in Counseling (3)
- EDGC 670 Ethical, Legal, & Professional Issues in Counseling (3)
- EDGC 679 Practicum in Community Counseling (3)
- EDUC 690 Introduction to Behavioral Research (3)
- EDGC 698 Seminar in Guidance and Counseling (2-6)
- EDGC 699 Advanced Practicum in Community Counseling (3)
Elective (3)

Elective Courses

The student may select additional electives to complete degree requirements from the following offerings upon approval by the Advisor.

- EDSP 481 Characteristics & Programming for the Gifted (3)
- EDGC 655 Social Diversity in Counseling (3)
- EDGC 612 Marriage and Family Counseling (3)
- EDGC 665 Special Topics (1-maximum 6 credits)
- EDGC 610 Introduction to Advanced Psychology (3)
- SPED 600 Characteristics of Exceptional Individuals (3)
- EDSP 491 Characteristics and Programming for the Learning Disabled (3)

EDSP 498	Foundations of the Education of Exceptional Children (3)
EDGC 609	Special Problems in Guidance & Counseling (1-3)
CDSP 628	Computer Application in Education (3)
EDGC 646	Organization and Administration of Guidance Program (3)
SOWK 455	Substance Abuse Issues and Services (3)
HUEL 460	The Family and Aging (3)
EDGC 798	Research Project (1-3)
SPED 630	Current Legal and Advocacy Issues in Special Education (3)

Courses

(NOTE: Credit Hours are given in parentheses)

EDGC 601 Introduction to Guidance & Counseling (3)

This course is an overview of the field of guidance and counseling, providing knowledge of the historical and philosophical foundations of guidance and counseling and their implications for professional practice. Professional activities and ethical practices of counselors and other helping professionals in both educational and non-educational settings are explored. Exploration of how personal values interact and impact upon counseling are examined.

EDGC 604 Theories & Techniques of Counseling (3)

The course focuses on counseling theories and techniques, with emphasis on their applicability to specific counseling settings and counselor orientation.

EDGC 612 Marriage & Family Counseling (3)

This course focuses on counseling theory and techniques as related to families and couples, with an emphasis on the unique aspects of marriage and family relationships. Analysis of family dynamics and the use and interpretation of genograms are presented.

EDGC 660 Crisis Management in Counseling (3)

This is an overview of applied therapeutic counseling in general and crisis intervention in particular. There is an emphasis on intervention strategies that work when people are in crisis. Counseling and counselor issues that will be effective in any crisis are explored. Topics such as suicide, sexual assault, posttraumatic stress disorder, and bereavement and grief are addressed.

EDUC 620 Human Growth & Development (3)

This course is a general overview of life-span development from conception through late adulthood. The scientific study of the quantitative and qualitative ways people change over time is examined. The use of theory and other information through application of scientific principles in the study of a child may be included.

EDUC 690 Introduction to Behavioral Research (3)

This course introduces the various methods and techniques of educational research. It provides intensive experience both in reading, analyzing and interpreting educational research and in writing abstracts, reports on research and seminar papers.

EDGC 640 Group Processes in Counseling (3)

The study of the dynamic processes that occur in groups and their application to group counseling is the focus of this course. It examines group stages, leadership styles and the importance of verbal and non-verbal communication in a laboratory setting. Social and cultural issues such as race, gender and social class are also addressed. Actual involvement in group process is required.

EDGC 643 Counseling Children and Adolescents (3)

This course examines counseling theory and techniques as related to children and adolescents. It emphasizes how to plan and implement counseling strategies appropriate to the developmental stages and need of each group.

EDGC 605 Individual and Group Appraisal (3)

The course focuses on the following topics: understanding of group and individual educational and psychometric approaches to appraisal, use and interpretation of both standardized and non-standardized appraisal data, and planning and administering testing programs.

EDGC 645 Cross-Cultural Perspectives in Counseling (3)

This course examines barriers in effective cross-cultural counseling. There is an emphasis on understanding cultural characteristics on visible racial/ethnic groups. Issues of racial identity world view and bias awareness are addressed.

EDGC 665 Special Topics (1)

This course number and title are intended to be a mechanism for students to take 1 credit courses on special topics that are cutting edge in the field of counseling and/or completion of program skills and requirements. All courses will be listed as 665 with a letter to delineate which course was taken (e.g. 665a-technology in counseling; 665b-gerontological counseling; 665c-Adlerian counseling; 665d-seminar II).

EDGC 610 Introduction to Advanced Psychology (3)

This is a survey course which reviews major psychological concepts of human development and behavior. The intent of this course is to provide a foundation to students with a minimal background in psychology and the social sciences who intend to enter the field of counseling. Emphasis is given to personality theory, abnormal psychology, and adjustment.

EDGC 670 Ethical, Legal and Professional Issues in Counseling (3)

The study of the role of the counselor in relation to ethical and legal issues and dilemmas is explored. Emphasis is place on the dynamic interactions and processes between counselor, individuals, and institutions. Topics such as standards, licensure, accountability, liability, and professional development will be addressed.

EDGC 631 Career and Life Development (3)

This course is the study of topics on: career development theories, the relationship between career choice and life style, sources of occupational and personal/social information, career decision-making processes and career development explanation techniques.

EDGC 698 Seminar in Guidance and Counseling (3)

The opportunity to research professional issues is provided, culminating in an approved seminar paper.

EDGC 606 Clinical Applications of Counseling (3)

Students conduct the initial stages of counseling with individuals, who present a variety of personal, educational, and vocational concerns. Students will establish realistic goals with the client and evaluate the extent to which goals were reached. Students will describe their own well formulated theory of counseling. PREREQUISITE: Must obtain the permission of the Coordinator of the Guidance and Counseling Program to enroll in this course.

EDGC 655 Social Diversity in Counseling (3)

This course is study of the nature, characteristics, and needs of socially diverse client groups seeking counseling. Socially diverse groups will include those with differing life-styles, physical disabilities, learning disabilities, the gifted and talented, the elderly, the obese and women. An emphasis will be placed on societal oppression, treatment, discrimination, and specific counseling issues related to these socially diverse groups.

EDGC 677 Practicum in School Counseling (3)

This course assists counselor trainees in acquiring a broad and varied background of knowledge, skills and abilities, as well as certain personal characteristics, in order to perform their roles effectively and efficiently. The trainee must demonstrate under supervision the ability to integrate and apply theories and techniques in providing direct counseling services for individuals and groups and to participate in appropriate professional activities in the practicum setting. PREREQUISITE: Must obtain the permission of the Coordinator of the Guidance and Counseling Program to enroll in this course.

EDGC 697 Advanced Practicum in School Counseling (3)

This course is an advanced group supervision experience (taken in conjunction with the second practicum placement) which seeks to provide a capstone experience that prepares students for a career as a professional counselor.

EDGC 602 Introduction to Community Counseling (3)

This course focus on planning, implementation, administration, and evaluation of human service systems affecting communication. Major organization theories, management styles, administrative techniques and study of relevant issues in human services delivery in a community setting are explored.

EDGC 609 Special Problems in Guidance and Counseling (1-3)

This course consists of individual projects geared to specific needs of students. It allows students to study independently in topical areas related to counseling. Specific requirements related to each independent study are approved on an individual basis. PREREQUISITE: Written permission of adviser is required.

EDGC 646 Organization and Administration of Guidance Program (3)

This course examines the evolution of content-based comprehensive guidance programs and why guidance programs are an integral part of the school curriculum. It provides the student with experience in developing and implementing a comprehensive program.

EDGC 679 Practicum in Community Counseling (3)

This course assist community counselor trainees in acquiring a broad and varied background of knowledge, skills and abilities, as well as certain personal characteristics, in order to perform their roles effectively and efficiently. PREREQUISITE: Must obtain the permission of the Coordinator of the Guidance and Counseling Program to enroll in this course.

EDGC 699 Advanced Practicum in Community Counseling (3)

This course is an advanced group supervision experience (taken in conjunction with the second part of practicum placement) which seeks to provide a capstone experience that prepares students for a career as a professional counselor.

Sequence of Courses for Counselor Education School Program (K-12)

1st Year

Fall

- EDGC 601 Introduction to Guidance & Counseling
- EDGC 604 Theories and Techniques of Counseling
- EDUC 620 Human Growth and Development

January

- EDGC 665 Special Topics in Counseling

Spring

- EDUC 690 Introduction to Behavioral Research
- EDGC 640 Group Processes in Counseling
- EDGC 631 Career and Life Development

2nd Year

Fall

- EDGC 645 Cross-Cultural Perspectives in Counseling
- EDGC 643 Counseling Children and Adolescents
- EDGC 605 Individual and Group Appraisal

January

- EDGC 665 Special Topics in Counseling

*Spring**

- EDGC 670 Ethical, Legal, and Professional Issues in Counseling
- EDGC 660 Crisis Management in Counseling
- SPED 600 Characteristics of Exceptional Individuals or Elective

3rd Year

Fall

- EDGC 606 Clinical Applications of Counseling
- EDGC 677 Practicum in School Counseling
- EDGC698 Seminar in Guidance and Counseling

Spring

- EDGC 697 Advanced Practicum in School Counseling Elective

* Comprehensive exams should not be taken before this time.

Sequence of Courses for Community Counseling

1st Year

Fall

- EDGC 602 Introduction to Community Counseling
- EDGC 604 Theories and Techniques of Counseling
- EDUC 620 Human Growth and Development

January

- EDGC 665 Special Topics in Counseling

Spring

- EDUC 690 Introduction to Behavioral Research
- EDGC 640 Group Processes in Counseling
- EDGC 631 Career and Life Development

2nd Year

Fall

- EDGC 645 Cross-Cultural Perspectives in Counseling
- EDGC 612 Marriage and Family Counseling
- EDGC 665 Substance Abuse Counseling or G,H,I Elective

January

- EDGC 665 Special Topics in Counseling

*Spring**

- EDGC 670 Ethical, Legal, and Professional Issues in Counseling
- EDGC 660 Crisis Management in Counseling
- EDGC 655 Social Diversity in Counseling

3rd Year

Fall

- EDGC 606 Clinical Applications of Counseling
- EDGC 679 Practicum in Community Counseling
- EDGC 698 Seminar in Guidance and Counseling

Spring

- EDGC 699 Advanced Practicum in Community Counseling

* Comprehensive exams should not be taken before this time.

For more information on this program, please contact:

Graduate Program Coordinator

Guidance and Counseling

Department of Education

Hazel Hall

University of Maryland Eastern Shore

Princess Anne, MD 21853

Email: cbowers@umes.edu

M.Ed., Special Education

Objective of the Program

The Department of Education provides a Master of Education (M.Ed.) program in Special Education with emphasis on students with mild and moderate disabilities in grades 1-12. The Special Education Program is a Maryland state-approved program at both the undergraduate and graduate levels. The graduate program is designed to develop and refine the graduate student skills as classroom teachers, inclusion teachers, resource teachers, teacher consultants, academic coaches, or as specialists in alternative educational settings. Students must complete the M.Ed. degree with certification if not already certified in special education. They may opt for coursework leading to certification in grades 1-8, 6-12, or both. The course of study varies with the experience and qualifications that individual students bring to the program.

Students may not enroll in the program for certification only.

Accreditation

UMES' Teacher Education and School Counseling Programs are accredited by the National Council for Accreditation of Teacher Education (NCATE) and approved by the Maryland State Department of Education (MSDE).

Program Goals

The overall goal of the Special Education Program is to prepare students to become effective special educators for mild and moderately disabled students in grades 1-12 and to meet the certification and professional standards of the Maryland State Department of Education, the Council for Exceptional Children, and the principles of the Interstate New Teachers Assessment Support Consortium (INTASC). To accomplish this goal, there are four major objectives:

1. To help each student develop and refine the personal and interpersonal qualities and skills necessary to function intellectually, emotionally, and socially with others in the capacity of teacher or facilitator.
2. To prepare teachers and leaders who are knowledgeable of research, theory and practice related to effective classroom and program management.
3. To develop teachers and leaders who are committed, continuous learners, and contributors to the enhancement of the teaching profession.
4. To prepare teachers and leaders who demonstrate sensitivity and effective interpersonal skills in working with culturally diverse populations.

Candidate Competencies

Candidate competencies and outcomes are consistent with those of the Council for Exceptional Children (CEC), the major professional organization representing special educators, the Interstate New Teachers Assessment and Support Consortium (INTASC), and those of the Maryland State Department of Education (MSDE). The following competencies are related to the ten CE standards:

1. Foundations

- Understand principles and theories, relevant laws and policies; diverse and historical points of view, and human issues that have influenced and continue to influence the field of special education.
- Understand how issues influence professional practice.
- Understand the impact of issues of human diversity.
- Understand the relationships of organizations of special education.

2. Development and Characteristics of Learner

- Demonstrate respect for students.
- Understand the similarities and differences in human development.
- Understand how exceptional conditions can interact with the domains of human development.
- Use knowledge to respond to the varying abilities and behaviors of individuals with exceptional learning needs (ELN).

3. Individual Learning Differences

- Understand the effects that an exceptional learning condition can have on an individual's learning.
- Are active and resourceful in seeking to understand how primary language, culture, and familial backgrounds interact with the individual's exceptional condition.
- Provide individualized instruction for individuals with ELN.

4. Instructional Strategies

- Possess a repertoire of evidence-based instructional strategies to individualize instruction.
- Promote positive learning results in general and special education curricula.
- Appropriately modify learning environments for individuals with ELN.
- Enhance the learning of critical thinking, problem-solving, and performance skills.
- Emphasize the development, maintenance and generalization of knowledge and skills across environments, settings and the lifespan.

5. Learning Environments and Social Interactions

- Create learning environments and active engagement for individuals with ELN that foster cultural understanding, safety and emotional well-being and positive social interactions.
- Foster environments in which diversity is valued.
- Shape environments to encourage independence, self-motivation, self-direction, personal empowerment, and self-advocacy of individuals with ELN.
- Help general education colleagues integrate individuals with ELN in regular environments.
- Use direct motivational and instructional interventions.
- Intervene with individuals with ELN in crisis.
- Provide guidance and direction to para-educators and others.

6. Language

- Understand typical and atypical language development.
- Enhance language development and teach communication skills to individuals with ELN.
- Are familiar with augmentative, alternative, and assistive technologies.
- Provide effective language models.

- Facilitate understanding of subject matter for individuals with ELN whose primary language is not English.

7. Instructional Planning

- Develop long-range individualized instructional plans.
- Translate individualized plans into shorter-range goals and objectives.
- Emphasize explicit modeling and efficient guided practice.
- Modify instructional plans based on ongoing analysis of the individual's learning progress.
- Facilitate instructional planning in a collaborative context.
- Develop a variety of individualized transition plans.
- Use appropriate technologies to support instructional planning and individualized instruction.

8. Assessment

- Use multiple assessment types of assessment information.
- Understand the legal policies and ethical principles of measurement and assessment.
- Understand measurement theory and practices.
- Understand the appropriate use and limitations of various types of assessment.
- Assure nonbiased, meaningful assessments and decision making.
- Conduct informal and formal assessments of behavior, learning, achievement and environments.
- Identify supports and adaptations required for individuals with ELN.
- Regularly monitor the progress of individuals with ELN.
- Use appropriate technologies to support their assessments.

9. Professional and Ethical Practice

- Attend to legal matters along with serious professional and ethical considerations.
- Engage in professional activities that benefit individuals with ELN.
- View themselves as lifelong learners and regularly reflect on and adjust their practice.
- Are sensitive to the many aspects of diversity of individuals with ELN and their families.
- Keep current with evidence-based best practices.

10. Collaboration

- Routinely and effectively collaborate with families, other educators, related service providers, and personnel from community agencies in culturally responsive ways.
- Are a resource to their colleagues in understanding the laws and policies relevant to individuals with ELN.
- Use collaboration to facilitate the successful transitions of individuals with ELN across settings and services.

Admission Requirements

Regular Admission

Admission to the Special Education Program is based on criteria specified in the requirements of admission to the UMES Graduate School. These standards were devised to ensure that students accepted into the Graduate School were qualified and had a reasonable chance of successfully completing a graduate degree.

Admission criteria include:

- A. Baccalaureate degree from an accredited institution.
- B. 3.0 grade point average (GPA) or better on a 4.0 scale in undergraduate work.
- C. Three letters of recommendation from individuals who can evaluate the applicant's potential for graduate studies and offer insight as to the professional dispositions of the candidate.
- D. Maryland passing scores on the Praxis I, or other Basic Skills test, including ACT, SAT, or GRE if not already a certified teacher.

Provisional Admission

Applicants who possess an overall GPA of between 2.5 to 2.99 may be admitted and given provisional status provided they have passing scores on the PRAXIS I, or other Basic Skills test, including ACT, SAT, or GRE. These students must maintain a 3.50 average in the first nine approved credit hours, six of which must be in Special Education graduate level core courses.

Provisional status students may be required to take undergraduate prerequisites in the areas of education and psychology to remediate content deficiencies before being admitted to regular status. Provisional status students may also be asked to come for a personal interview before being admitted to the program.

Policy On Applicant Rejection

The University may review a number of different factors to determine whether to admit an applicant to a graduate program, including but not limited to academic achievement, personal and professional references, scores on admission examinations, writing samples, personal interviews, character and integrity, personality, and potential to perform as a graduate student and in the applicable profession. Applicants should consider licensing/registration/credential requirements of a profession in which past personal history or conviction/criminal record may restrict completion of a degree program (the professional phase) and the eligibility to practice in a profession if graduated from a program.

Application Deadlines

Fall Semester - May 1
Spring Semester - November 1
Summer Sessions - April 1

Retention and Exit Requirements

The course of study will vary with the experiences and qualifications that individual students bring to the program. A minimum of 30 semester hours will be required for the M.Ed. degree. Students working toward the M.Ed. degree plus certification will need to complete additional hours beyond the 30 semester hours minimum to satisfy the M.Ed. and certification requirements. Undergraduate methods courses and the internship (i.e., EDSP 400, EDSP 401, EDSP 402, EDSP 403, EDSP 416, EDSP 426, EDSP 442, EDSP 450) may not be applied to the M.Ed. degree. However, these courses will be part of the student's overall program if they are essential to meet certification requirements. No more than 12 hours of coursework at the 400 level can be applied toward the M.Ed. requirements. Approved electives may be taken from Special Education, Counselor Education, and other appropriate areas.

All requirements for the Master's degree must be completed within a five-year period. This time limit also applies to any transfer work from other institutions to be included in the student's overall program.

To remain in good standing in the M.Ed. Special Education Program, including the eligibility to earn certification, each student must meet and maintain the following performance criteria:

1. Earn an overall grade point average of 3.0 or higher.
2. Earn no more than one "C" in all courses.
3. Earn no grade in a course lower than a "C" at any time during the program.

In addition, an internship will be required for students applying for initial certification in Special Education. A professional portfolio is developed as part of the internship experience. Prior to taking the internship and seminar (i.e., EDSP 400, EDSP 442, EDSP 450), teacher candidates must take and pass the PRAXIS II, meeting the minimum cut-off scores as determined by the Maryland State Department of Education.

Students must also take and pass a written comprehensive examination within the last 6 credits of their program as well as a professional portfolio. In addition, they must also complete a seminar paper within the last 6 credits of their program. During the course SPED 678, the seminar paper must be approved by the seminar instructor, program coordinator, and department chair.

For additional and elaborative information on the policies, procedures and forms of the program, see the latest *Graduate Special Education Program Handbook* (www.umes.edu/Education/Default.aspx?id=14976).

Courses

(NOTE: Credit Hours are given in parentheses)

Core Courses

(All students in the program are required to take these courses.)

- SPED 600 Characteristics of Exceptional Individuals (3)
- EDUC 610 Learning and Instructional Design (3)
- EDUC 690 Introduction to Behavioral Research (3)
- SPED 615 Psycho educational Assessment (3)
- EDUC 625 Applied Behavior Analysis (3)
- EDSP 428 Communication and Collaboration Skills in Special Education (3)
- EDSP 430 Technology in Special Education (3)
- SPED 678 Master's Research Seminar (3)

Electives

(Some of these may be required for those seeking Certification in Special Education.)

- SPED 603 Characteristics and Programming for Individuals with Learning Disabilities (3)
- SPED 605 Characteristics and Programming for Individuals with Mental Retardation (3)
- SPED 607 Characteristics and Programming for Individuals with Behavioral Disorders (3)
- SPED 608 Characteristics & Programming for the Gifted (3)

- SPED 630 Current Legal and Advocacy Issues in Special Education (3)
- SPED 638 Current Trends in Special Education (3)
- SPED 640 Internship in Special Education (3-6)
- SPED 650 Career Education for the Individuals with Disabilities (3)
- EDSP 401 Processes and Acquisition of Reading and Language for Students with Disabilities (3)
- EDSP 402 Materials for Reading and Language for Students with Disabilities (3)
- EDSP 403 Instruction of Reading and Language for Students with Disabilities (3)
- EDSP 404 Assessment, Diagnosis and Remediation of Reading for Students with Disabilities (3)
- EDUC 612 Advanced Educational Psychology (3)
- EDUC 620 Advanced Human Growth and Development (3)

In addition to elective courses within the major, students are encouraged to select electives in related areas such as Counselor Education and Rehabilitation Counseling. Advisors approve electives before they are taken.

Course Descriptions

(All courses [with the exception of SPED 600, EDUC 612 and EDUC 620] require acceptance into the graduate Special Education program)

SPED 600 Characteristics of Exceptional Individuals (3)

This course presents an overview of the major types of exceptionalities and their impact on the teaching/learning process. It includes the legal mandates that relate to the field of special education. Prerequisite: Graduate Standing

SPED 603 Characteristics and Programming for Individuals with Learning Disabilities (3)

This course presents an overview of learning disabilities. It includes the diagnosis, assessment, etiology, academic, social and behavioral characteristics as well as history, theories, current issues, instructional strategies and delivery systems. Prerequisite: SPED 600

SPED 605 Characteristics and Programming for Individuals with Mental Retardation (3)

This course presents an overview of mental retardation. It includes the diagnosis, assessment, etiology, academic, social and behavioral characteristics as well as history, theories, current issues, instructional strategies, and delivery systems. Prerequisite: SPED 600

SPED 607 Characteristics and Programming for Individuals with Behavioral Disorders (3)

This course presents an overview of behavioral disorders. It includes the diagnosis, assessment, etiology, academic, social and behavioral characteristics as well as history, theories, current issues, instructional strategies, and delivery systems. Prerequisite: SPED 600

SPED 608 Characteristics and Programming for the Gifted (3)

This course presents an overview of gifted and talented individuals. It includes the diagnosis, assessment, etiology, academic, social and behavioral characteristics as well as history, theories, current issues, instructional strategies, and delivery systems. Prerequisite: SPED 600

SPED 615 Psychoeducational Assessment (3)

This course presents the selection, administration, and interpretation of comprehensive psychoeducational batteries designed to assess intellectual, behavioral, achievement, and academic abilities. It includes design, construction, and implementation of informal procedures. Prerequisite: SPED 600

SPED 630 Current Legal and Advocacy Issues in Special Education (3)

This course presents an in-depth study of legal issues derived from federal and state mandates in special education. It includes the review of administrative and judicial decisions, analysis of due process proceedings, and study of current legal trends in the field. Prerequisite: SPED 600

SPED 638 Current Trends in Special Education (3)

This course presents an in-depth analysis of selected topics in the field of education as they relate to exceptional learners. Prerequisite: SPED 600

SPED 640 Internship in Special Education (3-6)

This course involves a supervised internship in a setting appropriate to the student's background and level of certification. This course may be taken twice for up to 6 credits. Prerequisite: SPED 600

SPED 650 Career Education for Individuals with Disabilities (3)

This course presents a study of pre-vocational and vocational training and career education for individuals with disabilities. Prerequisite: SPED 600

SPED 678 Master's Research Seminar (3)

This course provides individualized instruction, direction, and guidance in the research process. A student-generated, independent, comprehensive research paper (i.e., seminar paper) and a professional portfolio are required course products. Prerequisite: SPED 600, EDUC 690, 24 credits of graduate work

EDUC 610 Learning and Instructional Design (3)

This course provides advanced skill development in the area of individualized programming, including adaptation and modification of curriculum, instructional design, program development, and evaluation. Learning theory and its application in the classroom are emphasized. Prerequisite: SPED 600

EDUC 612 Advanced Educational Psychology (3)

This course emphasizes educational implications of research on child development, cognitive science, learning and classroom instruction. Prerequisite: Graduate Standing

EDUC 620 Advanced Human Growth and Development (3)

This course provides advanced study of human growth and development using a life-span approach. Current research and theories in the areas of cognitive processes, learning abilities, social and psychological processes will be examined. Prerequisite: Graduate Standing

EDUC 625 Applied Behavior Analysis (3)

This course develops competencies associated with effective individual, group, and classroom management. Systematic analysis of behaviors and the application of behavioral theory in special education are presented. Prerequisite: SPED 600

EDUC 690 Introduction to Behavioral Research (3)

This course presents methods and techniques of behavioral research; experience in reading, analyzing, and interpreting behavioral research, as well as writing and critiquing abstracts and developing research proposals. Prerequisite: SPED 600

EDSP 401 Processes and Acquisition of Reading and Language for Students with Disabilities (3)

This course introduces students to the processes of language development and the relationship and role of language acquisition in reading development for students with disabilities at the elementary and secondary levels. It will analyze the relationship between oral language development, reading acquisition, and written language. In addition, the interactive nature of the reading process, including the impact of phonemic awareness will be addressed. Prerequisite: SPED 600

EDSP 402 Instruction of Reading and Language for Students with Disabilities (3)

This course introduces the instruction of reading skills to students with and without disabilities at the elementary and secondary levels. Content includes the development of word attack and comprehension skills and the teaching of expository reading in the content areas. Emphasis is placed on the selection, organization, and evaluation of instructional content, strategies and activities. Prerequisites: SPED 600, EDSP 401

EDSP 403 Materials for Reading and Language for Students with Disabilities (3)

This course introduces materials which can be used to provide a variety of reading and language experiences to students with disabilities at the elementary and secondary levels. Both teacher-made and commercial materials will be discussed. The use of children's literature, community resources, and parental support will also be explored. Prerequisites: SPED 600, EDSP 401

EDSP 404 Assessment, Diagnosis and Remediation of Reading for Students with Disabilities (3)

This course provides an in-depth analysis of assessment, diagnosis, and remediation of reading problems for students with disabilities at the elementary and secondary levels. A thorough understanding of the diagnostic process is explored as well as remediation techniques for comprehension, vocabulary development, and word attack skills. Attention is given to effectively reporting these results to parents and other professionals. Prerequisites: SPED 600, EDSP 401, EDSP 402, EDSP 403

EDSP 428 Communication and Collaboration Skills in Special Education (3)

This course focuses on the nature of oral and written communication theories, models, and definitions; the role of the individual and groups in the communication process; and content and settings for communication. Emphasis will be on developing effective communication skills in the educational setting with a special focus on working with parents and other educators. Prerequisite: SPED 600

EDSP 430 Technology in Special Education (3)

This course explores a wide range of assertive technology applications for students with physical, cognitive, communicative, sensory, and/or multiple disabilities. Students will examine the use of technology in combination with effective instructional strategies to enhance learning. In addition, students will examine electronic and print resources for assertive technology information and review research about current practices for the implementation of instructional technology. Prerequisite: SPED 600

For more information on this program, please contact:

Dr. Karen A. Verbeke

Graduate Program Coordinator, Special Education

Department of Education

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University of Maryland Eastern Shore

Princess Anne, MD 21853

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M.A.T., Master of Arts In Teaching

UMES/Salisbury University: Collaborative Degree-Granting Program

Objective of the Program

The MAT is a 39 semester-hour professional degree program designed to prepare students for initial teacher certification. It is an alternative, collaborative degree program offered by Salisbury University (SU) and the University of Maryland Eastern Shore (UMES).

The MAT is intended for students who have earned a non-teaching baccalaureate degree from an accredited institution of higher education in an appropriate content area, who now wish to become teachers in a secondary school (grades 7-12). Students may prepare for teacher certification in the following State-approved programs at UMES: Agriculture, Art, Biology, Business, Chemistry, English, Family & Consumer Sciences, Mathematics, Music (vocal and instrumental); Social Studies and Technology.

The overall goal of the MAT program is to prepare students to become effective educators and to meet the certification and professional standards of the Maryland State Department of Education. To accomplish this goal, there are four major objectives:

1. To allow students to build upon the content knowledge they have acquired in the baccalaureate degree, adding the professional knowledge necessary for a career in teaching.
2. To prepare teachers who are well-grounded in research, theory, and practice related to effective classroom instruction and school improvements.
3. To enable teacher candidates to develop and demonstrate sensitivity and effective interpersonal skills in working with culturally diverse populations.
4. To nurture educators who are committed, continuous learners, and contributors to the enhancement of the teaching profession.

Accreditation

UMES' Teacher Education and School Counseling Programs are accredited by the National Council for Accreditation of Teacher Education (NCATE) and approved by the Maryland State Department of Education (MSDE).

Admission Requirements

Regular Admission

Although students must matriculate at the campus where there is a State-approved teacher preparation program in their intended field, applicants will be admitted to the MAT program by a common UMES/SU admission process. To be admitted to the program all applicants must:

1. Possess a baccalaureate degree in a content area.
2. Meet the requirements for regular admission to the graduate school.
3. Take and pass Praxis I.

4. Possess an undergraduate grade-point average of a least 3.0 in the last half of the undergraduate program, or possess a prior graduate degree from an accredited institution.
5. Submit official transcripts from all higher institutions attended.
6. Submit three letters of recommendation that address: their personal qualities, e.g., character and academic abilities; problem solving skills, conceptual thinking, and writing and speaking skills needed to support a rigorous graduate program; and that they possess the personal determination and commitment needed to complete this program.
7. Participate in the individual structured interview session by the SU/UMES Admissions Committee.
8. Focuses on some current educational issues, as determined by the MAT joint Admissions Committee.
9. Complete the MAT Application Form, including a personal statement of purpose.

The transcripts and academic credentials of all applicants will be reviewed by the UMES/SU joint MAT Admissions Committee. Appropriate academic departmental subcommittees will determine whether students possess adequate and current content coursework in the intended certification area. Individuals who lack appropriate course work will be expected to complete the identified course requirements prior to their enrollment in the internship portion of the MAT program. Students holding degrees which are more than five years old, may be required to take additional courses in the major area before taking method courses, or before the internship. No additional courses will be taken during the full-time internship. Students must follow the school day and holiday schedule of the school system in which their internship occurs.

Provisional Admission

Applicants who possess an overall undergraduate GPA of between 2.5 and 2.99 may be considered for admission to the MAT program under Provisional Status. They must maintain a 3.0 or better GPA in the first nine credit hours. A transcript review will be conducted after the first nine credit hours. Students meeting the 3.0 standard will be granted regular admission status if other provisional conditions have also been met. Those who do not meet the standard will be terminated from the program.

Retention and Exit Requirements

The specific requirements for the MAT degree are as follows:

1. Course Work

A minimum of 39 semester hours of course work will be required for the MAT degree. All requirements must be completed within a five-year period after admission to the program.

2. Retention

To remain in good standing in the MAT program each UMES student must meet and maintain the following performance criteria:

- a) Earn an overall grade point average of 3.0 or higher.
- b) Earn no more than six credit hours of C or C+ grades and no grade lower than a C.
- c) Take and pass PRAXIS II prior to beginning the student internship experience.

- d) Complete a seminar paper before the internship that meets the identified standards.
- e) Complete the program within three calendar years of advancement to candidacy.

Advisement System

Students in the MAT program have an on campus advisor throughout their course of study, who is available to serve as mentor and to advise them on academic and career plans. Students may not register for classes without discussing their program with their Academic Advisor and receiving the Advisor's signature on the registration and drop/add forms.

Application Deadline

All fully completed applications must be submitted to the Graduate School no later than October 1 for Winter Session admission.

Transfer Credits

A maximum of six graduate credits may be accepted for transfer into the program, provided these credits are as specified (see transfer credits section of this Catalog).

Comprehensive Portfolio Examination

Students in the UMES/SU MAT program must obtain passing scores on the portfolios they assemble as a capstone to the program. This portfolio is created under the direction of the EMAT 511 Seminar professor and presented at the culmination of the Seminar. It shows how the candidate has met all of the INTASC standards.

Seminar Paper

All UMES students must write a seminar paper that demonstrates their ability to analyze and synthesize educational research. The student's Advisor should be consulted on the process. Seminar papers must be completed and approved by designated UMES personnel.

Internship

Completion of an internship as a full-time teacher in a Professional Development School internship is required for completion of the degree.

MAT Program Curriculum

The Master of Arts in Teaching is a 16-month, initial teacher certification program offered collaboratively by the University of Maryland Eastern Shore and Salisbury University. Successful completion of the program and passing PRAXIS I and II results in a Master's degree as well as eligibility for the secondary teaching certificate (grades 7-12 or, for music and art, grades preK-12) in the state of Maryland. All courses are 3 credits for a total of 39 credit hours.

Winter Term

EMAT 501 Development & Learning Applied to Teaching (SU)

Spring Term

EMAT 502 Foundations of Education in a Diverse and Democratic Society (SU)

EMAT 504 Reading in the Content Area I (UMES students only) (UMES)

EMAT 539 Instruction and Assessment for Student Learning (UMES)

EMAT 538 Technology in Education (SU)

Summer I Term

EMAT 537 Educational Research (UMES)

Fall Semester

EMAT 506 The Inclusive Classroom (UMES)

EMAT 508 Reading in the Content Area II (UMES students only) (UMES)

EMAT 512 Classroom Management: Theory and Practice (SU)

EMAT 5xx Methods (UMES students only)

Art: EMAT 530

Business: 527B, etc. (UMES)

Must have taken and passed Praxis II before beginning student internship.

Spring Semester

EMAT 507 Internship I

EMAT 509 Internship II

EMAT 511 Internship Seminar

Presentation of Portfolios = the Portfolio Comprehensive Exam

Additional Program Requirements

1. All courses taken at SU require an inter-institutional form for registration.
2. Most courses require field experiences. At least the equivalent of one day per week should be set aside to meet this requirement.
3. Students in this program must complete 100 days internship in a Professional Development School. While it may be no less than 100 days, the internship does not end when 100 days have been accumulated.

Courses are taught on both campuses. In any semester, half of the courses are taught at UMES and the others at SU.

Note: The Teacher Educator in the academic department that offers the program in which the student plans to teach must review his/her transcripts and indicate what content course work, if any, must be completed prior to the internship.

Course Descriptions

(Note: Credit hours are given in parentheses)

EMAT 501 Development and Learning Applied to Teaching (3)

The course examines theory and research in human development and learning psychology with application to teaching in contemporary middle and secondary schools. Emphasis is placed on translating theory into practice by integrating field experiences, class work, student projects, assignments, and exams.

Prerequisite: Admission to the MAT program or consent of the instructor.

EMAT 502 Foundations of Education in a Diverse and Democratic Society (3)

This course is a comprehensive overview of the foundation of education in a diverse and democratic society. It is an interdisciplinary attempt incorporating the social, philosophical, economic, political, historical and curricular foundations to provide teacher candidates with a clear understanding of the teaching profession. A special attention will be given to cultural problems and issues that influence opportunities, and performance in educational institutions, including controversies confronting American education today. Twenty hours of field experiences in an educational setting required. Prerequisite: Admission to the MAT program.

EMAT 504 and 508 Reading in the Content Areas I and II (3 each)

The courses are an analysis of reading/writing/learning processes with an emphasis on skills and strategies to facilitate student comprehension and learning of content in middle and secondary schools. The course examines research and practice; field experiences are required. Prerequisite: Admission to the MAT program or consent of the instructor.

EMAT 506 The Inclusive Classroom (3)

This course is designed to provide students with the fundamentals of inclusive teaching. The focus of the course will be to teach students the history of special education, legal and ethical foundations for individuals with disabilities, accommodations, modifications of students with high, low, multiple incidence disabilities, effective teaching/management skills, and an overview of specific strategies that promote learning within the content areas. Students will identify specific problems in content areas and learn how to effectively address them. Students will also learn how to create assessments that provide immediate feedback in a variety of formats. Field experiences are required. Prerequisite: Admission to the MAT program.

EMAT 5xx Secondary School Methods (500 level course number will vary according to the content major.) (3)

The course prepares prospective teachers to teach content area in middle and high schools. Students will integrate content knowledge with basic teaching methodologies of preparing objectives, effective questioning, curriculum and resource evaluations, teacher presentations, cooperative learning, demonstrations and experiments, student projects, classroom management, lesson and unit planning. Students will be placed with a high school or middle school teacher for observations and bit teaching experiences. Prerequisites: Successful completion of EMAT 502 and EMAT 512 courses. (This is a sample of the course to be offered. A specialized content area methods course will be offered in each area for which one or both institutions [UMES, SU] have a State-approved program.)

EMAT 507, 509 Internship I and II

EMAT 511 Seminar(9)

Full-time fourteen weeks clinical internship and concurrent campus seminar provide the intern with opportunities to actualize the latest educational research and theory into practice. These opportunities include and are not exclusive to: observation, mini-teaching, macro-teaching, whole group lessons and action research. The seminar provides a forum for discussing problems encountered during the internship, and also provides a colloquium for developing strategies to resolve these problems. The internship will be conducted under the direct supervision of a clinical supervisor (experienced public school teacher) with guidance and support from the University supervisor. Prerequisites: Completion of all coursework in the MAT sequence prior to the Internship, including content methods, and achievement of a passing score on the PRAXIS.

EMAT 512 Classroom Management (3)

The course provides the student with a repertoire of strategies to create a classroom environment that facilitates optimal learning. Different classroom management theories will be explored and evaluated for appropriateness in a given situation. Special attention is given to accommodating diversity, and strategies for effectively communicating with families are considered. Prerequisites: Admission to MAT program, completion of the professional education sequence, and content requirements.

EMAT 525F Curriculum and Instruction in Family and Consumer Sciences (3)

This course is an in-depth study of current instructional methods and curricular materials used in teaching content in grades relative to Family and Consumer Sciences (i.e., grades 7-12). The focus of the course is on effective program development and instructional delivery. It includes lesson and unit planning, collecting reference and illustrative materials, observing and evaluating teaching, and applying effective strategies and techniques. Additional curricular topics include performance objectives, student outcomes, scheduling, community resources, and specialized equipment and technology. The philosophy, history, and important issues and trends related to Family and Consumer Sciences Education are included. A field experience/pre-internship in the content specific area at a Professional Development School is required. Prerequisite: Teacher Candidacy Status in the Master of Arts in Teaching Program.

EMAT 537 Educational Research (3)

Introduction to quantitative and qualitative methods of inquiry as they apply to the needs of teacher-researchers. Attention to reading, analyzing, and interpreting scholarly research to solve instructional problems. Students will design an action research project that addresses an area of current concern in the field of P-12 education. Prerequisite: Admission to MAT program

EMAT 538 Technology in Education (3)

This course examines educational technology and its current and potential impact on schools. The course provides an introduction to the role of technology in the teaching and learning process as well as how the use of technology can enhance teacher productivity and professional development. It examines current issues in the use of educational technology, the impact of technology on society, and techniques for integrating technology into the classroom. Students examine Web 2.0, audio, video, and graphic technologies, as well as tools for collecting and analyzing student data. Prerequisite: Admission to MAT program

EMAT 539 Instruction and Assessment for Student Learning (3)

This graduate course will focus on the appropriate selection, construction, administration and use of effective educational assessment tools particularly as they impact student learning. Using the curriculum-instruction-assessment cycle, MAT teacher candidates will explore of these important connections to better understand their roles and responsibilities as classroom teachers in the assessment process. Prerequisite: Admission to MAT program

For more information on this program, please contact:

Graduate Program Coordinator
Master of Arts in Teaching Program
Department of Education, Hazel Hall
University of Maryland Eastern Shore
Princess Anne, MD 21853
Email: mlagnew@umes.edu

Ed.D., Education Leadership

Introduction

The focus of the Doctorate of Education (Ed.D.) is to produce ethical and humane leaders for Maryland and the nation's schools who are:

1. Sensitive to the diverse needs and individuals who attend our schools and who will seek to provide an equal and quality education for all children.
2. Instructional leaders able to build an effective team-oriented approach to teaching and learning in order to maximize the academic achievements of all students.
3. Scholar practitioners with reflective, problem solving habits who are able to design, consume, critique and implement research relevant to effective practice.
4. Adaptable to changing environments and problems, to solving new problems, and developing adaptive learning environments.

The program is aligned with the standards of the Educational Leadership Constituent Consortium, the Interstate School Leadership Licensure Consortium (ISLLC) and the Maryland Instructional Leadership Framework (MILF). It is part of The Professional Education Unit in the Department of Education.

Educational Objectives

Candidates who satisfactorily complete the Education Leadership Program will receive the Doctor of Education degree (Ed.D.) and will be able to demonstrate the following:

1. Leadership skills which demonstrate team-oriented approaches to teaching and learning in order to maximize student achievement.
2. Development of an educational institution's vision and mission.
3. Alignment of the total school culture to student learning and achievement.
4. Monitoring and facilitating the alignment of curriculum, instruction and assessment.
5. Improvement of instructional practices through purposeful observation and assessment of teachers and staff.
6. Regular integration of appropriate assessments into daily classroom instruction.
7. Utilization of multiple sources of data to improve classroom instruction and student achievement.
8. Facilitation of professional development for staff that is focused, sustained, and research-based.
9. Engagement of all stakeholders in a shared responsibility for school and student success.
10. Ability to meet the educational needs of a diverse and multi-cultural student and community population.

11. Ethical standards in all research and education leadership activities.

Admissions Procedures

Applicants will be considered for admission to the Education Leadership (EDLD) Doctoral Program in accordance with the general admission requirements set forth by the UMES Graduate School. Applications will be reviewed and recommendations concerning admission made to the Dean of Graduate Studies. All applicants must satisfy the following minimum requirements:

1. Earned baccalaureate and Master's degrees from regionally accredited institutions.
2. A minimum of a 3.0 grade point average in the Master's degree.
3. Three years of recent teaching or successful relevant professional experience in a school (PreK-12) setting.
4. State certification for a supervisory position.
5. The completed UMES application materials.
6. A writing sample: A sample of the student's writing that can be used to evaluate the student's ability as a writer and potential success in the Doctoral program. The minimum length of the sample is five pages and should not exceed 30 pages. It should focus on a current issue in education.
7. Current criminal background check.
8. An interview.

Application Deadline

As a cohort-based program, there is one admission period per year (Fall). The application deadline is April 1. Students are responsible to ensure that completed applications and supporting materials are received in the UMES Graduate School by the application deadline.

Program, Retention, and Exit Requirements

The sixty (60) credit hours required for the degree, can be earned within a three-year cohort sequence. The program will include the following elements:

1. A leadership core.
2. A specialization in leadership.
3. A research core.
4. A supervised internship.
5. The creation and defense of a dissertation.

Courses are offered in a nontraditional scheduling format on Friday evening, Saturday and Sunday. A three credit course meets for two weekends in a semester. Students must pursue coursework with the cohort. Students who become out of sequence with the cohort may join the next cohort as space permits. Additional time to complete the program may be granted in accordance with the policies and procedures of the UMES Graduate School. Students must maintain a "B" or better grade in all courses. A grade of P (pass) or F (fail) is reserved for the comprehensive examination and the dissertation.

The program specifics for the Doctor of Education degree in Education Leadership are:

A. Core Domains of Leadership (24 semester hours)

EDLD 640 Writing for Publication
EDLD 641 Inclusionary Classroom Practices
EDLD 642 School and Community Relations
EDLD 644 Supervision and Professional Development
EDLD 645 Ethics and Diversity
EDLD 647 Curriculum and Instructional Leadership
EDLD 648 Planning and Program Evaluation
EDLD 649 Policy and Politics

B. Specialization in Leadership (12 semester hours)

EDLD 662 School Plant Management
EDLD 664 Advanced School Law
EDLD 667 School Finance and Resource Allocation
EDLD 669 Personnel Management and Negotiations

C. Research Methods and Statistics (9 semester hours)

EDLD 683 Qualitative Research for Educational Leaders
EDLD 685 Quantitative Research for Educational Leaders
EDLD 687 Research Instrument Design

D. Integrated Internship (3 semester hours)

EDLD 675 Internship in Administration

E. Exit Experience (12 semester hours)

EDLD 899 Doctoral Dissertation with Seminar

Advisor and Research Advisory Committee

Upon admission to the Education Leadership Program, students will be assigned to an Academic Advisor. After passing the comprehensive examination, the student will select a Research Advisory Committee (RAC), which must be approved by the Coordinator of the EDLD Program and the Dean of Graduate Studies.

Doctoral Internship

Students are expected to document at least 300 contact hours in the internship experience that is approved by the Professor of Record for EDLD 675 and the Coordinator of the Education Leadership (EDLD) Doctoral Program. The internship must be successfully completed and evaluated before the comprehensive examination can be attempted.

Comprehensive Examination

The comprehensive examination must be passed before a student can defend the Dissertation Proposal. The comprehensive examination will be given twice a year. Students may register for it once they have successfully completed all course work and the internship and only have the dissertation and seminar remaining. Students may only take the comprehensive exam twice.

The Proposal Defense

The student and his/her Research Advisory Committee (RAC) will agree upon a dissertation subject and accompanying research design. The proposal manuscript will include the first three chapters (Introduction, Review of the Literature, and Methods) of the final dissertation. The student will follow the current edition of the APA Style Manual regarding referencing. The Proposal Defense, is an oral examination of the research proposal. The student passes if there are four affirmative votes. If failed, the student must re-define the proposal within one year. A second failure will result in cancellation of admission. After passing the Proposal Defense, the student officially applies for Advancement to candidacy for the Ed.D. degree and must submit all necessary forms.

The Dissertation Defense

The ability to undertake independent research and provide sufficient evidence of scholarship is demonstrated by submission of an original dissertation, which is required of all candidates for an Ed.D. degree. A minimum of 12 dissertation hours is required to complete the EDLD Doctoral degree program. The candidate has up to four (4) years to successfully defend his/her dissertation from the time he/she was admitted to candidacy. The Dissertation Defense must be held in UMES facilities. Two or more negative votes constitute failure. Candidates may be examined no more than twice. After failing the second attempt, the candidate's admission to the graduate program is terminated.

EDLD Programs Grading and Retention Policies

The grading policy for the EDLD program is that students must receive a grade of either "A" or "B" in each course and a grade of "Pass" on the comprehensive examination and the dissertation. A student who receives a grade of "C" or lower in any course must repeat that course. Students must follow the UMES Policies on Academic Honesty.

Description of Courses

EDLD 640 Writing for Publication

This course is designed assist students in the publication process. It presents tools, techniques and resources for writing scholarly articles and will assist in the dissertation writing process. It will familiarize the student with various writing styles and focus on improving the writing ability of the student.

EDLD 641 Inclusionary Classroom Practices

Emphasis is on the leadership of special education teachers, regular education teachers and the special education program. Students will receive guidance in supporting teachers of students with disabilities in general education classrooms and special education settings, supporting the general education teacher in providing instruction to children with disabilities, and facilitating the acceptance and optimal learning of students with disabilities in a non-segregated, diverse, inclusionary educational environment.

EDLD 642 School and Community Relations

This course offers a review of the history and philosophy of education in the United States with a focus on the ideals which fostered growth and change. Students will examine the relationship of the school to the community. Emphasis will be placed on the school community concept, community analysis, community characteristics affecting educational quality, public involvement in educational strategic planning and district evaluation.

EDLD 644 Supervision and Professional Development

The nature and function of supervision as related to staff is the focus of the course. A contemporary view of supervision from both a theoretical and practical perspective will be presented. The role of the "supervisor" will be examined as it has evolved from the traditional model to the instructional leadership model, a model that embraces collegiality and professional development. The course includes strategies and processes they relate to a variety of supervisory models, e.g.: clinical supervision, mentoring, differentiated supervision, cooperative development, and professional, self-directed development.

EDLD 645 Ethics and Diversity

This course is designed to provide an in-depth analysis of how diversity has impacted education in America. In addition, this course will explore and examine the role of educational leaders in pluralistic school. In addition, the course is designed to provide school leaders with reflective considerations of current and anticipated ethical issues and dilemmas facing education.

EDLD 647 Curriculum and Instructional Leadership

The course focuses on effective assessment practices, effective curriculum design, development and implementation, curriculum evaluations and current issues and trends in the subject fields. Attention is given to the professional decisions that must be made about curriculum alignment and assessment. The major focus will be on developing learner centered school cultures that assesses outcomes and understands curriculum alignment and instructional outcomes including state, regional and national standards.

EDLD 648 Planning and Program Evaluation

The course is designed to give the administrator the knowledge, skills, strategies, and applications of planning for educational organizations. It will include different planning models to include strategic planning, long range planning and Total Quality Management.

EDLD 649 Policy and Politics

This course will explore the role of politics and public policy in education. It will examine policy models and frameworks, and their application to current policy issues in PreK-12 education. The course is designed around the theoretical frameworks necessary for understanding public policymaking; to offer a perspective on the role that research plays in the policy process; and to provide students with the chance to interpret the context of policy development for current policy issues.

EDLD 662 School Plant Management

This course is the study of issues involved in the planning, operation and maintenance of school facilities, buildings and grounds. Emphasis is on the analysis of leadership beliefs and actions that promote the effective use of existing facilities and possible applications to meet current educational and community needs and culture.

EDLD 664 Advanced School Law

This course will include an analysis of selected general legal principles, laws and law-making agencies that affect leaders and educational institutions. The legislative process will be analyzed with regard to governmental decision-making and the legalities of lobbying. Ethics for school leaders will play a major part of the course.

EDLD 667 School Finance and Resource Allocation

Students in this course will become knowledgeable about state fiscal law and will learn to distinguish among the various revenue sources and district budgeting. Business office functions including bid law, purchasing and building fund management will be studied.

EDLD 669 Personnel Management and Negotiations

This course will focus on hiring techniques, job analysis and job evaluation procedures that comply with district, state and federal regulations. The collective bargaining process and the interpretation and implementation of an employee collective bargaining agreement will be studied. Evaluation research within applied settings will be examined.

EDLD 675 Internship in Administration

This course will utilize University faculty and practicing administrators to analyze topics relevant to the role of the superintendent, including but not limited to school board relationships, the legislative process, lobbying, community relations, program accountability, ethics and other role-specific concerns. During the internship, the student will be working closely in the Central/District Office with practicing administrative leaders. A minimum of three hundred (300) hours of on-the-job experiences are required to complete the course.

EDLD 683 Qualitative Research for Educational Leaders

This is an intensive course in the use of field-based and general qualitative research methods in the study of education. Qualitative research is research that focuses on understanding, rather than predicting or controlling, phenomena

EDLD 685 Quantitative Research for Educational Leaders

This course is designed to provide students with the quantitative research skills required of effective executive educational leaders. This course builds on a student's foundation of research and statistics and introduces advanced statistical techniques commonly used in educational research

EDLD 687 Research Instrument Design

The purpose of this course is to write an approved Doctoral dissertation proposal in standard format on a researchable topic in educational administration. The course will help students to integrate knowledge of research design and statistics in a practical fashion to revise and complete the dissertation proposal.

EDLD 899 Doctoral Dissertation with Seminar

Students develop and carry out an independent research project related to education leadership. A minimum of 12 semester hours in this course is required for graduation. Continuous enrollment in this course is required while working on the dissertation project. Seminar meetings will be held with the candidates to help mentor them through the process and move to completion of the dissertation.

For more information on this program, please contact:

Coordinator, Education Leadership Program

2027 Hazel Hall

University of Maryland Eastern Shore

Princess Anne, MD 21853

Phone: 410-651-6216

<http://www.umes.edu/EDLDLeadership/>

Department of Social Sciences

Degree Offered

Doctor of Philosophy (Ph.D.): Organizational Leadership

Ph.D., Organizational Leadership

Introduction

The success of academic organizations, governmental agencies, and health and human service organizations is dependent on the availability of persons well qualified to provide effective leadership. Consequently, UMES offers a graduate program leading to the degree of Doctor of Philosophy (Ph.D.) in Organizational Leadership. The Doctoral program in Organizational Leadership focuses on the professional development of persons to lead all operations in specific organizational settings. Students who satisfactorily complete the Organizational Leadership course of study will receive the Doctor of Philosophy degree and be prepared to:

1. Plan, guide, direct and evaluate policy, program, and personnel development in academic, governmental, and health and human services organizations.
2. Serve as leaders who possess knowledge and skills needed to facilitate the organizational change required to develop, maintain, and increase organizational effectiveness.
3. Employ ethical standards in all leadership processes.
4. Select and use information management systems, including statistical packages and technologies that support and enhance organizational structures and reform initiatives.

Objective of Program

The mission of the Organizational Leadership Program is the professional development of persons toward mastery of the knowledge, skills, and dispositions supportive of exemplary leadership in specific settings: academic organizations, governmental agencies, and health and human services organizations. The Organizational Leadership Program accomplishes this mission through advanced learning of the concepts relative to effective leadership in these specific settings. Additionally, the Organizational Leadership Program contributes to the growing body of knowledge pertaining to effective leadership in specific settings through scholarly inquiry, and serves the academic, governmental, and health and human services organizations throughout the Delmarva Peninsula Region through high quality engagement.

Admission

Applicants will be considered for admission to the Organizational Leadership Program in accordance with the admission requirements set forth by the UMES Graduate School. Applicants must specify on the Statement of Purpose application form the Strand Area (Academic Organizations, Governmental Agencies, or Health and Human Services) for consideration. Applications will be reviewed and recommendations concerning admission made to the Dean of Graduate Studies by the Organizational Leadership Admissions Committee composed of as many as four assessors, including one from each of the three content strands.

All applicants must satisfy:

1. All general requirements for full admission to graduate programs.
2. An on-site interview that assesses oral/written presentation skills.
3. A written evaluation of work performance by a current or recent supervisor (one of the required letters of recommendation).

Because the program is a cohort design, admissions also will be based, to the extent possible, on a sufficient number of admissions in each of the three strand areas of the program, so as to maintain a continuity of strand course offerings.

The Organizational Leadership Program is a terminal degree program for students in mid to advanced career stages. Applicants represent a wide variety of professional experiences and educational backgrounds.

Students who enter the program must have earned baccalaureate and Master's degrees from US regionally accredited educational institutions or the degree equivalent in another country and demonstrate successful employment in an organization that relates to the specified strand major. Applicants, particularly those demonstrating nontraditional career paths, must clearly articulate on the Statement of Purpose application form the purposes for pursuit of the degree consistent with previous educational background and professional experiences and well-considered career plans.

Application Deadline

As a cohort-based program, there is one admission period per year (Fall). The application deadline for the Fall semester is March 1. Students are responsible to ensure that completed applications and supporting materials, including letters of recommendation and official transcripts, are received in the UMES Graduate School by the application deadline.

Program, Retention, and Exit Requirements

All students in the Organizational Leadership program must complete core courses (30 semester hours) and courses in one of the three strand areas: Academic Organizations, Governmental Agencies, or Health and Human Services Organizations. A strand is 12 semester hours of content-specific course work.

Included in the Ph.D. course of study for all Organizational Leadership students, regardless of the elected strand, will be a supervised internship (6 semester hours) in an organization that aligns with the elected strand.

Provided that the candidate submits the Application for Candidacy form to the UMES Graduate School, the candidate advances to candidacy after successfully completing all course work; completing the internship, including the scholarly product; passes the comprehensive examination; completes the initial Dissertation Committee meeting; and, successfully completes the Dissertation Proposal Defense. Twelve (12) semester hours of credit are awarded for the satisfactory completion of the dissertation. The comprehensive examination is a minimum one credit. The sixty (60) credit hours in addition to the comprehensive examination required for the degree, can be earned within a three-year cohort sequence. Any applicable transfer credit for core, strand or research methods/statistics course requirements, up to 12 semester hours, must comply with the transfer of credit provisions of the UMES Graduate School and be approved by the Organizational Leadership Program Director and the Graduate Studies Dean during the first semester of matriculation.

Students enter the Organizational Leadership Program as members of a Doctoral cohort. Because this program is designed to meet the needs of students who are employed full-time, courses will be offered in a nontraditional scheduling format on Friday evenings, Saturdays and Sundays. Classes are five weeks in duration, and generally meet twice. The remaining three (3) weeks are devoted to individual projects and research. Students must pursue coursework with the cohort. Students who become out of sequence with the cohort may join the next cohort as space permits. The cohort will complete twenty-seven (27) semester hours of the core courses during the first year of enrollment in the program: three (3) courses in each of the fall, spring, and summer semesters (9 credit hours per semester).

In the second year, the remaining core course and four (4) strand courses will be completed. The remaining requirements are scheduled for completion in the third year of the program. Additional time to complete the program may be necessary in accordance with the policies and procedures of the UMES Graduate School. The program's grading and retention policies are listed in a subsequent subsection of this ORLD program text.

The program specifics for the Doctor of Philosophy degree in Organizational Leadership are as follows:

1. Learning

a. *Core Course Requirements (30 semester hours)*

Organizational Leadership as a Field of Inquiry

- History and Philosophy of Organizations
- Theories and Processes of Organizations
- Politics, Organizations, and Leaders: Legal and Ethical Issues
- National and International Organizational Research and Development

Research and Statistics

- Qualitative Research
- Quantitative Research
- Statistical Applications and Interpretations
- Statistics and Information Management

Professional Services

- Personnel Development, Management and Evaluation
- Public Relations and Marketing in the Non-Profit Sector

b. *Strand Course Requirements (12 semester hours)*

Academic Organizations

- Advanced Learning Theory
- The Adult Learner
- Academic Leadership
- Fundraising, Lobbying and Negotiating Skills

Government Agencies

- Managing Public Financial Resources
- Policy Development and Leadership
- Policy Analysis Seminar
- Public Leadership Seminar Health and Human Services
- Organizational Behavior in Health and Human Services
- Comparative Health and Human Services Policy

- Budgeting for Health and Human Services Organizations
 - Policy Analysis for Health and Human Services Organizations
2. Engagement
Doctoral Internship (6 semester hours)
 3. Inquiry
Dissertation Research (12 semester hours)

Advisor and Research Advisory Committee

Upon admission to the Organizational Leadership (ORLD) Program, students will be assigned to an Academic Advisor. This person will be responsible for advising on all aspects of the student's progress through the program. Students should also consult for information, forms, specific policies and procedures the ORLD program manuals on the Research Advisory Committee Process and the Processes Leading to Graduation.

After passing the comprehensive examination (see the section below), the student will select a Research Advisory Committee (RAC), which must be approved by the ORLD Director and the Dean of Graduate Studies. The Committee will include at least five (5) members selected from the following categories who must have UMES Graduate Faculty Status to be a voting member:

1. RAC Chair: Select from ORLD adjunct and full-time faculty, as well as UMES full-time faculty. Previous Doctoral Committee Chair experience is preferred.
2. RAC Strand/Core Faculty: Select from ORLD adjunct and full-time faculty, UMES faculty, or faculty affiliated with another accredited university who have expertise in the student's area of interest.
3. RAC Research Faculty: Select from ORLD adjunct and full-time faculty, UMES faculty, or faculty affiliated with another accredited university who have expertise in research design and/or statistics.
4. RAC Associate (optional): While possibly not having a terminal Doctoral degree, this person is selected because of expertise in a desired area (may be related to the internship). This person may be a reader in a non-voting status if he/she does not have the terminal degree.
5. Dean's Representative: Assigned by the Dean of Graduate Studies.

Comprehensive Examination

The ORLD Doctoral program holds written comprehensive examinations twice a year, in June and January. To be eligible to sit for the comprehensive examination, the student must be in "good academic standing," that is, the student must have obtained an A or B in all core, research and strand courses and have successfully completed the internship and be registered for ORLD 700 (1 to 6 credit hours as needed). The comprehensive examination format is as follows:

1. Examination questions reflecting coursework in core, strand and research, as well as the internship, will be submitted from the ORLD faculty.
2. The examination will be monitored by a proctor who cannot be a grader. Each student will be assigned a number so that "graders" (ORLD faculty) will not know whose

examination they are grading. In other words, the comprehensive examination uses a double-blind technique. At least three graders will assess each question; their scores will be averaged. Averages will not be rounded to the next whole number.

3. The student may hand-write the examination (exam booklet/paper will be provided) or submit answers via a UMES-provided computer (with only word processing capability). Students are allowed to bring only a pencil/pen to the exam room. The student must inform the ORLD Administrative Assistant two weeks before the examination date whether he/she will use pencil/pen or computer. After this time, the student is not allowed to waver from this test-taking decision unless, on the day of the examination, there are technical difficulties regarding the use of computers.
4. Room assignment for the exam will be emailed to the student from the ORLD Administrative Assistant two (2) weeks before the examination date.
5. Exams are scheduled to be taken in an 8 hour time block (3 hours in the morning [9:00 am—12:00 noon]; a one-hour lunch break [12:00 noon to 1:00 pm]; and 4 hours in the afternoon [1:00 pm—5:00 pm]). Testing will begin at the specified times (9:00 am and 1:00 pm). If the student arrives at a later time, he/she will not be provided extra time to complete the examination.
6. The exam proctor will distribute two questions at 9:00 in the morning (one strand question and one research question). After lunch, the proctor will distribute three questions at 1:00 in the afternoon (one internship question and two core questions). At the end of the morning session, the strand question and the research question, and answers will be submitted to the proctor. At the end of the afternoon session, the internship question and the two core questions and answers will be submitted to the proctor. The student cannot revisit submitted responses.
7. Where students may be provided a choice among the questions to answer, e.g., one of two questions, students who mistakenly respond to both questions will have only the first of the two responses graded. A student may not respond to both questions to attempt to improve the total score for the question.
8. Points for each question are as follows:
 - a. The strand question is worth 25 points.
 - b. The research question is worth 25 points.
 - c. The internship question is worth 10 points.
 - d. Core questions are worth 40 points total (20 points each).
9. The student must pass EACH question by at least an 80 percent margin. In other words, the student must score 20 points or higher on the strand question; 20 points or higher on the research question; 8 points or higher on the internship question; and, 16 points or higher on each core question.
10. Comprehensive exam questions are designed to assess the student's knowledge about broad foundational concepts as well as the ability to integrate this knowledge in a manner that "graders" perceive as indicative of Doctoral status. "Graders" will expect that the student will cite references according to the 5th or latest edition APA style manual (author, date) throughout his/her writing. There is no required length for a comprehensive examination answer. Passing has to do with quality—not quantity.

11. Students will be informed in writing of their comprehensive examination score as well as a summary of graders' comments. Usually, this process takes about 2-3 weeks.
12. If a student does not pass the comprehensive examination, he/she must again register for at least one (1), and up to six (6), credit hours(s) in ORLD 700 until the next sitting date for the comprehensive examination. Only after passing the comprehensive examination will a student be eligible to register for dissertation credit hours (ORLD 899) and initiate the Dissertation Initial Meeting (IM) process.
13. In the event of failing ANY or ALL of the five questions, the student may retake the failed section(s) ONLY once. If the student fails the re-taken part the second time (or fails to take the failed examination section(s) within one year), his/her admission status is terminated.
14. The second examination attempt will be given no earlier than four months after the first examination and no later than one calendar year from the date of the initial examination.

Doctoral Internship

Students are expected to document at least 90 contact hours in the internship experience that is approved by three (3) ORLD faculty members and the ORLD Program Director. This field-based, supervised experience should culminate in a scholarly product. The internship must be completed and evaluated before the comprehensive examination can be attempted. An internship question is included on the comprehensive examination.

The Initial Meeting

The Initial Meeting (IM), a meeting closed to everyone other than the ORLD student and his/her Research Advisory Committee (RAC), takes place when the student has passed the comprehensive examination and has the written approval from the Dean of Graduate Studies regarding membership of the student's RAC. The purpose of this meeting is to provide opportunities for the RAC to become familiar with each other personally and professionally as well as to review and summarize the student's progress toward completion of the ORLD program degree requirements. All members of the RAC must attend the IM either in person or through audio/video (A/V) technology in the case of an RAC member at a distant location. The use of A/V technology must be prior approved by the Dean of Graduate Studies. Three (3) members must be physically present at the IM. In case of an emergency, the Dean of Graduate Studies may substitute the excused RAC member with the Dean's Representative to the RAC so that the IM may take place. The RAC chair is responsible for taking minutes of the meeting, copies of which will be forwarded to each RAC member, the student, the ORLD program director, the Dean of Graduate Studies, and a copy will be placed in the student's file.

After the RAC Chair opens the IM with welcoming and introductions, the student should be able to discuss and present evidence pertaining to the following agenda items:

1. Curriculum vitae.
2. The student's transcript, the internship's scholarly product, and the passing of the comprehensive examination.
3. Perceived strengths, areas for growth, and working style for future progress toward graduation.
4. Summary of proposed research (background, purpose of the study, proposed methods).
5. Discussion of proposal manuscript sections and the proposal defense, including appropriate forms.
6. Tentative proposal manuscript/defense dates.

RAC members may ask questions at any time. The RAC Chair will make closing remarks and dismiss the meeting.

The Proposal Defense

The student and his/her Research Advisory Committee (RAC) will agree upon a dissertation subject and accompanying research design. The Proposal manuscript will include the first three chapters (Introduction, Review of the Literature, and Methods) of the final dissertation (usually five chapters: Introduction, Review of the Literature, Methods, Results, and Conclusions/Discussion). A qualitative proposal and dissertation may contain more than three or five chapters respectively. The student will follow the APA Style Manual (6th or latest edition) regarding referencing.

The student must have completed the Initial Meeting to defend his/her proposal. The Proposal Defense, administered by the RAC, is an oral examination of the research proposal. All members of the RAC must attend the Proposal Defense either in person or via prior approved audio/video technology. If an emergency arises among a Committee member, the Dean of Graduate Studies may substitute that member with the Dean's Representative to the RAC so that the Proposal Defense may take place. At least three RAC members must be physically present for the proposal defense.

During the Proposal Defense—the oral examination—the RAC examines the student on all aspects of the proposed dissertation research as well as whether the student has the proper motivation, technical and intellectual capacity, and resources to complete the research in partial fulfillment of the requirements for the Doctor of Philosophy degree.

Following the completion of the Proposal oral examination process, the RAC will hold a closed meeting in which decisions will be made concerning the final form of the proposal. The student will be called back into the room to hear the RAC decision. RAC consensus is desired; however, the student passes the proposal with at least four of five (or 80%) affirmative votes. The student is required to bring *ORLD Form B* to the proposal defense. It is expected that the RAC will work with the student to make any required changes. When the RAC recommends substantive changes in the proposal, the student will not move forward to submit to the UMES Institutional Review Board (IRB) the request for approval of human subjects data collection until all corrections have been made. After passing the Proposal Defense, the student is allowed to submit materials as needed to the UMES Institutional Review Board (IRB).

After passing the Proposal Defense, the student is admitted to candidacy provided that he/she submits the application for *Admission to Candidacy*. This application form may be obtained from the UMES Graduate School (www.umes.edu/Grad/Default.aspx?id=17612). The timeline for Admission to Candidacy is five years after enrollment in the program.

If the student fails the Proposal Defense, he/she must re-defend the research proposal. A second failure or failure to re-defend within one year (but no sooner than 30 working days) of the first proposal defense results in cancellation of admission.

The Dissertation Defense

The ability to undertake independent research and provide sufficient evidence of scholarship is demonstrated by submission of an original dissertation, which is required of all candidates for a Ph.D. degree. A minimum of 12 dissertation hours is required to complete the ORLD Doctoral degree program. Prior to admission to candidacy, the student may register for no more than six (6) dissertation hours. After registering for all 12 required hours, the candidate

must register for one dissertation hour per semester and summer session, including the semester or session in which he/she defends his/her dissertation. In other words, the candidate must be continually enrolled in dissertation hours until graduation. The candidate has up to four (4) years to successfully defend his/her dissertation from the time he/she was admitted to candidacy.

The Dissertation Defense MUST be physically attended by ALL members of the candidate's RAC, and the Dissertation Defense must be held in UMES facilities. At the completion of the defense, the RAC will hold a meeting (without the candidate) to discuss decisions regarding the candidate's pass/fail status and any recommendations for the final form of the dissertation manuscript. The student will be called back into the room to hear the RAC decision. The RAC has the following alternatives regarding the pass/fail status for the candidate:

1. Accept the dissertation without any recommended changes and sign the appropriate form.
2. Accept the dissertation with recommendations for changes, and, EXCEPT FOR THE RAC CHAIR, sign the appropriate form. After the candidate makes the recommended changes, the RAC chair will review the dissertation and, upon his/her approval, sign *ORLD Form E*.
3. Recommend revisions to the dissertation manuscript and NOT sign *ORLD Form E* until the candidate has made the changes and submitted the revised dissertation manuscript for RAC approval. Then, the RAC will sign *Form E* if they approve of the changes.
4. Recommend revisions and convene a second meeting of the Dissertation Defense. The second defense may take place no fewer than 6 months and no later than 12 months after the first defense. Candidates may be examined no more than twice. After failing the second attempt, the candidate's admission to the graduate program is terminated.
5. Rule the dissertation manuscript and defense unsatisfactory; therefore, the student fails and may not re-defend. Before or after recommended changes, the candidate fails if two (2) of five (5) RAC members do not sign *ORLD Form E*. In addition, the ORLD Program Research Coordinator may override any RAC pass/fail decision. Circumstances for an override could include *a.)* a dissertation manuscript not in compliance with ORLD specified outline/style; *b.)* failure of the student to comply with IRB human subjects protection requirements; or *c.)* acts of plagiarism and faulty data handling and other examples of academic dishonesty that were found. These problems would go back to the student and the RAC with appropriate action to be taken as warranted, e.g., if an academic honesty or IRB issue and/or revisiting the dissertation manuscript for revision and a subsequent review following the above five pass/fail alternatives. Although not an ORLD requirement, the Doctoral candidate may request a Public Seminar (open to the public) to serve as a dress rehearsal for the Dissertation Defense. The request should be submitted to the ORLD program Director.

ORLD Program Grading and Retention Policies

The grading policy for the ORLD program is that students must receive a grade of either "B" or "A" in each program course (core, strand and research) with a letter grading system (A, B, C, D, & F) and a grade of "S" in comprehensive examination, internship and research credit courses with a "S/F" grading system.

The retention policy for the ORLD program is as follows:

1. A student who receives a grade of “C” in any core, strand or research methods/statistics course must repeat that course.
2. The statistics course pre-requisite is that students must earn a final grade of “A” or “B” in ORLD 612 before proceeding to ORLD 613.
3. After receiving two final “C” grades (whether receiving two consecutive “C” grades in the process of repeating one course or whether, throughout the duration of the program, receiving two final “C” grades in any two different courses), the student will be dismissed from the program.
4. A student who receives a final course grade of “D” or “F” at any time in the program will be dismissed from the program.
5. A grade of “I” (Incomplete) is given in any course only to students who are passing the course at the time of a legitimate emergency. If the “I” grade has not been completed satisfactorily within six (6) months from the conclusion of the 5-week course in which the instructor granted the “I,” the student’s registration for the next sequence of courses is subject to hold. All “I” grades must be completed for the student to sit for the comprehensive examination. An “I” becomes a “W” at the end of one year if not removed and, thereby, must be repeated.
6. Academic dishonesty (e.g., plagiarism, improper citation, fabrication, and/or manipulation of facts and data, cheating, and so on) will not be tolerated in the ORLD program and will be subject to actions and penalties prescribed in the campus’ academic honesty policy.
7. Students enrolled in internship, comprehensive examination and research credit courses with an “S/F” grading system—898 internship credit, 700 comprehensive examination credit, and 899 dissertation credit—must earn a grade of “S” to continue with the progress to degree. A failing grade in any of these credit courses at any time is subject to review by the program to determine whether the student should be continued in the program or dismissed.

Altered Timelines for the Program

Completion of the ORLD degree program requirements within the recommended three-year time frame is contingent on successful completion of all coursework in sequential order and the required examinations. Unsatisfactory performance on or delays in completion of the coursework, the comprehensive examination, the internship, the research proposal defense or the final dissertation examination, and subsequent re-examinations of any of the above, and leaves of absences all necessarily extend the duration of the student’s retention and graduation in the program. Consequently, students in the ORLD Program may need to commit additional time and resources beyond the recommended three-year time frame and sequence in accordance with the policies and procedures and timelines for Doctoral degrees of the UMES Graduate School.

Course Descriptions

(Note: Credit Hours are given in parentheses)

Core Requirements

Organizational Leadership as a Field of Inquiry

ORLD 601 History and Philosophy of Organizations (3)

The course traces the development, rationale, and purpose for organizations. Information obtained will serve as the foundational building block for understanding and obtaining an essential perspective of current organizational interactions.

ORLD 602 Theories and Processes of Organizations (3)

The course examines theories, methods, and practices that influence organizations. Emphasis is placed on organizational performance outcomes and how implementation impacts emerging global markets. Also explored will be the human, conceptual, and technical skills required of all policymakers working collaboratively within organizations to achieve individual, organizational, and societal goals.

ORLD 603 Politics, Organizations, and Leaders: Legal and Ethical Issues (3)

The impact of ethics as well as the responsible behavior of leaders in organizations are studied. Policies, practices, and their legal implications; resource identification and the need for human services, along with the impact of technology on human rights, will all be explored. Ethics regulations for research on human subjects, including IRB requirements, will be presented.

ORLD 604 National and International Organizational Research and Development (3)

This course will provide the student with a study of American organizational structures, along with a comparison of emerging influential cultures which impact international markets, and global performance.

Research and Statistics

ORLD 610 Qualitative Research (3)

The course is an introduction to the field of qualitative research through the development of knowledge base and application of research skills and methodologies needed to select, read, and interpret relevant professional literature. Ethics regulations for research on human subjects, including IRB requirements, will be presented. Research reports are emphasized.

ORLD 611 Quantitative Research (3)

This course is introduction to the field of quantitative research through the development of knowledge base and application of research skills and methodologies needed to select, read, and interpret relevant professional literature. Ethics regulations for research on human subjects, including IRB requirements, will be presented. Research reports are emphasized.

ORLD 612 Statistical Applications and Interpretations (3)

The course covers fundamentals of research and case study design, focusing on implementation strategies that address organizational policies and practice. There is also a study in paradigm shifts and analysis of literature in the field of study. Cultural and technological influences, how public, private and corporate systems are altered by

interpretative data, are also covered. In order to enroll in ORLD 613, the student must earn a grade of "A" or "B" in ORLD 612.

ORLD 613 Statistics and Information Management (3)

The course covers the study and use of statistics in a diverse, global society and the effective use of derived information to provide for orderly transitions in institutional governance. The student may not enroll in this course unless s/he has earned a grade of "A" or "B" in ORLD 612.

Professional Services

ORLD 614 Multi-Variate Statistics (3)

This course addresses the multivariate analysis of quantitative data at the intermediate level. The course will emphasize skills and knowledge that are crucial and practical for participation in the community of Doctoral-level researchers and for meeting professional obligations as PhDs.

ORLD 617 Personnel Development, Management, and Evaluation (3)

The course covers leadership strategies required in recruitment, development, and in-service, effective use of personnel staff, and the evaluation techniques which will promote a highly motivated professional delivery system.

ORLD 618 Public Relations and Marketing in the Non-Profit Sector (3)

Topics include interdisciplinary approaches to achieving harmony in making systems and organizations apparently seamless, publicly attractive, economically sound, and professionally ethical.

ORLD 620 Research in Organizational Leadership (3)

This seminar will focus on scholarly writing and publishing. Scholarly writing is the deliberate dissemination of ideas and among persons trained in an academic discipline or profession with the intent expanding the available base of knowledge. This dissemination can be in the form of journal articles, book chapters, or books. The goal of this seminar is to produce researchers and scholars who will contribute to the knowledge base of organizational leadership.

ORLD 623 Organizational Policy Analysis and Change (3)

This course will assist students in understanding how to perform an organizational analysis and how to use it to improve effectiveness. Students will understand: how learning builds organizational performance; how organizations can strategically leverage knowledge; how organizations and communities design and sustain effective change strategies; apply theories of learning and performance, knowledge management, and strategic change; and how to analyze social policies that affect organizations. This course is designed to give the student the theoretical and practical skills necessary to achieve those goals.

ORLD 624 Advanced Seminar in Theory and Methods (3)

This course will be a final class intended to aid the students in tying current theory and research methods together for the basis of their dissertation proposal. The topic of the seminar is the relationship between contemporary theories of organizational leadership and their linkage to research design and method selection. The final product of the seminar is expected to be a defensible dissertation proposal.

Doctoral Internship

ACOL, GVOL, HSOL 898 (1-6)

The Doctoral internship is an experiential-based learning opportunity completed as a field experience related to current or future professional interests. Activities must be performed on site in concert with fellow professionals. Insight through engagement of academic organizations, governmental agencies, and/or health and human services agencies must be available. New learning is an essential component of this experience that will yield a scholarly product that has been supervised by an expert in the field and approved by the student's research Advisory Committee. Repeatable credit.

Comprehensive Examination

ORLD 700 Comprehensive Examination (1-6)

This is a required course for students eligible to sit for the comprehensive examination and for those who must retake any part of the comprehensive examination. Prerequisite: Successful completion of all core, research and strand courses and the internship. Repeatable credit.

Doctoral Dissertation

ACOL, GVOL, HSOL 899 (1-12)

The Doctoral dissertation in the Organizational Leadership Program is a self-directed, analytical, and comprehensive product of scholarly inquiry which will stand as a model within the field of professional literature. This project, demonstrating excellence, will be the center piece of the three (3) year academic experience that will add to the body of knowledge relative to leadership in specific settings and contribute to the human endeavor. The dissertation will be conducted in accordance with the policies and procedures of the UMES Graduate School. Repeatable credit.

For more information on this program, please contact:

Coordinator,
Organizational Leadership Program
Spaulding Building
University of Maryland Eastern Shore
Princess Anne, MD 21853
<http://www.umes.edu/ORLDLeadership/>

School of Business and Technology

www.umes.edu/sbt/

Department of Mathematics and Computer Science

Degree Offered

Master of Science (M.S.), Applied Computer Science

M.S., Applied Computer Science

Objective of the Program

The Department of Mathematics and Computer Science offers a Master of Science (Thesis or Non-thesis option) in Applied Computer Science. This program provides advanced understanding, knowledge and research opportunities related to computer science that prepare the students for applying their skills in business, industry, academia, government agencies, consultancy, etc. The primary emphasis is reflective of current theoretical and applied computing in multi-disciplinary applications.

The graduate program in Applied Computer Science (APSC) culminates in a Master of Science (M.S.) degree. It is designed to meet the needs of students such as:

1. Those who are already in the workforce and wish to update or improve their knowledge of current computer science. Many of these students will have completed their undergraduate or graduate work in fields other than computer science.
2. Those who have recently completed an undergraduate degree program and wish to enhance their interests, understanding and research opportunities in Computer Science and its application in multi-disciplines or with specific focus.

Admission Criteria

Admission to this program adheres to the general criteria for admission to the UMES Graduate School. The general GRE is also required but, in view of the wide variety of fields from which students come, the Computer Science subject-matter GRE is not employed in admission consideration for Applied Computer Science. Students with undergraduate GPAs of at least 2.5 on a 4.0 scale and those students with weaker preparation in Computer Science may be offered Provisional Admission. This status is usually changed to Regular Admission as soon as the student completes prerequisite requirements and/or achieves a 3.0 or better cumulative GPA. Students whose computing background is weak may be directed to take undergraduate computer science or mathematics courses as a condition for entering the graduate program. Courses required for Regular Admission must be completed as early as possible, generally within the first year.

In addition to the University of Maryland Eastern Shore's general admission requirements, applicants must have:

1. A bachelor's degree in Computer Science or Information Sciences or a bachelor's degree and specified background course determined by the Department Graduate Committee.

2. An undergraduate GPA of at least 2.5 on a 4.0 scale for Provisional admission, which may also be conditional on some course requirements (of computer science or mathematics) to be met, determined by the Departmental Graduate Committee.

Admission to the program is determined by the Departmental Graduate Committee.

Course Requirements for Graduation

Student must earn a minimum of thirty (30) credit hours with thesis option or thirty three (33) with non-thesis option to graduate from the program, not including any Provisional Admission course requirements. All courses that are to count towards graduation must be passed with a minimum grade of "B", and students must also pass at least five of these courses with a grade of "A".

The time limit for completing the M.S. degree is five years from the first enrollment in the graduate program. This includes any Provisional Admission course or other requirements to be met. Any exception to the time limit must be approved by the UMES Graduate School.

In the Thesis option, the student is required to take a minimum of eight graduate level courses (24 credits) and six credits for Thesis (CSDP699). The thesis must be supervised by a member of the graduate faculty as a thesis Advisor and the initial thesis proposal must be defended with an oral presentation (see below) and approved by student's Thesis Committee (three members including Advisor). The thesis must be submitted to the department in a bound form after its defense orally which will take place after the thesis research is completed. A student is required to submit at least one journal/conference paper from his/her thesis work before its defense.

In the Non-Thesis option, the student is required to take a minimum of ten graduate level courses (30 credits) and a 3-credit hour research project (CSDP698) that must be approved by the project Advisor. A copy of the resulting scholarly paper must be submitted to the department.

Cooperative Education Program Internship

Students seeking internship in industry are required to take CSDP 698 (Master's project) or CSDP 699 (Master's thesis), and all required lecture courses. Students must register for the appropriate cooperative education credit to undertake the internship. The internship should provide learning experience in computer applications useful to strengthen the Master's project or Master's thesis.

Transfer Credit

1. Students desiring to transfer graduate credit need to apply for this privilege during their first semester at UMES.
2. Students need to remember that an absolute limit of six credits of transfer (two courses) is allowed.
3. In general, transfer requires an exact match with the contents of local courses as offered at UMES and will be determined by the Department's Graduate Committee.

Application Deadlines

Fall Semester	-	April 15
	-	March 1 for international applicants

- Spring Semester - October 15
- August 1 for international applicants

- Summer Sessions - April 15
- December 1 for international applicants

Only under extenuating circumstances will applications be accepted after a deadline date has passed. This is particularly true for international applicants who are overseas and need a longer time period in which to be reviewed for admission, receive the I-20 form if admitted and to obtain the visa for study in the US.

Computing Resources

The Department has a Sun Lab consisting of 21 Sun Blade 150 workstations and Sun V1280 server and two Computer Laboratories consisting of high-end Pentium computers. Users have access to a wide variety of Windows and UNIX Microcomputers, plus special purpose facilities for graphics. These computer facilities and several other campus wide computer facilities are available for all students.

Students in both the undergraduate and graduate Computer Science courses benefit from the wide variety of computing resources made available at UMES as a member of the University System of Maryland. Both Unix-based and Windows-based systems provide a rich computing environment both for majors and for students in service courses.

Library facilities are extensive and are supplemented each year. Opportunities exist for student participation in faculty research projects. While computer laboratory facilities are open and available all day and evening, most graduate courses are scheduled in the early evening so that those working during the day can participate.

Curriculum

Core Computer Science courses

(Note: Credit Hours are given in parentheses)

CSDP 600 Advanced Programming Languages (3)

Topics include (not limited to); Advanced topics in programming language theory, design and implementation, in depth understanding of data types, binding, scope and extent, abstraction, extensibility and control mechanisms, formal semantics and program verification, alternative programming language paradigms

CSDP 601 Analysis and Design of Algorithms (3)

Topics include (not limited to); NP completeness and approximation algorithms, design techniques for efficient algorithms such as amortized analysis, dynamic programming and greedy algorithms. Computational geometry, graph algorithms, primality and other number-theoretic algorithms, specialized data structure techniques such as augmenting data structures, combinational graph reduction and functional repetition

CSDP 602 Database Management System (3)

Topics include (not limited to); A study of the theoretical foundations of database management systems. Design and implementation of alternatives for various database models, including, but not limited to, hierarchical network and relational models, comparison of the reliability, security and integrity of various database systems. Implementation of simple database system.

CSDP 603 Advanced Operating System (3)

Topics include (not limited to); Structure and functions of operating system, inter-process communication techniques, high-level concurrent programming, virtual memory system, basic queuing theory, security, distributed system, design and implementation of operating systems.

CSDP 605 Software Engineering (3)

Topics include (not limited to); A formal study of the software development process, lifecycle models, requirements definition specifications, design, implementation, validation, verification, maintenance and reuse, team work on a project.

Elective courses

Select any three for Thesis option and five for Non-thesis option

CSDP 604 Computers Methods in Statistics (3)

Topics include (not limited to); principles and applications of probability and statistics needed in graduate studies in various academic areas and to the computer realization of these methods. Review of basic statistical principles.

Pre-requisite: one semester of calculus

NOTE: The department is committed to offer CSDP 604 (Computers in Statistics) as an elective course on demand.

CSDP610 Parallel Computing (3)

Topics include (not limited to); Motivation for parallel computation and survey of different models. Fundamental techniques used in parallel algorithms. Implementation on parallel machines and simulation on clusters of workstations. Distributed computed versus parallel computing model for distributed computing. Examples of distributed programming environment.

CSDP 611 Theory of Computation (3)

Topics include (not limited to); Grammars, automata, Turing machines, decidability and complexity, language hierarchies, normal forms, NP completeness and reducibility with applications from various areas of computer science

CSDP 612 Advanced Software Engineering (3)

Topics include (not limited to); A formal study of selected aspects of contemporary software development methodology, definition of user requirement, formal specification of solutions, design and implementation techniques, validation and testing, verification, maintenance and reuse.

CSDP 613 Computer Security (3)

Topics include (not limited to); Computers and network security, Public-key and private-key cryptography, authentication, digital signatures, key exchanges, key management, certification authorities, distributed trust models, file system security, mail system security, and web security, intruders. Trojan-horse, viruses, covert channels, projects involve the use of available security tools.

CSDP 614 Trusted Computing Technology (3)

Topics include (not limited to); Introduction to modular arithmetic, RSA, El-Gamal, Diffie-Hellman and Blue-Blum-Shub public key cryptosystems, authentication and digital signatures, anonymity protocols, protocol failures

CSDP 615 Bioinformatics (3)

Topics include (not limited to); The primary objective of this course is to expose students to the computational methods and software tools often used in bioinformatics research. Bioinformatics is a new research field where computational models and methods are developed to analyze and interpret biological data and systems. Major topics in this course include sequence alignment and analysis, gene structure and prediction, motif recognition, structure modeling and prediction for RNA and protein sequences, protein identification in proteomics, and haplotyping and phylogenetic trees. The applications of machine learning and data mining algorithms in bioinformatics will also be introduced and studied.

CSDP 616 Data Mining Security (3)

Topics include (not limited to); Introduction to principles and implementation techniques for information security and privacy in data mining. It deals with techniques used to automatically search large volumes of data for patterns to detect security breaches, fraud, tampering, etc. using tools such as classification, association rule mining, and clustering. Techniques will be compared and application areas for the techniques will be addressed. Other topics include security vulnerabilities and privacy breaches, design of defensive countermeasure and privacy-preserving mechanisms.

CSDP 618 Advanced Graphics (3)

Topics include (not limited to); Introduce to advanced raster graphics architecture, advanced geometric and raster algorithms, advanced 3D modeling and rendering techniques, advanced animation, virtual reality techniques, advanced image transformation such as image warping and morphing techniques, and the advanced applications such as motion capture in movie industry, existing and emerging standard for 3D model storage and compression, image synthesis and scientific visualization.

CSDP 619 Artificial Neural Networks (3)

Topics include (not limited to); Introductions to various aspects of artificial neural networks, with emphasis on elements of design of trainable systems. Topics include linear and nonlinear neurons, multi-layer networks, back-propagation algorithms, unsupervised learning algorithms, Hopfield networks, and advanced neural network architectures and training algorithms.

CSDP 620 Secured E-commerce (3)

Topics include (not limited to); Introduced to the concepts and issues of electronic commerce. Topics include comparison of e-commerce procedures, payment mechanisms, applications in different industry sectors, security, the challenges of starting and maintaining an electronic business site, as well as a comparison with traditional business practices. Students create an e-commerce Web site using such tools as Dreamweaver.

CSDP 651 Computer Architecture (3)

Topics include (not limited to); Structure of computer system using processors, memories, input/output devices as building blocks, computer system instruction set design and implementation including memory hierarchies, microprogramming, pipelining and multiprocessors, issues and tradeoffs involved in the design of computer system architectures with respect to the design of instruction sets, applications of hardware description language (HDL) in the design of computer systems.

CSDP 668 Advanced Topics in Databases (3)

Topics include (not limited to); Parallel and distributed database system architectures, distributed database design, client/server database systems, selected topics from new development in extended relational databases, multimedia databases, information retrieval systems, object-oriented databases, temporal databases

CSDP 697 Special Topic course (3)

CSDP 698 Master's Project (3)

CSDP 699 Master's Thesis (6 credits in at least two semesters, 3 credits each)

Computer Science Thesis/Project

The thesis/project must contain original theoretical/experimental results/simulation findings that are suitable for publication in a refereed journal/conferences/workshops.

General Guidelines for Master's Thesis/Project Proposal

A student in consultation with his/her thesis Advisor should decide the thesis topic and submit a thesis/project proposal to the Thesis Committee (comprising of thesis Advisor and two graduate faculty members from within or outside the department who are familiar with the related work). It is required that the student do the above at least one full semester before the thesis is defended and it should be completed before other work on the thesis or project is started. The department will not approve the defense of the thesis/project if the student fails to submit and have his/her proposal approved by the Thesis Committee using the above guidelines. If a thesis is to be submitted, the draft will be reviewed by the Graduate School for general thesis format applicable to all graduate programs.

Proposal Document Format of Thesis/Project

The thesis/project proposal is a written document and must follow the outline below.

1. *Title Page*: High level abstract description of work undertaken.
2. *Introduction*: A detailed discussion on the work undertaken that can be reasonably understood by faculty members not working in this research area.
3. *Thesis/project statement*: Precise and concise statement of the thesis/project, e.g. proposed hypothesis to be tested, the thesis to be defended, the project to be defended, questions to be answered, etc.
4. *Methods*: Describe the methods and framework to be used to accomplish the thesis/project statement; e.g. proposed algorithms, procedures, controls, sample size, experiments, simulation, expected results, its significance, and future extension that might give new technological development, etc.

5. *Schedule*: A complete schedule for the completion of thesis/project.
6. *Interpretation of findings/results*: A detailed discussion on the interpretation and analysis of the results/findings that have been presented via charts/graphs and its comparison with existing results reported by other researchers.
7. *Conclusion and future work*: Statement of your work, difficulties encountered and presentable results. Discussion on this proposed work can be extended with appropriate justification.
8. *Bibliography*: A fairly complete annotated bibliography of the area of proposed work in the thesis/project.
9. *Artifacts*: A description of any artifacts besides the write-up of the thesis/project (as appendix); i.e. code, user's manuals, etc.
10. *Signatures*: A standard acceptance page including the date and all the members of Thesis/Project Committee and the Graduate Coordinator.

Requirements for Thesis Option

Proposal for Paper thesis: The following are the general questions (not limited to) that need to be addressed for each of the chapters of the thesis.

1. Introduction
 - i. Necessary background.
 - ii. Statement of the problem.
 - iii. Why is this problem interesting?
 - iv. Significance and application of the problem.
2. Thesis statement
 - i. What is the proposed solution?
 - ii. What does the solution do?
 - iii. Why does the proposed solution solve the problem?
 - iv. How is your proposed solution different than others?
3. Method
 - i. How to address the problem and its solution?
 - ii. Combination of proof, implementation and experimentation.
 - iii. Presentation of results or simulation for the solution
 - iv. Interpretation of the solution.
 - v. How does this solution different than the existing ones?
 - vi. Proof of real contribution.
4. Annotated bibliography
 - i. Complete and appropriate a thorough literature survey in the pertinent area.
5. Artifacts
 - i. Code, user's manual, any other relevant chart or basic conceptual information.

Requirements for Non-thesis Option

Proposal for Project

Necessary background for the proposed work with convincing argument that the project will offer a significant contribution that can generate a scholarly work. The project statement should precisely and concisely describe the work. The methods section should describe the requirements and expectations for the finished product and explain what will be done to assure the quality of the work. The annotated bibliography should convince the Committee and readers that the student is well acquainted with techniques/methodologies needed to do the work and these techniques/methodologies have been used to solve similar problems. The contributions should reflect the importance of the work. It is important to discuss how the work will be disseminated to others.

General comment

If the document does not satisfy the above mentioned standards or similar standards for traditional theses, the department will not approve it. Feedback and correction is an integral part of student's education and must be done in consultation with the Advisor.

Thesis/Project Proposal Presentation

Oral presentation audience: Computer Science faculty members who may not be acquainted with the topic.

A 15 minute oral presentation of the proposed thesis/project must be carefully organized and given to the members of Thesis/Project Committee and the invited public. During the proposal presentation, the student must answer Committee members' questions on topics such as methodology used, organization and literature surveys. After the presentation, the student and the public leave the room while the Committee makes a decision on the proposal acceptance. The result will range from unqualified acceptance to unqualified rejection. The students will work on his/her approved proposal for his/her M.S. project.

General comments

A simple restatement of the proposal document will not be acceptable. The central ideas of this document should be presented, but should be augmented by examples and explanations. The presentation will offer the opportunity to students to practice and improve upon making a good presentation in future.

The above guidelines will be followed for the thesis/project proposal. Similar guidelines will be followed after the student has completed thesis/project work.

Thesis/Project Defense Instructions

(also check the *Graduate School's Established Procedures for Conduct of the Master's Thesis Examination* listed in this Catalog – Pg 47)

1. Before scheduling: Create and write up the Thesis/project under the supervision of the thesis/proposal Advisor. Have verbal agreement from the Advisor and the members of the Committee that the thesis/project is in final form and has their approval.
2. 7-9 days before the presentation: The student will provide copies of the final thesis/project for each of the three members of the Thesis/Proposal Committee. The student will also arrange for a date, time and place for the defense of the project/thesis.

The student must make sure that all three Committee members can attend the defense. Other faculty are welcome to attend. The department secretary can schedule a room and post the announcement of the defense.

3. Reserve at least 45 minutes of the defense for questions. The presentation should not exceed beyond 15-20 minutes. Remaining time will be reserved for questions from the audience and Committee members.
4. Defense day or after: (a.) Obtain signatures of all the Committee members and the graduate coordinator on the acceptance page in the thesis/project. (b.) A copy of the published paper/scholarly work must be left with the Department Chair. (c.) The student must also leave the signed copy of the thesis/project with the department chair.

For more information on this program, please contact:

Graduate Program Coordinator: Dr. Gurdeep S. Hura
Department of Mathematics and Computer Science
Kiah Hall
University of Maryland Eastern Shore
Princess Anne, MD 21853
Phone: 410 651 7740
Fax: 410 651 7673
e-mail: ghura@umes.edu
Web site: www.umes.edu/MCS

Department of Technology

Degree Offered

Master of Education (M.Ed.), Career and Technology Education

M.Ed., Career and Technology Education

Objective of the Program

The Department of Technology offers a Master of Education Degree Program (M.Ed.) in Career and Technology Education (CTED). The program is intended to refine the student's knowledge and skills to become master classroom teachers, trainers resource teachers, specialists, supervisors, and administrators in Career and Technology Education. The program is also designed to prepare teachers and educational leaders to qualify for Advanced Professional Certification (APC) in Maryland.

Students are admitted to the M.Ed. program at the University of Maryland Eastern Shore (UMES). Coursework is offered at UMES, the Maryland Center for Career and Technology Education Studies located at the Baltimore Museum of Industry (BMI), and other satellite sites throughout Maryland. The program offers strands in Technology Education and Career and Technical Education. The course of study may vary with the experience, qualifications, and career development needs that individual students bring to the program.

The overall goal of the graduate program in Career and Technology Education is to prepare individuals to become master teachers, administrators, and leaders who are professional, reflective, innovative, valuable diverse and effective. Graduates will be committed to developing, instructing, coordinating, and directing quality programs in Career and Technology Education. The following program objectives assist in accomplishing this goal:

1. Provide opportunities for individuals to gain professional knowledge, skills and dispositions in teaching and training.
2. Prepare individuals to build upon the content knowledge they have acquired in their related baccalaureate degree by providing additional professional knowledge and content necessary for advancing careers in teaching and administration.
3. Develop individuals who can implement science-technology-engineering-math (STEM) instruction.
4. Prepare teachers and leaders who are knowledgeable of research, theory and practice related to effective management of classroom and laboratory instruction.
5. Develop teachers and leaders who are professional, committed, continuous learners, and contributors to the enhancement of the teaching and training profession.
6. Prepare teachers and leaders who demonstrate sensitivity and effective interpersonal skills in working with culturally diverse populations.

Accreditation

UMES' teacher education and school counseling programs are accredited by the National Council for the Accreditation of Teacher Education (NCATE) and approved by the Maryland State Department of Education (MSDE). The M.Ed. in Career and Technology Education is part of the teacher education programs at UMES.

Program Competencies

Students who complete the M.Ed. program in Career and Technology Education will be expected to demonstrate successful achievement in the philosophy, mission, vision, goals, and evolution of Career and Technology Education. They will develop the following professional competencies:

1. Knowledge and application of Maryland State standards-based curriculum in Career and Technology Education areas.
2. Development of administrative and leadership skills in Career and Technology Education.
3. The ability to conduct research on important topics and issues in education and training, specifically Career and Technology Education.
4. Application of research and inquiry for the improvement of classroom and laboratory instruction.
5. Understanding of the learner's physical, cognitive, and emotional development and the implications for learning and instruction.
6. Knowledge of the social contexts in which education occurs, the philosophical perspectives which influence teaching and learning, and an understanding of personal beliefs related to the role of the teacher and the learner.
7. Skills and knowledge necessary to assist learners with special needs and diverse cultural backgrounds in an instructionally integrated setting.
8. Ability to organize and manage a classroom and laboratory on the basis of research, best practices, expert opinion, personal attributes, and student learning needs.
9. Development and application of a variety of teaching/learning strategies and techniques.
10. Appropriate use of a variety of approaches to assess and evaluate instructional outcomes.
11. Use of instructional technology, including computers and media, for classroom, laboratory and professional needs.
12. Application of theory and best practices in classroom laboratory situations through field experiences.

Admission Requirements

Students who enter the M.Ed. program must possess an earned baccalaureate degree in one of the areas of Career and Technology Education: agriculture, business education, family and consumer sciences, health occupations, technology education, trade and industrial education, or a related content area. Matriculating students must meet all requirements for regular admission to the UMES graduate program. In some cases, provisional admission will be granted if students have a minimum grade point average of 2.5 along with other requirements.

Applicants must fulfill the following for regular admission:

1. Complete the graduate school application and related paperwork for a degree program.
2. Possess an undergraduate cumulative GPA of at least 3.0, or possess a prior graduate degree.
3. May require a writing sample essay that focuses on current educational issues, as determined by the graduate faculty Admissions Committee.
4. Submit official transcripts from all higher education institutions attended.
5. Submit three letters of evaluation/ recommendation that address:
 - a. Personal qualities, e.g. character and academic abilities, problem solving, conceptual thinking, and the writing and speaking skills needed to support a rigorous graduate program.
 - b. Personal determination and commitment needed to complete the program.
 - c. A resume and a statement of purpose for enrolling in the Master's degree program.

Transcripts and academic credentials of all applicants will be reviewed by the Department of Technology's graduate Admissions Committee. Individuals who lack appropriate coursework will be expected to complete the identified course content requirements prior to their enrollment in the capstone research portion of the program.

Application Deadlines

Fall Semester - June 1
Spring Semester - December 1
Summer Sessions - April 1

However, applications will be accepted and reviewed at any time throughout the year. Applications take about a month to process and approve.

Program of Study

The M.Ed. program combines Career and Technology Education content with professional education, research, and leadership theory and practice. Graduate level scholarship and research-based content will be presented throughout the program. The essential elements of teaching and assessment, leadership, and educational research will guide instructional decision-making throughout the program.

This is a 30 credit Master's program. There are six required courses (18 credits) dealing with teaching content and methods, instructional organization and management, administration

and leadership, and educational research. The four elective courses (12 credits) that are selected by the student are based on their career needs and goals.

Retention and Exit Requirements

Students enrolled in the M.Ed. program complete a state-approved program of study that includes at least 30 semester hours of graduate credit with a cumulative "B" (3.0) or higher GPA. Six (6) credits are required in a capstone research experience. Of the remaining 24 credits, six (6) are required in Career and Technology Education and six (6) are required in professional education. Twelve (12) elective credits are selected with approval of the graduate Advisor based on the student's previous educational experience and future career goals. Overall, eighteen (18) credits are required at the 600 level or higher and a maximum of twelve (12) credits can be completed at the 400 level in designated courses. Students will take a written comprehensive examination and complete an action research seminar paper within the last six credits of their program. Students who have completed 27 credits of coursework and have passed the comprehensive examination will be advanced to Master's degree candidacy.

A maximum of six (6) graduate credits will be accepted for transfer into the program from non-USM institutions, provided these credits are directly related to the program and meet the criteria for transfer of credit. No more than six (6) credit hours of "C" grades will be acceptable in the program.

Students must complete the program within three calendar years of advancement to Master's degree candidacy, but no later than their five-year admission period. Full-time candidates in the Career and Technology Education M.Ed. program will be expected to complete the program in one academic year including one summer. Part-time students, who attend uninterrupted, will be expected to complete the program in three years.

The following represents the typical program of study for students pursuing the M.Ed. in the Technology Education or Career and Technical strand.

Typical M.Ed. Program of Study

(Note: Credit Hours are given in parentheses)

Technology Education Strand

<u>Course #</u>	<u>Core Required</u>
CTED 600	Technology Education Content, Methods and Strategies (3)
CTED 602	Technology Education Instructional Management and Organization (3)
CTED 615	Administration and Leadership in CTE (3)
EDUC 610	Learning and Instructional Design (3)
CTED 640	Research in Career and Technology Education I (3)
CTED 650	Research in Career and Technology Education II (3)

Total Required Credits: 18

Possible Electives

These are only suggested electives and other courses are available and allowable.

EDTE 482	Core Technologies I (3)
EDTE 483	Core Technologies II (3)
EDTE 487	Foundations of Technology (3)
CTED 630	Special Problems in Career and Technology Education (3)

Total Elective Credits 12

TOTAL CREDITS 30

Additional graduate electives offered by UMES include:

EDTE 437	Student Performance Assessment (3)
EDTE 440	Integrating Math and Science in Occupational and Technology Education (3)
EDTE 445	American Industry & Global Competition (3)
EDTE 499	Research and Experimentation in Career and Technology Education (3)
SPED 600	Characteristics of Exceptional Individuals (3)
EDCI 409	Methods of Teaching Reading in the Content Areas I (3)
EDCI 410	Methods of Teaching Reading in the Content Areas II (3)
EDUC 612	Advanced Educational Psychology (3)
EDUC 620	Advanced Human Growth & Development(3)
CTED 610	Teaching Adult and Post-Secondary Education Programs(3)

Typical M.Ed. Program of Study

(Note: Credit Hours are given in parentheses)

Career and Technical Education Strand

<u>Course #</u>	<u>Core Required</u>
CTED 601	Career and Technical Education Content, Methods and Strategies (3)
CTED 603	Career and Technical Education Instructional Management and Organization (3)
CTED 615	Administration and Leadership in CTE (3)
EDUC 610	Learning and Instructional Design (3)
CTED 640	Research in Career and Technology Education I (3)
CTED 650	Research in Career and Technology Education II (3)

Total Required Credits: 18

Possible Electives

Selection of elective courses is based on previous education experience and career goals. Elective courses will vary for each individual, and require the approval of the graduate Advisor. These are only suggested electives and other courses are available and allowable.

EDTE 445	American Industry & Global Competition (3)
EDTE 467	Instructional Analysis and Curriculum Development (3)
CTED 480	Coordination of Work-Based Learning Programs (3)
CTED 630	Special Problems in Career and Technology Education (3)

Total Elective Credits: 12

TOTAL CREDITS: 30

Additional graduate electives offered by UMES include

EDTE 437	Student Performance Assessment (3)
EDTE 440	Integrating Math and Science in Occupational and Technology Education (3)
EDTE 450	Mentoring: Expectations and Responsibilities (3)
EDTE 486	Instructional Media Development (3)

SPED 600	Characteristics of Exceptional Individuals (3)
EDCI 409	Methods of Teaching Reading in the Content Areas I (3)
EDCI 410	Methods of Teaching Reading in the Content Areas II (3)
EDUC 612	Advanced Educational Psychology (3)
EDUC 620	Advanced Human Growth & Development(3)
CTED 610	Teaching Adult and Post- Secondary Education Programs (3)

Course Descriptions

(Note: Credit Hours are given in parentheses)

CTED 600 Technology Education Content, Methods, and Strategies (3)

This course examines the philosophy, mission, vision, goals, and evolution of Technology Education within the context of the Designed World. The Maryland State Technology Education Curriculum, teaching and learning strategies, foundations of technology, content standards, and science-technology-engineering-math (STEM) are also covered. Integrating core academic knowledge and skills, and the professional roles and responsibilities of Technology Education teachers within the total school community at the secondary level are also discussed.

CTED 601 Career and Technical Education Content, Methods, and Strategies (3)

This course examines the philosophy, mission, vision, goals, and evolution of Career and Technical Education. Teaching and learning strategies, performance-based instruction, Skills for Success, content standards, science-technology-engineering-math (STEM), work-based learning, school-to-careers, and student equity issues will be covered.

CTED 602 Technology Education Instructional Management and Organization (3)

This course covers planning, implementing, evaluating, and marketing Technology Education programs. Particular attention will be given to the organization and classroom management of a safe laboratory environment. Ground rules, student grading systems, program and instructor effectiveness, and a classroom management system are addressed. The safe and effective use of tools, equipment, and materials will be covered, as well as a review of the Technology Education teacher's responsibilities.

CTED 603 Career and Technical Education Instructional Management and Organization (3)

This course covers planning, implementing, evaluating, and marketing Career and Technical Education programs. Particular attention will be given to the organization and management of a safe work environment. Ground rules, student grading systems, program and instructor effectiveness, and a classroom management system are addressed. The safe and effective use of tools, equipment, and materials will be covered, as well as a review of the CTE teacher's responsibilities.

CTED 607 Coordination of Work-Based

EDTE 480 Learning Programs (3)

A variety of work-based learning programs will be covered including the career research and development program, cooperation work experience, internships, mentorships, job shadowing, and apprenticeship. Mission, trends and current practices in these programs will be discussed. Methods and techniques of coordination in comprehensive and part-time programs at the secondary and adult levels are covered.

CTED 610 Teaching in Adult and Post-Secondary Education Programs (3)

Methods and techniques for teaching adult learners in secondary and in post-secondary occupational and technical programs are covered. The needs, interests and motivation of the mature learner are analyzed. Secondary and post-secondary educational settings will be compared

CTED 615 Administration and Leadership in CTE (3)

This course covers the theories and concepts of educational administration and leadership in Career and Technology Education. Societal forces that affect educational administration, tasks of administration, role requirements, administrative processes, division of responsibility, organizational variables, the administrator as an instructional leader, and professional organizations are discussed.

CTED 630 Special Problems in Career and Technology Education (3)

Master's and APC students who desire to pursue a special research problem or project under the direction of their Advisor may register for this course. The course may be repeated twice with different topics and approval of the Advisor.

CTED 640 Research in Career and Technology Education I (3)

Students are introduced to the three basic forms of research: historical, descriptive and action research. Emphasis is placed on incorporating research into classroom teaching and leadership. A variety of databases will be used. The course provides a base for action research methodology. Qualitative and quantitative data treatments will be developed within the context of individual student projects and the evaluation of the research literature.

CTED 650 Research in Career and Technology Education II (3)

Students will complete and present their action research papers. Students will also write a journal article based on their paper for possible publication. Prerequisites: Successful completion of CTED 640.

EDUC 610 Learning and Instructional Design (3)

Advanced skill development in the area of individualized programming, including adaptation and modification of curriculum, instructional design, program development, and evaluation are covered in this course. Learning theory and its application in the classroom are emphasized.

EDUC 612 Advanced Educational Psychology (3)

Application of psychology to learning processes and theories are examined. Topics covered include individual differences, measurement, motivation, emotions, intelligence, attitudes, problem solving, thinking, and communicating in educational settings.

EDUC 620 Advanced Human Growth and Development (3)

This course is an advanced study of human growth and development using a life-span approach. Current research and theories in the areas of cognitive processes, learning abilities, and social and psychological processes will be examined.

SPED 600 Characteristics of Exceptional Individuals (3)

This course is an overview of the major types of exceptional abilities and their impact on the teaching/learning process. The legal mandates that relate to the field of special education are covered.

EDCI 409/410 Methods of Teaching Reading in the Content Areas I and II (3)

These courses teach the fundamentals of reading instruction including current theories and methods of reading instruction. These courses also present an overview of reading programs K-12 and consider the integration of reading into the student's areas of specialization at the middle and secondary school levels. These courses emphasize the identification of requisite reading skills, the assessment of reading skill levels (instructional and independent), the development of strategies and materials for reading mastery, and the remediation of reading difficulties.

EDTE 437 Student Performance Assessment (3)

This course examines how to identify and utilize appropriate student performance criteria to measure student achievement in the cognitive, psychomotor and affective domains. A variety of assessment instruments will be evaluated and developed to document student mastery of instructional objectives.

EDTE 440 Integrating Math and Science in Occupational and Technology Education (3)

The purpose of this course is to provide teachers with techniques and methods to assist students in improving their math and science skills within the context of their curriculum. Math and science techniques and problem applications are covered for specific Career and Technology Education (CTE) areas.

EDTE 445 American Industry and Global Competition (3)

This course is an analysis of American industry in relation to current and future competitive trends. Personnel organizations, personnel needs, production, quality, all aspects of the industry, and competition in selected manufacturing and construction enterprises are covered.

EDTE 450 Mentoring: Expectations and Responsibilities (3)

This course is an introduction to mentoring, and covers selecting mentors, mentor/teacher responsibilities, teacher observation, problems of beginning teachers, mentoring techniques, assessment, and portfolio development. This course is designed to prepare experienced teachers who are interested in becoming mentors or helping teachers in the secondary school.

EDTE 467 Instructional Analysis and Curriculum Development (3)

This advanced curriculum design course covers how to design a standards-based unit of instruction based on an instructional analysis in a content area in order to develop curriculum materials. Students learn how to design, implement, and evaluate Career and Technology Education curriculum. Emphasis is placed on the integration and utilization of national and state content standards. Based on these standards and the backward mapping process, goals, objectives, indicators, student learning activities, instructional materials, and assessment instruments are designed.

EDTE 481 Facilities Organization and Management (3)

Basic elements of designing, creating, and managing Career and Technology Education learning environments, both classroom and laboratory facilities, are covered in this cover. Room layout, selection of tools, supplies, equipment, safety and layout arrangements will be studied.

EDTE 482 Core Technologies I (3)

Core technologies are the building blocks of all technology systems within the context of the designed world. Mechanical and structural technologies are examined with regard to common components, simple controls, basic system design, safety, and applications. An overview of materials technology will include an examination of ferrous and non-ferrous materials, common industrial forms, and the primary and secondary processing of industrial materials. The course includes an introduction to biotechnology with instructional units devoted to genetics, environmental biotechnology, and the future of biotechnology. Topical investigations and modular activity packages are utilized to enhance understanding of the core technologies.

EDTE 483 Core Technologies II (3)

Core technologies are the building blocks of all technology systems within the context of the designed world. Electrical, electronic, optical, fluid, and thermal technologies are examined with regard to common components, simple controls, basic system design, safety, and applications. The context for the study of these core technologies is the design and development of technology systems to solve practical problems. Communication skills are developed through the documentation of the design and development process. Topical investigations and modular activity packages are utilized to enhance understanding of the core technologies.

EDTE 484 Information Systems (3)

This course will provide students with knowledge and skills related to communication systems, application of computers, computer controlled robots and machines, imaging, publishing, audio systems, video systems, and telecommunications. Students learn how to integrate instruction on information systems into teaching/learning strategies. These strategies include: ingenuity challenges, topical investigations, product generation, modular activity packages, research and experimentation, and engineering design and development.

EDTE 486 Instructional Media Development (3)

Students will develop instructional materials in this course. The course covers commercially available sources and teacher-developed materials including web pages, WebQuests, computer-generated materials, PowerPoint presentations, and the use of instructional technology devices and equipment.

EDTE 487 Foundations of Technology (3)

This course focuses on the development of knowledge, skills and dispositions regarding the following aspects of technology: 1) its evolution, 2) systems, 3) core concepts, 4) design, and 5) utilization. It addresses the three dimensions of technological literacy: knowledge, ways of thinking and acting, and capabilities with the goal of students developing the characteristics of a technologically literate citizen. It examines strategies designed to engage students in exploring and deepening their understanding of "big ideas" regarding technology and makes use of a variety of assessment instruments to reveal the extent of understanding. The nature of a technology education experience with its performance-based instruction and assessment will be explored with special attention given to the program's potential to invigorate student interest and achievement.

EDTE 499 Research and Experimentation in Career and Technology Education (3)

This advanced course focuses on solving technological issues through the problem-solving method. Students identify a technological problem, determine possible solutions, collect data, write a research report, and present their findings. Emphasis is placed on inquiry, utilizing

resources, analyzing and synthesizing data, and developing solutions. This course may be repeated twice using different problems with the permission of the graduate Advisor.

For more information on this program, please contact:

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Department of Rehabilitation Services

Degree Offered

Master of Science (M.S.), Rehabilitation Counseling

M.S., Rehabilitation Counseling

The Master of Science in Rehabilitation Counseling (MSRC) is a graduate degree program offered through the Department of Rehabilitation in the School of Pharmacy and Health Professions at the University of Maryland Eastern Shore. Rehabilitation counseling is a thriving professional field and graduates of our program can look forward to employment opportunities in both the public and private sector. Graduates will find numerous opportunities for employment in rehabilitation and a growing number of human services and allied health settings.

Objective of the Program

The mission of the Master of Science program in Rehabilitation Counseling is to train well qualified rehabilitation counselors who are prepared to work with individuals from diverse backgrounds with physical, developmental, psychosocial, and sensory disabilities. A second part of that mission, which is no less important, is to assist our graduates to develop an inclusive and holistic approach to rehabilitation which values the individuals' right to fully participate in the decision making process regarding their development. This approach takes into consideration how all the components of that person's life, (including vocational, psychosocial, spiritual, cultural, and emotional components) may impact their lifestyle and overall quality of life.

The Goal

The goal of the MSRC program is to prepare rehabilitation professionals to effectively assist individuals with disabilities to achieve their highest degree of vocational, psychological, economic and social independence and the greatest quality of life possible. It is essential to our process that students are grounded in the belief that their central role as rehabilitation professionals will be to serve as advocates for individuals with disabilities. As advocates for individuals with disabilities they must recognize and support the reality that rehabilitation is a holistic process which includes addressing the physical, psychological, familial, social, vocational, cultural and spiritual components which influence their lives.

To successfully pursue our mission and goal, it is the objective of the MSRC faculty to expose students to the knowledge, skills, and abilities needed to become highly competent rehabilitation practitioners. The curriculum is designed to introduce students to state of the

art knowledge and procedures which carefully integrate theory with substantial experiential components.

The Master of Science degree in Rehabilitation Counseling does address the critical and compelling need for trained rehabilitation professionals in the state of Maryland, the mid-Atlantic region and the nation. The graduate program will not only produce needed professionals in rehabilitation but will also offset the continuing education needs of regional rehabilitation, human services and allied health personnel

Characteristics of the Program

1. **Educational Objectives:** The graduate program is designed to provide rehabilitation education and training to meet the needs of a diverse and global labor market. The curriculum includes:
 - a. job placement counseling of people with disabilities;
 - b. infusion of rehabilitation technology across the curriculum; and
 - c. preparation of students to work in a variety of allied health and human service professions.

Inclusion of assistive/adaptive and other relevant technology into the curriculum will make a difference in counseling about quality of life for individuals with disabilities.

2. **General Requirements:** The UMES Graduate Program in Rehabilitation Counseling has established a program based on the Council on Rehabilitation Education (CORE) guidelines and State of Maryland professional counselor licensure criteria. Emphasis is placed on competencies that prepare graduates for a career path that includes direct service competencies and administrative functions. The universal CORE-based curriculum prepares graduates to apply to be a certified rehabilitation counselor (CRC) and professional counselor licensure (LPC). Program graduates will be prepared for employment in the State-Federal rehabilitation system, e.g., Maryland Department of Rehabilitation Services, Non-governmental Organizations (NGOs) such as private foundations and associations, and private sector rehabilitation among many venues focused on serving individuals with disabilities and their families. Work settings for graduates of the Rehabilitation Counseling program include federal/state public rehabilitation, private practice, community rehabilitation centers, hospitals, schools, colleges, universities, industry, insurance companies, legal offices, corrections, treatment programs, centers for independent living (CILs), and rehabilitation centers. Additionally, students will be prepared to comply with the federal mandate on Comprehensive System of Personnel Development (CSPD) for the state-federal system of vocational rehabilitation.

The curriculum is consistent with the standards of the Council on Rehabilitation Education (CORE) and the Standards of Practice as set forth by the Commission on Rehabilitation Counselor Certification (CRCC). Graduates following the ascribed curricula are eligible to apply for certification as a Certified Rehabilitation Counselor (CRC). For more information on rehabilitation counseling certification visit the CRCC website: <http://www.crc-commission.org>.

3. **Credit and Courses:** The academic program will require 48 credit hours (16 courses) and can be completed in four semesters by full-time students. Although priority will be given to

full-time students, part-time students and non-rehabilitation graduate students may register for courses if space is available. The length of time it will take for a part-time student to fulfill requirements for graduation is contingent upon how many credit hours he/she takes each semester. The course sequence is such that courses are also taken during the Winter and Summer sessions. This allows students the opportunity to take only RECN 712 during their final semester. Students are then afforded the possibility of doing their Rehabilitation Counseling Internship at a location outside of the immediate Princess Anne/Salisbury area. Students must maintain a cumulative grade of B (3.0) in all graduate level courses taken for credit toward a graduate degree.

4. **Comprehensive Examinations:** In addition to completing the CORE-based curriculum, the requirements for the master's degree in Rehabilitation Counseling will include a final written examination, to be completed in the Fall before the student enters the internship. In order to qualify for the comprehensive examination, students should have completed all course requirements excluding the internship. Students must be successful on the comprehensive exam before being allowed to enroll in the internship (RECN 712). Students are responsible for meeting with their advisor before planning to take the comprehensive exams to ensure that all curriculum requirements have been met.

Course of Study

(Note: Credit Hours are given in parentheses)

First Semester

RECN 621	Disability and Rehabilitation Policy (3)
RECN 622	Theories and Counseling Techniques (3)
RECN 623	Cultural and Ethical Dimensions of Counseling (3)
RECN 642	Case Management of Severe Disabilities (3)

Total Credits: 12

Winter Semester

RECN 640	Assessment and Vocational Evaluation (3)
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Total Credits: 3

Second Semester

RECN 624	Psycho-Social Aspects of Disability (3)
RECN 641	Vocational Counseling & Job Placement* (3)
RECN 643	Research Methods (3)
RECN 720	Advanced Counseling Skills, Techniques & Practices (3)

Total Credits: 12

Summer Semester

RECN 701	Group and Family Counseling (3)
RECN 704	Program Evaluation and Organizational Development (3)

Total Credits: 6

Third Semester

RECN 625	Medical Aspects of Disabilities (3)
RECN 705	Counseling Practicum (3)
RECN 710	Master's Seminar* (3)

Total Credits: 9

Fourth Semester

RECN 712	Rehabilitation Counseling Internship*** (6)
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Total Credits: 6

Total credit hours : 48

* Indicates the course requiring 100- documented practical/clinical clock hours.

** Indicates the Internship, 600 clock hours.

RECN 621 through 625 or Advisor's consent are prerequisites to other courses. These courses must be completed prior to practical/clinical experiences.

Practical/Clinical Experience

The four didactic courses that require practical/clinical experiences are identified below. The Counseling Practicum is a 100 clock hour supervised clinical experience. Details of the requirements for the Internship are written in the syllabus for that course. All clinical experiences will be supervised by qualified professional personnel, approved and verified by faculty who have Certified Rehabilitation Counseling (CRC) expertise.

Requiring practical/clinical experience within the didactic courses encourages the students to get 15-20 clock hours of immediate practice and application of the theory and knowledge acquired in the lectures from four specific rehabilitation domains.

The four domains below each require 15 - 20 clock hours:

RECN 641	Vocational Counseling and Job Placement
RECN 640	Assessment and Vocational Evaluation
RECN 701	Group and Family Counseling
RECN 703	High Tech/Low Tech Rehabilitation Systems

The practical/clinical experience competencies for each of the courses are outlined below and are consistent with the Council on Rehabilitation Education (CORE) competencies. Students are expected to express and experience, in these four courses, knowledge consistent with the following competencies.

RECN 641 Vocational Counseling and Job Placement (3)

- Vocational counseling and consultation services
- Planning for vocational services
- Vocational implications of various disabilities
- Job placement strategies

- Client job-retention skill development
- Job modification and restructuring techniques
- Job and employer development
- Job follow-up and post-employment services
- Accommodation and rehabilitation engineering
- Supported employment services and strategies
- Services to employer organizations
- Worker's Compensation
- Worker's compensation laws and practices

RECN 640 Assessment and Vocational Evaluation (3)

- Vocational counseling and consultation services
- Assessment of physical-functional capacities of individuals
- Occupation and labor market information
- Theories of career development/work adjustment
- Computer application and technology
- Assessment and Evaluation
- Interpretation of assessment results
- Test and evaluation techniques for assessment

RECN 701 Group and Family Counseling (3)

- Individual and Group Counseling
- Individual counseling practices
- Individual counseling theories
- Behavior and personality theory
- Human growth and potential
- Family counseling theories
- Group counseling practices and interventions
- Group counseling theories
- Family, Gender, and Multicultural Issues
- Societal issues, trends, and developments
- Psycho-social and cultural impact on family
- Multicultural counseling issues
- Gender issues
- Family counseling practices

RECN 703 High Tech/Low Tech Rehabilitation Systems (3)

- Vocational counseling and consultation services
- Job modification and restructuring techniques
- Accommodation and rehabilitation engineering
- Computer application and technology
- Environmental and Attitudinal Barriers
- Environmental barriers for individuals with disabilities
- Americans with Disabilities Act
- Compliance guidelines
- Job accommodation resources

RECN 705 Counseling Practicum (2)

The Counseling Practicum is exclusively devoted to fulfilling the Council on Rehabilitation Education recommendation for practical experience. This is a 2 semester credit hour, 100 clock hour practical experience under the direct supervision of faculty who have fulfilled requirements to be Certified Rehabilitation Counselors (C.R.C). The practicum shall include on-campus and off campus audio and video taping of individual and group counseling experiences dealing with rehabilitation counseling concerns which will facilitate the further development of rehabilitation counseling skills. Course requirements, competencies, and the Code of Ethics will be made available in the syllabus for the course.

RECN 712 Rehabilitation Counseling Internship (600 CRC-supervised clock hours) (6)

A supervised Rehabilitation Counseling Internship enables the student's socialization into the field of rehabilitation counseling and the development of the appropriate professional skills, experiences and competencies as outlined by the Commission on Rehabilitation Education (CORE) and the Commission on Rehabilitation Counselor Certification (CRCC). The students will gain knowledge that will enhance their ability to help individuals with disabilities find and maintain adequate vocational and personal independence. The internship experience will take place under the supervision of a qualified rehabilitation, rehabilitation related or allied health

professional and involve direct experiences with persons with disabilities. Appropriate selected facilities involved in the rehabilitation of individuals who have a physical, mental, developmental, behavioral, or sensory disability will provide an opportunity for students to apply theories and skills. These facilities may include state departments of rehabilitation, centers for independent living, psychiatric hospitals or psychosocial programs, sheltered workshops, supported employment agencies, and institutions or organizations serving individuals with developmental disabilities, substance abusing persons, the industrially injured, agriculturally- or rural-related injuries, aged or adult/juvenile offenders. Students interested in higher education may opt to conduct their internship experience in the Services for Students with Disabilities program at an approved college or university.

RECN 720 Advanced Counseling Skills, Techniques, and Practices (3)

This course is designed to be an advanced course in counseling. The course will examine advanced concepts and practices in current counseling modalities. Students will have the opportunity to participate in guided counseling experiences designed to allow them to refine their counseling skills, knowledge and ability. The course will also provide students will exposure to advanced counseling technology and intervention strategies.

Didactic Course Descriptions

(Note: Credit hours are in parentheses)

RECN 621 Disability and Rehabilitation Policy (3)

The purpose of this course is to examine, describe and discuss public and private sector policy as it impacts individuals with disabilities (physical and/or mental impairments that effect one or more major life activity). The philosophy of the course and its approach toward policy is presented in the context of systems and a bio-psycho-social approach to human development with the goal of attaining maximum quality of life and community inclusion. Topics include terminology, history, philosophy and legal aspects of rehabilitation and independent living, the state-federal vocational rehabilitation program, benefit systems, workers compensation, employer-based disability management, independent living, disability legislation, and ethical issues.

RECN 622 Theories and Counseling Techniques (3)

This course is a survey and practice course in counseling and psychotherapy. The course covers the theoretical approaches and best practices of counseling with a focus on individuals with disabilities. The underlying assumptions of human nature and personality are covered in addition to the specific techniques associated with each. Students are encouraged to develop their own theory and practice of counseling centered around a thorough reflection on the individual's belief system, particular target populations they envision working, and individual traits, strengths, and weaknesses. Significant time is spent on experiential activities including dyads, triads, and role-playing. Ethical, legal, multicultural and research issues are also covered in depth.

RECN 623 Cultural and Ethical Dimensions of Counseling (3)

This course in rehabilitation counseling provides theoretical and practical (clinical) instruction in multicultural and ethical aspects of rehabilitation counseling. Topics include the historical perspectives of multiculturalism and cultural diversity in society, theories and models of identity development among diverse groups, supervisory issues, practical strategies and a review of current research. Ethical issues regarding counseling and direct rehabilitation service delivery are discussed from both a generic and multi-cultural perspective centered upon research-based concepts, specific skills and strategies. Direct role-playing and skill building exercises are employed along with case study methods and lectures. Students are encouraged to develop an awareness of different cultures, learned biases and how they may affect the counseling relationship. Other topics include independence versus interdependence, and specific strategies in rehabilitation counseling. The purpose of this course is to provide students with knowledge and skill that will maximize access and effectiveness in serving underrepresented and culturally diverse populations, and to develop effective outreach strategies.

RECN 624 Psycho-Social Aspects of Disabilities (3)

The course covers concepts, skills and knowledge of the social and psychological factors that either directly or indirectly effect the quality of life, adjustment and full societal participation of individuals with severe disabilities. Particular focus is placed on coping mechanisms, individual, familial, and cultural attitudes, and strategies that seek to facilitate human dignity, productivity and inclusion. The course will address human growth and potential, attitudinal barriers and vocational implications of disability. Physical disability, mental illness, congenital, developmental and emotional disabilities are addressed. The social and psychological factors that contribute to resiliency and minimize vulnerability are emphasized.

RECN 625 Medical Aspects of Disabilities (3)

This course involves an exploration of medical information and disabilities from a systems perspective. The course incorporates fundamental medical terminology, medical practitioners, and health care systems. The health care and related systems will be explored in view of their vocational implications, service provision, and resources for intervention, treatment, or therapy for individuals with disabilities. Case studies of systemically related disabilities and how they are managed through the medical model will be explored through the symptomatology, diagnosis, prognosis, and treatment phases of the disabilities. Consumer transition from the medical to the service model will be discussed. The psycho-social and cultural impact of disabilities important to the rehabilitation process will be infused in the curriculum.

RECN 641 Vocational Counseling and Job Placement (3)

Concepts, principles, and skills related to the employment of individuals with physical, mental and congenital or developmental disabilities will be explored. Current best practices are covered within the context of various models, public and private, that seek to maximize productivity and life-long career pursuits. Areas of emphasis include: the vocational counseling process, marketing approaches and networking strategies for working with employers, placement strategies, theories of vocational development and choice, labor market surveys and job analysis assessment of work readiness, job seeking and job retention skills, and major occupational classification systems. Knowledge of job modification and restructuring techniques and its importance to the employment of people with disabilities will be covered. Between 15-20 clock hours practica of in vivo supervised vocational counseling are required. Prerequisites: RECN 621; 622; 623; 624; 625

RECN 640 Assessment and Vocational Evaluation (3)

This course will provide the students with basic statistical concepts: a working knowledge of test selection, administration, interpretation of test results and communication of findings in a comprehensive evaluation report. A major emphasis will be on the application of the procedures and utilization of the tools of vocational evaluation including: interviews, work related behavioral observations, individual evaluation plans, vocational counseling, standardized tests, work samples, and situational assessment. Guest speakers and visitations to local evaluation centers may also be utilized to enhance student understanding of the

evaluation process. Between 15-20 clock hours practica of in vivo supervised assessment and vocational evaluation/counseling are required. Prerequisites: RECN 621, 622, 623, 624, 625

RECN 642 Case Management of Severe Disabilities (3)

This is a level survey and practice course covering case management concepts, systems, processes and competencies necessary for the effective delivery of services to individuals with disabilities and their families. The instructional approach seeks to concurrently provide didactic and experiential pedagogy. Various models of case management practice will be presented including the State/Federal system of vocational rehabilitation, workers' compensation systems, health care case management, employer-based disability management, and managed care models. An emphasis is placed on attaining knowledge of the range and level of community and professional resources, services and products that facilitate quality of life, independent living and work for individuals with disabilities in both urban and rural settings. The legal, ethical, cultural, social, and psychological aspects of case management are integrated into the course. The student will attain essential knowledge and skill in the cost-effective coordination of services, vendor selection criteria, negotiation/conflict resolution skills, documentation, and evaluation techniques in providing quality, professional services. Prerequisites: RECN 621, 622, 623, 624, 625

RECN 643 Research Methods (3)

This course examines research methods and statistical concepts as they apply to the rehabilitation professional. Students will learn about quantitative, qualitative, and single-subject research methods; basic statistical concepts; and the use of the statistical database SPSS. Students will develop critical thinking skills and learn to be good "consumers" of rehabilitation and popular research, as well as learn to collect, manage and analyze data.

RECN 701 Group and Family Counseling (3)

This course integrates family and group process theory, interventions and practices, and methods into an advanced applied course. The course addresses both clinical and organizational aspects of working with families, groups and organizations in the rehabilitation process. The student is challenged to develop an understanding of group processes that apply concepts, research and best practice models to a variety of settings, client profiles and organizational models. Social psychology, family systems theory, organizational and clinical models are covered in addition to experiential elements that build competencies that are effective in rehabilitation and healthcare settings. Between 15-20 clock hours practica of in vivo supervised group counseling are required.

RECN 702 Legal Aspects of Rehabilitation (1)

This course provides an overview of civil rights legislation specific to people with disabilities. The course methods will focus primarily on case studies exploring relevant legislation such as the Americans with Disability Act (ADA), tort and civil law, and their effect on the experience of individuals with disabilities. Students will learn processes and agencies for filing complaints and develop resources on the agencies specific to each element and Title of the ADA. The course will cover public policy, law, and practice, e.g., worker's compensation, and expert testimony. There will also be an emphasis on the organizational structure of private-for profit systems involved in rehabilitation. Additionally, legal issues germane to disability such as commitments, guardianships, and housing law will be discussed. Prerequisites: RECN 621, 622, 623, 624, 625

RECN 703 High Tech/Low Tech Rehabilitation Systems (3)

This course will provide an overview of high/low technology focused on adaptive and assistive rehabilitation technology, including aids for daily living. This technology will assist individuals with disabilities to achieve their maximum potential and provide training to students interested in gaining expertise in the use of technology while working with people with disabilities across the human lifespan. The student will become familiar with advanced computer technology such as Enabling Technologies (Braille/print systems), Dragon Dictate (speech input software), adaptive devices for computers, computer technology such as AlphaSmart, IntelliKeys, Delta Talker and a broad array of computer application technology available for working with individuals who are blind, deaf, or physically disabled. Other technology to be taught will include augmentative communication devices, voice output, e.g. outSPOKEN (enable individuals who are blind to access Macintosh). This course will have a practical application of knowledge and didactic preparation for understanding the value and use of advanced technology. Technology for working with people with learning disabilities and a broad range of developmental disabilities will be included. Between 15-20 clock hours practica of in vivo supervised rehabilitation technology are required. Prerequisite: RECN 621

RECN 704 Program Evaluation & Organizational Development (3)

This course addresses current best practices in program evaluation. Program evaluations are fundamental to good planning. In order to plan and implement effective, valid and accurate evaluations, an understanding of organizational behavior and developmental concepts are significant. The increasing emphasis upon outcomes and program efficacy, necessitates knowledge and skill in determining return on investment, organizational effectiveness, cost/benefit analysis, research and planning as well as determining whether the needs of a constituency are being met. This course will focus on organizational factors, and evaluation design and technique. Upon successful completion, the student will be able to design,

implement, and interpret the results of a basic evaluation strategy and possess a basic understanding of essential organizational behavior and planning processes. These skills are fundamental to effective and progressive organizational development and service to individuals with disabilities. Prerequisite: RECN 643

RECN 710 Master's Seminar (3)

The Master's Seminar will focus on the review of current literature, and will include reading and discussion of specific aspects of rehabilitation. Topics include, but are not limited, to: adaptive/assistive rehabilitation technology, Centers for Independent Living, Supportive Employment, Order of Selection, Ethical Issues, Americans with Disabilities Act, Disability Management, Job Development, Assessment, Cultural Diversity and current legislation on disability issues. The outcomes for this class are an increased interest and proficiency in rehabilitation research, oral and written presentation and publication.

Prerequisites: RECN 621, 622, 623, 624, 625, 641, 640, 642, 643, 701

The following three credit courses will be offered for students interested in pursuing the Maryland State License for Professional Counselors (LPC).

RECN 713 Introduction to Private Sector Rehabilitation

RECN 714 Marriage and Family Counseling

RECN 715 Psychiatric Rehabilitation: Practice, Assessment and Management

RECN 716 Alcohol and Drug Abuse in Counseling

RECN 713 Introduction to Private Sector Rehabilitation (3)

This course is designed to explore issues in rehabilitation pertinent to policy, practice, research and legal issues as addressed in the private sector. Topics include the insurance system, worker's compensation, social security testimony, personal injury liability, and expert testimony within these systems.

RECN 714 Marriage and Family Counseling (3)

This course is designed to be an introduction course to the topic of marriage and family counseling. The course will examine basic concepts of family counseling and special issues related to couples and families. The course will also examine the theoretical models and procedures appropriate to a variety of theories and specific settings.

RECN 715 Psychiatric Rehabilitation: Practice, Assessment and Management (3)

This course constitutes a basic orientation to the field of psychiatric rehabilitation. The course will include historical antecedents, philosophical and traditional connections with the field of rehabilitation counseling, assessment, planning and service delivery methods for those intending to work in rehabilitation focused programs serving persons with psychiatric disabilities. This course will also examine the incidence of etiology of significant dysfunctional behavior patterns in individuals.

RECN 716 Alcohol and Drug Abuse in Counseling (3)

This course is designed to provide an overview of alcohol and drug use, misuse and abuse. Course content includes: historical perspective of drug use/abuse; psychosocial aspects; pharmacology; prevention strategies; drug education; treatment and rehabilitation; examination of personal alcohol and drug use practices and philosophies; and current issues.

Admission Criteria

1. The application form and required attachments (see *Application Instructions* (Pg 19) in this Catalog), including the Graduate Record Examination (GRE) General Test or Miller Analogies Test (MAT) scores which may be submitted as optional support.
2. A Bachelor's Degree with a minimum 3.0 cumulative GPA on a 4-point scale is required for regular admission. Provisional admission will be considered for students with a GPA of 2.5 to 2.99 as long as all other requirements have been fulfilled.
3. A personal interview.
4. By accepting admission into the Master of Science in Rehabilitation Counseling program, the applicant agrees to:
 - a. complete pre-requisites in the time frame given;
 - b. maintain a 3.0 cumulative GPA over all coursework;
 - c. practice professional conduct in accordance with UMES policies, NRCA/ARCA Code of Ethics, and local and state laws.

Failure to maintain a 3.0 cumulative GPA will result in a probationary period or termination as determined by the Department of Rehabilitation Services Graduate Committee and Graduate School policy.

Denial of admission may be made for reasons, which will be outlined for potential future amelioration. Acceptance is based on the listed criteria above and the availability of limited space. These criteria are designed to establish high standards of service and instruction consistent with accreditation recommendations.

Prerequisite Undergraduate Coursework

1. An introductory course is needed in Human Services, such as the UMES course REHA 201 - Introduction to Rehabilitation, or Introduction to Psychology, Abnormal Psychology, Developmental Psychology, and/or Introduction to Sociology.
2. A basic statistics course is needed.
3. Comparable undergraduate courses will be reviewed for equivalencies.

Application Deadlines

Fall Semester – May 1

Spring Semester – November 1

Retention-Dismissal – Reinstatement/Readmission Policy

1. A cumulative GPA. of 3.0 each semester is required.
2. A maximum of two (2) grades of 'C' in a semester or session results in academic probation. Students have two consecutive semesters in which to raise their cumulative GPA to 3.0, or be subject to academic dismissal.

3. A grade of 'D' or 'F' is subject to academic probation and/or dismissal from the program. Readmission or reinstatement is provisional and contingent upon repeat of the class with grade of 'A' or 'B'.
4. A request to repeat a course because of a deficient grade earned is provisional and must be a written petition submitted to the Department Chair with the signature and recommendation of the Advisor.
5. Readmission or reinstatement is at the discretion of the Department of Rehabilitation Services Graduate Committee.
6. A successful completion of an internship is required.

Transfer and Waiver Courses

Students have up to a 6 credit hour limitation for transfer of equivalent courses, unless those courses were completed with a cumulative GPA of 3.0 in a comparable CORE accredited program. Evaluation and approval of graduate transfer courses will be up to the Department of Rehabilitation Graduate Committee.

Additionally, students completing the undergraduate program in the Rehabilitation Services with a cumulative GPA minimum of 3.0 can elect to request exemption from up to 6 credit hours of rehabilitation comparable core courses where they have earned a grade of 'A' in the undergraduate course. See Advisor for the courses where waiver(s) are allowable. The credit hour substitutions need to be program/career related and approved by the Academic Advisor.

For more information on this program, please contact:

Dr. Lakeisha Harris
Department of Rehabilitation Services
Hazel Hall
University of Maryland Eastern Shore
Princess Anne, MD 21853

Department of Physician Assistant

Degree Offered

Master of Medical Science (M.M.S.) Physician Assistant

M.M.S., Physician Assistant

Objective of the Program

The UMES Physician Assistant (PA) Program currently offers an undergraduate degree. In recognition of the changing needs in the community, the Master of Medical Science in Physician Assistant Studies Program will enhance the UMES mission by preparing Physician Assistants for the local, regional and national workforce requisites. It will:

1. Provide consistency and standardization of entry into the profession
2. Establish equity with other professions with similar health care responsibilities
3. Reflect the rigors of the pa curriculum
4. Engender a greater understanding of PA education by community members and policy makers.

Rationale for the Program

Educational Rationale

In support of the Maryland Higher Education Commission's 2000 Maryland State Plan for Postsecondary Education and its complement, *The USM 2010: In Responding to the Challenges that Lie Ahead – the 10 Year Plan*, UMES has committed itself to “equipping students with the skills, knowledge, and experience necessary for appropriate professional employment and professional development through strong academic programs whose strength is assured through regular review and accreditation where appropriate . . .”

UMES has a solid track record in delivering highly successful programs in Allied Health fields. For example, the Doctor of Physical Therapy (DPT) Program started as a Bachelor's Program, grew into a Master's Program, and because of industry trends, it evolved into the campuses first professional Doctoral level program.

The Master of Medical Science in Physician Assistant Studies (MMS) Program follows the precedence of the Physical Therapy Program by transitioning from the baccalaureate to the graduate level, which has become the industry standard for Physician Assistant education. It was approved in spring 2011 and will admit its first cohort in fall 2013.

Curricula for Physician Assistant (PA) programs have expanded in response to the increasing demands and expectations of graduate PAs in the workplace. PAs now assume roles in research, leadership and education. Clinical practice opportunities for PAs have expanded to medical and surgical specialties, as well as primary care, including key roles in the projected changes due to health care reform.

The ARC-PA has mandated that programs currently accredited at the undergraduate or certificate level must transition to offering a graduate degree by the year 2020. The membership organization of PAs (American Academic of Physician Assistants) and the organization for PA education (Physician Assistant Education Association) have endorsed the Master's Degree as the degree for entry into the PA profession.

Workforce Projections

The United States Bureau of Labor Statistics (BLS) has projected that the number of PA jobs will increase by 27% between 2006 and 2016, with an overall 10% growth in the number of PA jobs during that 10-year period. A recent posting in on CareerBuilder's website, stated that the PA profession ranked #12 among the top 25 jobs in female wages as compared to their male peers, based on analysis of BLS data.

The American Academy of Physician Assistants estimates the number of PAs working clinically as 75,000 nationally. The Maryland Academy of Physician Assistants estimates that 1,800 PAs work in Maryland; however, 90% of those PAs are located in the Baltimore/DC area and suburbs. Only 50 PAs work in the Delmarva Peninsula.

Maryland's health care system includes some of the nation's most prestigious institutions. However, according to the Maryland Department of Health and Mental Health Hygiene, Maryland residents have the 19th highest cancer rate in the US, and almost 60% of Maryland residents are overweight or obese. Black residents of Maryland are disproportionately affected by high blood pressure, diabetes, smoking and obesity, compared to white residents.

With implementation of health care reform, the importance of PAs in both primary care and specialties will continue to expand, and the ability of UMES to educate a diverse PA student population will help meet the health care needs of Maryland's citizens.

Educational Objectives

The educational objectives of this program are consistent with the suggested guidelines established by the accrediting body, the ARC-PA, and include a focus on the knowledge, skills, abilities, and values that students should acquire while pursuing a graduate degree in Physician Assistant. The specific goals for the Program, as listed below, are excerpted from a policy paper developed by the four stakeholder organizations in the PA profession American Academy of Physician Assistants (AAPA), Physician Assistant Education Association (PAEA), ARC-PA, and National Commission on Certification of Physician Assistants (NCCPA), which was adopted in May 2005. The paper is titled: *Competencies for the Physician Assistant Profession*. The Competencies serve as the foundation for the Program's curriculum and assessment of student and graduate outcomes.

1. Medical Knowledge

Medical knowledge includes an understanding of pathophysiology, patient presentation, differential diagnosis, patient management, surgical principles, health promotion and disease prevention. Physician Assistants must demonstrate core knowledge about established and evolving biomedical and clinical sciences and the application of this knowledge to patient care in their area of practice.

2. Interpersonal and Communication Skills

Interpersonal and communication skills encompass verbal, nonverbal and written exchange of information. Physician Assistants must demonstrate interpersonal and communication skills that result in effective information exchange with patients, patients' families, physicians, professional associates, and the health care system.

3. Patient Care

Patient care includes age-appropriate assessment, evaluation and management. Physician Assistants must demonstrate care that is effective, patient-centered, timely, efficient and equitable for the treatment of health problems and the promotion of wellness.

4. Professionalism

Professionalism is the expression of positive values and ideals as care is delivered. Foremost, it involves prioritizing the interests of those being served above one's own. Physician Assistants must know their professional and personal limitations. Professionalism also requires that PAs practice without impairment from substance abuse, cognitive deficiency or mental illness. Physician Assistants must demonstrate a high level of responsibility, ethical practice, sensitivity to a diverse patient population and adherence to legal and regulatory requirements.

5. Practice-based Learning and Improvement

Practice-based learning and improvement includes the processes through which clinicians engage in critical analysis of their own practice experience, medical literature and other information resources for the purpose of self-improvement. Physician Assistants must be able to assess, evaluate and improve their patient care practices.

General Requirements of the Degree

The Program's curriculum will consist of 27 months, divided into 15 months of didactic education, followed by 12 months of clinical rotations. The curriculum will provide the academic and theoretical foundation in the classroom and opportunities for application and synthesis in the clinical setting. Learning objectives and competencies will be specified in order to guide student learning in each course and rotation. Assessment of students' knowledge, skills and professionalism will be based on the objectives and competencies. Testing methods will be tailored to the appropriate learning domains with written/computer based tests, practical exams, faculty/preceptor evaluations, and observation of students' skills and behavior. Students will be expected to earn 80% or higher to pass.

The program's didactic content conforms to the ARC-PA Standards and includes the following areas:

1. Applied medical sciences: anatomy, physiology, pathophysiology, pharmacology and pharmacotherapeutics, and genetics.
2. Clinical medicine covering all body systems.
3. Interpersonal and communication skills.
4. Provision of clinical medical care across the life span to include patient evaluation, diagnosis, management, basic counseling, and patient education.
5. Technical skills and procedures based on current medical practice.
6. Social and behavioral sciences.
7. Searching, interpreting and utilizing the medical literature.
8. Health care delivery systems and concepts of public health.
9. Professional issues including medical ethics and PA practice.

Unlike any other Physician Assistant Program in the state of Maryland, UMES' PA Program will offer the benefit of a mentorship internship for all first-year students. Through the fall, spring, and summer sessions of the 15-month didactic year, each student will undertake a one-day-per-week mentorship in which he/she shadows a local internist/family practice physician or Physician Assistant and performs hands-on patient care work as assigned.

The unique mentorship program will allow students to:

1. Improve patient evaluation skills.
2. Practice effective communication skills in establishing a productive provider-patient relationship.

3. Establish a professional student-mentor relationship and provides the opportunity to interact with future colleagues.
4. Present selected cases to mentor for critique.
5. Develop an appreciation of the complexities of the medical profession.
6. Observe administrative activities and aspects of office practices.
7. Build confidence and become comfortable in a clinical setting.

The clinical year curriculum will include rotations under the supervision of physician and PA preceptors including:

1. Outpatient, emergency department, inpatient and operating room experience.
2. Medical care across the life span including:
 - a) Family medicine.
 - b) Internal medicine.
 - c) General surgery.
 - d) Pediatrics.
 - e) Women's health (prenatal care and gynecology).
 - f) Behavioral and mental health.

Clinical education sites will be located in Maryland and the surrounding region. This Program will help strengthen linkages with service providers for experiential clinical clerkships. Furthermore, the Program is committed to extending, forging and building collaborative ventures with surrounding health care entities.

Total Number of Credits and their Distribution

The curriculum comprises a total of 120 graduate credits over 28 months (four semesters and one winter session of didactic work and three semesters of clinical rotations).

Admissions Requirements

1. A Baccalaureate Degree from a regionally accredited US college or university prior to matriculation;
2. Meet the regular admission requirements of UMES graduate school;
3. Completion of the General Graduate Record Examination; Official scores must be received by the program to make an admission decision. GRE scores beyond 5 years old will not be accepted.
4. Have an undergraduate upper division grade point average of 3.5 on a four-point scale;
5. Applicants may not substitute other classes for any of the required medical core prerequisites.

All course work listed must be completed.

(Note: Credit Hours are given in parentheses)

CHEM 111	Principles of Chemistry I (3)
CHEM 113	Principles of Chemistry 1 Lab (1)
CHEM 112	Principles of Chemistry II (3)
CHEM 114	Principles of Chemistry II Lab (1)
CHEM 211	Fundamentals of Organic Chemistry I (3)
CHEM 213	Fundamentals of Organic Chemistry Lab (1)
CHEM 212	Fundamentals of Organic Chemistry II (3)
CHEM 213	Fundamentals of Organic Chemistry II Lab (1)

BIOL 111	Principles of Zoology I or BIOL 188A (3)
BIOL 113	Principles of Zoology I Lab or BIOL 188 (1)
BIOL 231	Anatomy & Physiology I (3)
BIOL 233	Anatomy & Physiology I Lab (1)
BIOL 232	Anatomy & Physiology II (3)
BIOL 234	Anatomy & Physiology II Lab (1)
BIOL 301	Microbiology (3)
BIOL 303	Microbiology Lab (1)
SOCI 101	Introduction to Sociology (3)
PSYC 200	Introduction to Psychology (3)
PHASS 201	Medical Terminology (1)
MATH 110	Trig & Analytical Geometry or higher (3)
MATH 210	Elementary Statistics (3)
BUED 212	Computer Concepts (3)
ENGL 101	Basic Composition 1 (3)
ENGL 102	Basic Composition II (and ENGL 002 – EPE) (3)
ENGL 203	Fund of Contemporary Speech (3)
ENGL 305/H	Technical Writing or ENGL 310W Adv Comp (3)
EXSC 111	Personalized Health and Wellness (3)
NUDT	Nutrition (3)

Completion of a minimum of 500 hours of clinical experience with direct patient contact. Hours must be completed by July 15 of the year of entry into the program.

Other Application Information

Due to the regulations of the PA program's clinical affiliates:

1. No history of drug abuse or conviction of a felony.
2. National Security and Criminal Background checks will be employed for each student.
3. No history of dismissal from another Physician Assistant school, medical, pharmacy, physical therapy, or nursing school for either academic or disciplinary reasons will be allowed.
4. All non US citizens and applicants whose first language is not English must complete the TOEFL examination, (Test Of English As A Foreign Language, www.toefl.org) , and submit their college transcripts to the World Education Services for translation, and complete all science medical core (biology and chemistry), prerequisites courses in the United States. No exceptions will be made.
5. All applicants must apply through Central Application Service for Physician Assistants (CASPA) (www.caspaonline.org).

All applicants meeting the minimum requirements and those determined to be the most qualified candidates will be granted an on-site interview at UMES, using criteria developed by the MMS Program's Admissions Committee. Criteria used by the interviewers in their evaluations will include academic performance, GRE scores, extracurricular activities, work experience, amount and quality of healthcare experiences, interest in serving in medically

underserved areas, applicant's concept of the role of the Physician Assistant, emotional and intellectual maturity, ability to communicate verbally, specific motivation toward pursuit of a health career, humanistic qualities, and evidence of strong study skills.

Process and Methods Used in Assuring Graduates Achieve Program Outcomes

The processes used to assure that graduates achieve the program outcomes will be:

1. Formative and summative assessment of students' knowledge, clinical skills and professionalism through a variety of assessment measures delivered on a regular basis during each didactic course and clinical rotation.
2. Summative evaluation before graduation consisting of capstone project, comprehensive written assessment of knowledge base, review of professional behavior evaluations and practical testing of clinical skills and professionalism with standardized patients.
3. Monitoring of curricular content and student performance with reference to program goals and expected competencies.
4. National standardized knowledge exam delivered at mid-point and before graduation to benchmark student performance with national norms and prepare students for national board examination.

Courses

PHAS 607A Regional Anatomy 5 (3-4)

Comprehensive survey course on regional anatomy taught over two semesters focused on the structure and function of the human body with emphasis on the HEENT, cardiovascular, pulmonary, gastrointestinal, genitourinary systems, gynecological, neurological, and musculoskeletal systems. This course is designed to provide the student with an in-depth examination of the anatomical structure and function of the human body through cadaver dissection and lecture. This course will be enhanced with Blackboard, Tegrity, Echo 360 and Class Capture software.

PHAS 607B Regional Anatomy 1 (1-1)

This continuation anatomy course focuses on the structure and function of the human body with emphasis on the musculoskeletal system, including the upper and lower limbs and back. This course is designed to provide the student with an in-depth examination of the anatomical structure and function of the human body through cadaver dissection and lecture. This course will be enhanced with Blackboard and Echo 360, Class Capture software.

PHAS 608 Clinical Medicine I 4 (4-0)

Comprehensive survey course that studies prioritized medical topics within organ systems. The systems covered are otolaryngologic, ophthalmologic, cardiovascular and respiratory systems. Prerequisites: admittance to the Physician Assistant program.

PHAS 609 Clinical Medicine II 4 (4-0)

A comprehensive survey course that studies prioritized medical topics within organ systems. The systems covered are the gastrointestinal, hepatobiliary, genitourinary, endocrine, hematological systems and oncology. Prerequisites: admittance to the Physician Assistant program and PHAS 608.

PHAS 610 Clinical Medicine III 3 (3-0)

Comprehensive survey course that studies prioritized medical topics within organ systems. The topics covered are the immunologic, musculoskeletal and neurologic systems and geriatrics. Prerequisites: admittance to the Physician Assistant program and PHAS 609.

PHAS 612 Obstetrics/Gynecology 3 (3-0)

Prioritized instruction in normal function and selected medical conditions in women's health including pregnancy, childbirth, neoplasm and endocrine changes. Prerequisites: admittance to the Physician Assistant program.

PHAS 614 Pediatrics 3 (3-0)

A survey course of growth, development and diseases from birth to adolescence. It prepares students for the primary care clinical setting. Prerequisites: admittance to the Physician Assistant program.

PHAS 616 Surgery 2 (2-0)

Survey course that focuses on pre-, peri- and postoperative care and medical considerations of the surgical patient and prepares the student for the clinical setting. Prerequisites: admittance to the Physician Assistant program.

PHAS 618 Emergency Medicine 2 (2-0)

Survey course that familiarizes the student with common emergency medicine problems and injuries utilizing a priority system. Prerequisites: Admittance to the Physician Assistant Program.

PHAS 620 Infectious Diseases 3 (3-0)

A comprehensive survey course on the diagnosis and treatment of infectious diseases seen in primary care medicine and organized by organ system. Prerequisites: admittance to Physician Assistant program.

PHAS 624 Issues in Practice 2 (2-0)

Topics concerning physician assistant professional practice. Prerequisites: Admission to the Physician Assistant Program.

PHAS 625 Clinical Pharmacology I 3 (3-0)

Survey clinical course that emphasizes principles of pharmacology, pharmacokinetics and pharmacotherapy as they relate to drugs in the treatment of common primary care conditions. Prerequisites: admittance to Physician Assistant program.

PHAS 626 Clinical Pharmacology II 3 (3-0)

This clinical survey course continues instruction in pharmacology of select drugs, prescription essentials general pharmacology resources for the primary care practitioner. Prerequisites: admittance to Physician Assistant program, PHAS 625.

PHAS 630 Clinical Procedures I 3 (0-6)

Integrated didactic and laboratory course which develops medical procedural diagnostic and therapeutic skills. This prepares the student for the clinical setting. Prerequisite: admission to the Physician Assistant program.

PHAS 631 Clinical Procedures II 3 (0-11)

A two module course consisting of Advanced Cardiac Life Support and Pediatric Advanced Life Support.. Prerequisite: Admission to the Physician Assistant Program.

PHAS 633 Scientific Basis of Medicine I 3 (3-0)

An in depth review of the normal and abnormal physiologic processes associated with diseases of the cardiac and pulmonary organ systems. Prerequisites: Admission to the Physician Assistant Program.

PHAS 634 Scientific Basis of Medicine II 2 (2-0)

An in-depth review of the normal and abnormal physiologic processes associated with diseases of the renal, neurological, and endocrine system. Prerequisites: Admission to the Physician Assistant Program.

PHAS 635 Scientific Basis of Medicine III 2 (2-0)

An in depth review of the normal and abnormal physiologic processes associated with diseases of the gastrointestinal system, immune system, heritable conditions, and spontaneous genetic abnormalities. Prerequisites: Admission to the Physician Assistant Program.

PHAS 640 Clinical Problem Solving I 3 (0-11)

Onsite interactive group problem solving sessions and offsite patient/student/preceptor clinical interactions. Both modes develop clinical diagnostic reasoning by focusing on a hypothetic-deductive approach. Prerequisites: admission to the Physician Assistant program; successful completion of the didactic portion of the curriculum.

PHAS 641 Clinical Problem Solving II 3 (0-11)

Onsite interactive problem solving sessions and offsite patient/student/preceptor clinical interactions. Both modes develop clinical diagnostic reasoning by focusing on a hypothetic-deductive approach. Prerequisites: admission to the Physician Assistant program; successful completion of PHAS 640.

PHAS 642 Clinical Problem Solving III 3 (0-11)

Onsite interactive problem solving sessions and offsite patient/student/preceptor clinical interactions. Both modes develop clinical diagnostic reasoning by focusing on a hypothetic-deductive approach. Prerequisites: admission to the Physician Assistant program; successful completion of PHAS 641.

PHAS 645 Interpreting Research & Literature A-D (1-0)

Students will develop the ability to critically analyze current and past medical research and publications, and apply those concepts to the practice of Evidence-Based Medicine through a series of sequentially designed courses. Emphasize problem formulation, hypothesis testing, argumentation from data, and completion of the Master's project at the end of the professional training is expected "Capstone Project". The student's Advisor will supervise all research undertaken. Prerequisites: Admission into the Physician Assistant Program.

PHAS 650 Diagnostic Tests I 2 (1-2)

An introduction to the indications for and interpretation of the chest radiograph and electrocardiogram. Prerequisites: Admission into the Physician Assistant Program.

PHAS 651 Diagnostic Tests II 2 (2-0)

Indications for and interpretation of laboratory, pulmonary function, and neurophysiologic testing. Prerequisites: PHAS 650.

PHAS 652 Diagnostic Tests III 2 (1-2)

Indications for and interpretation of imaging of the central nervous system, vascular system, abdomen and extremities. Principles of nuclear medicine, magnetic resonance, and computed tomography. Prerequisites: PHAS 651.

PHAS 660 History and Physical Examination I 3 (2-2)

Integrated didactic/laboratory course. This course teaches assessment via the medical history with focus on interviewing skill and technique. It prepares students for the clinical setting. Prerequisites: admission to the Physician Assistant program.

PHAS 661 History and Physical Examination II 3 (2-2)

Integrated didactic/laboratory series that teaches patient assessment through the complete medical history and physical examination. It prepares students for the clinical setting. Prerequisites: admission to the Physician Assistant program; successful completion of PHAS 660.

PHAS 662 History and Physical Examination III 4 (2-4)

Integrated didactic/laboratory series that teaches patient assessment through the complete medical history and physical examination. It prepares students for the clinical setting. Prerequisites: admission to the Physician Assistant program; successful completion of PHAS 661.

PHAS 671 Preventive Medicine & Epidemiology 3 (3-0)

This course introduces the principles of preventive medicine and methods for their incorporation into primary care on an individual, family and community basis. Prerequisites: Admission to the Physician Assistant program.

PHAS 672 Applied Health Care Ethics & Law for Physician Assistants 3 (3-0)

This course enables the student to examine the principles of medical ethics, develop an organized process to resolve clinical dilemmas, and to explore future professional roles. Prerequisites: admission to the Physician Assistant program.

PHAS 673 Psychiatry 3 (3-0)

The course includes the identification and management of psychiatric disorders, with an emphasis on the pharmacological management of mood disorders. Prerequisites: admission to the Physician Assistant program.

PHAS 690 Clinical Education I 9 (0-40)

This course consists of a full-time clinical internship. Prerequisites: admission to the Physician Assistant program; successful completion of didactic course work for Physician Assistant program.

PHAS 691 Clinical Education II 9 (0-40)

This course consists of a full-time clinical internship. Prerequisites: admission to the Physician Assistant program; PHAS 690.

PHAS 692 Clinical Education III 9 (0-40)

This course consists of a full-time clinical internship. Prerequisites: admission to the Physician Assistant program; PHAS 691.

PHAS 697 Special Topics for Physician Assistants 4 (Spec)

This course consists of presentation and examination of special topics in medicine, health, and biosciences. It will also include clinical education medicine sub-specialty elective internships. Prerequisites: Entry into the Physician Assistant Program

For more information on this program, please contact:

Mrs. Darlene Jackson-Bowen, Chair
Physician Assistant Department
410-651-7584/8932
University of Maryland Eastern Shore
Princess Anne, MD 21853

Department of Physical Therapy

Degree Offered

Doctor of Physical Therapy (D.P.T.)

D.P.T, Physical Therapy

Objective of the Program

The Doctor of Physical Therapy (DPT) degree program constitutes the initial professional preparation for students desiring to become physical therapists. Graduates of the program will be prepared to carry out the expanding responsibilities as autonomous health care providers practicing prevention, examination, and intervention in acute care and rehabilitation settings, and in educational and research environments. The DPT Program will also prepare students to contribute to the field of physical therapy through research and other scholarly activities in addition to the utilization of these activities.

Accreditation

The DPT Program is designed to meet the Standards of Practice of the American Physical Therapy Association and the Accreditation Standards set forth by the Commission on Accreditation in Physical Therapy Education.

The DPT Program has been granted accreditation status by the Commission on Accreditation in Physical Therapy Education.

Admissions Policy

The Physical Therapy Admissions Committee selects students for admission. Applicants must meet the following criteria to gain admission to the DPT Program:

1. A Bachelor's degree from US institutions of higher education accredited by a regional accrediting association or the degree equivalent in another country is required.
2. All applicants must successfully complete the following prerequisite courses with a grade of "C" or higher. (*Note: Credit Hours are given in parentheses*)
 - Zoology with Lab OR Biology with Lab (4)
 - Human Anatomy and Physiology with Lab (or its equivalent) (8)
 - Mathematics (Trigonometry or higher) (3-4)
 - Physics with Lab (8)
 - Psychology (General, Abnormal or Child) (3)
 - Sociology (3)
 - Chemistry with Lab (8)
 - Histology with Lab OR Cell Biology with Lab or Microbiology with Lab (4)
 - (Other upper level Science Courses may be considered) and, Statistics (3)
3. A cumulative 3.0 GPA over all course work earned and a 3.0 average in the science and math courses earned that are a prerequisite to the program (including any courses taken during the spring and the summer preceding the fall admission).
4. Demonstration of knowledge concerning the physical therapy profession by submitting:
 - a. an essay detailing the reasons the applicant desires to become a physical therapist.

- b. Documentation of first-hand observation and/or work experience related to the practice of physical therapy. This experience must be substantiated in writing by a registered/licensed physical therapist.
5. Submission of three (3) letters of recommendation addressing both the applicant's moral character and potential as a physical therapist.
6. A personal interview with at least one member of the Physical Therapy Admissions Committee may be required.
7. Prerequisite science courses completed 10 years prior to the date of admission will not be accepted.

Due to certain factors (i.e., number of available clinical sites), the number of qualified students who can be accepted into the DPT Program is limited. The Department of Physical Therapy Admissions Committee will consider such criteria as cumulative GPA, mathematics and science GPA, prior experience and personal interview scores in making its decision for admissions.

Acceptance Policy

Upon acceptance to the DPT Program, the student will be notified of acceptance and given two weeks to return the acceptance letter. A non-refundable acceptance fee of \$300.00 must accompany the acceptance letter. On admission, this acceptance fee will be credited toward tuition.

Application Deadline

Applicants who plan to complete the Bachelor of Science Degree and all prerequisites for the DPT Program before the end of August in any year may apply to the program beginning September 1 of the year prior.

1. Early admission decisions will be made on applications received September 1 to December 1. Once the complete application is received by the Department, the student will receive notification within one month.
2. Normal admission decisions will be made on applications received by February 1 of the following year.
3. If space is available, applications received after these dates may be considered for admission.

General Program Completion Requirements

The program requires completion of didactic course work, clinical internships, independent study, and a research project as partial fulfillment for the Doctorate degree. Core didactic courses include foundational sciences, clinical medicine, physical therapy procedures, and patient management.

The Clinical Education component provides students with the opportunity to apply their didactic knowledge and skills to clinical situations. Through clinical education experiences, students develop problem-solving and clinical decision-making skills. Select clinical affiliations provide students with clinical experience in specialty areas of physical therapy practice.

The independent study/electives component allows students to pursue advanced study in

areas of individual interest under the guidance of the physical therapy faculty. Each student is required to complete six credits in independent study/electives which are approved by the student's Academic Advisor.

The Research/Critical Inquiry component consists of one didactic course in research methods and the completion of an extensive independent research project under the direction of a research Advisor. The research project incorporates all phases of the scientific inquiry process from the formulation of research questions or hypotheses and literature review through data collection and analysis of the results. The student must select a research Advisor by the end of the first year of enrollment in the program. Final project requirements include a written document and an oral presentation. Students are encouraged to publish and/or present their research to professional organizations such as the American Physical Therapy Association and the American College of Sports Medicine.

Each student is initially assigned an Academic Advisor who is responsible for advising the student on all aspects of the student's progress throughout the program. All students must maintain a cumulative 3.0 GPA. The program is full-time continuous enrollment.

Retention in Program

1. Didactic Program Phase

i. The grading scale for the Physical Therapy Department is as follows:

- A - 90-100%
- B - 80-89%
- C - 75-79%
- D - 65-74%
- F - 0-64%

Students must have a 75% average in the didactic and the laboratory components of courses for successful completion.

- ii.* A final grade of 'D' in any course (lecture and/or lab) during the DPT Program will result in the student being placed on academic probation.
- iii.* Students attaining probationary status twice during the DPT Program are subject to automatic academic dismissal from the program.
- iv.* A final grade of 'D' in any two courses during the DPT Program (lecture and/or lab) results in an automatic academic dismissal from the program.
- v.* A final grade of 'F' in any course (lecture and/or lab) results in automatic academic dismissal from the program.
- vi.* A student who receives a final grade of 'D' in a course (lecture and/or lab) will be referred to the faculty who will make recommendations to the Department Chairman as to how this grade may be removed and the time limit for removal. Failure to remove the grade in a specified time limit may result in dismissal from the program.
- vii.* Students engaging in any unethical practices as outlined by the policies of the University of Maryland Eastern Shore, Code of Conduct of the American Physical Therapy Association, and State or Federal laws may be dismissed from the program.

viii. Students must maintain a cumulative GPA of “B” or better over all graduate courses taken and must satisfy all departmental and UMES Graduate School requirements. A graduate student has two semesters in which to bring the cumulative GPA back to a 3.0 (“B”) if it falls below that level (NOTE: for the Physical Therapy program, the Year I Summer is an academic semester). The admission of all students is continued at the discretion of the faculty, the Department and the Dean of Graduate Studies. (See Section on *Termination of Admission* in this Catalog).

ix. All courses must be completed in sequence.

x. Students are expected to be able to meet the essential technical standards of performance required by the Department of Physical Therapy.

2. Clinical Practicum and Affiliation Phase

i. Clinical Affiliation assignments are dependent upon faculty recommendation, Department Chair approval, and availability of clinical sites.

ii. No student may enter the final 16 weeks of full-time clinical affiliations during the 3rd year of the program with a final grade of ‘D’ or Incomplete in any course or a cumulative GPA below 3.0. Admission to the final 16 weeks of fulltime clinical affiliation is by approval of the Physical Therapy faculty.

iii. Each clinical affiliation or practicum must be passed. A student receiving a failing grade during a clinical affiliation or practicum is automatically dismissed from the DPT Program.

iv. Students not completing a clinical affiliation or practicum for personal reasons may be required to repeat an affiliation or practicum of the same length or make-up the time lost at the same affiliation or practicum.

v. A student may only repeat or makeup a clinical affiliation or practicum upon approval of the faculty of the Department of Physical Therapy.

vi. Students are expected to be able to meet the essential technical standards of performance required by the Department of Physical Therapy.

3. Readmission

i. Students who have been dismissed for academic reasons and students who have had to withdraw for personal reasons may seek readmission by submitting a letter of request to the department.

ii. The request for readmission will be reviewed by the Department of Physical Therapy faculty. A student may be readmitted only once to the program.

Reapplication to the Program

An applicant who has been unsuccessful in obtaining admission into the program may reactivate his/her file by written request to the department by February 1.

Entry-Level Doctorate in Physical Therapy Course Sequence*

(Note: Credit Hours are given in parentheses)

Year 1

Fall

PHYT 601	Advanced Human Anatomy Lecture (4)
PHYT 607	Advanced Human Anatomy Lab (2)
PHYT 605	Life Span Development and Embryology (3)
PHYT 670	Introduction to Health Care Systems and Patient Care (2)
PHYT 600	Advanced Human Physiology (3)
<i>Total: 14 Credits</i>	

Winter

NO CLASSES

Spring

PHYT 602	Neuroscience (4)
PHYT 603	Exercise Physiology (3)
PHYT 604	Analysis of Human Movement (4)
PHYT 612	Clinical Medicine I- Pathophysiology (3)
PHYT 681	Research Methods I (3)
<i>Total: 17 Credits</i>	

Summer

PHYT 622	Tests and Measures (3)
PHYT 614	Clinical Medicine II–Neuropathology (2)
PHYT 671	Interpersonal Communication and Psychosocial Aspects of Disability (3)
PHYT 620	Introduction to Clinical Examination, Evaluation, and Differential Diagnosis (1)
PHYT 621	Physical Therapy in the Acute Care Setting (3)
PHYT 651	Clinical Practicum I – Acute Care Focus (1)
PHYT 789	Research Project (1)
<i>Total: 14 Credits</i>	

Year 2

Fall

PHYT 615	Clinical Medicine III – Orthopaedics (3)
PHYT 623	PT Procedures I – Physical Agents (2)
PHYT 627	PT Procedures II – Soft Tissue Techniques (2)
PHYT 630	PT Procedures III Musculoskeletal (3)
PHYT 624	Therapeutic Exercise I-Basic & Essentials (3)
PHYT 616	The Integumentary System and Wound Management (2)
PHYT 789	Research Project (1)
PHYT 652	Clinical Practicum II (1)
PHYT 658	Clinical Judgment & Integration Seminar (1)
<i>Total: 18 Credits</i>	

Winter

PHYT 660 Clinical Affiliation I** (6 weeks) (3)

Total: 3 Credits

Spring

PHYT 631 Prosthetics and Orthotics (2)

PHYT 626 PT Procedures IV –Electrophysiology (3)

PHYT 625 Therapeutic Exercise II (2)

PHYT 672 Patient and Community Health Education and Promotion (2)

PHYT 632 Therapeutic Exercise III-Exercise Testing and Prescription for Special Populations (2)

PHYT 675 Physical Therapy Administration (3)

PHYT 789 Research Project (1)

PHYT 653 Clinical Practicum III (1)

PHYT 658 Clinical Judgment & Integration Seminar (1)

Total: 17 Credits

Summer

PHYT 606 Pharmacology, Laboratory Values, & Medical Imaging For the Physical Therapist (2)

PHYT 789 Research Project (1)

Total: 3 Credits

Year 3

Fall

PHYT 642 Patient Management-Neuromuscular I (2)

PHYT 637 Patient Management- Pulmonary (2)

PHYT 634 Patient Management-Musculoskeletal I (2)

PHYT 640 Patient Management-Pediatrics I (2)

PHYT 789 Research Project (1)

PHYT 661 Clinical Affiliation II** (8 weeks) (4)

PHYT 659 Advanced Clinical Judgment and Integration Seminar (1)

Total: 14 Credits

Winter

PHYT 643 Patient Management- Neuromuscular II (1)

PHYT 635 Patient Management- Musculoskeletal II (1)

PHYT 641 Patient Management- Pediatrics II (1)

Total: 3 Credits

Spring

PHYT 633 Patient Management-Cardiac (2)

PHYT 645 Patient Management Selected Topics II (2)

PHYT 644 Patient Management – Neuromuscular III (3)

PHYT 636 Patient Management– Musculoskeletal-III (3)

PHYT 659 Advanced Clinical Judgment & Integration (1)

PHYT 674 Professional Development and Practice Issues In P.T. (1)
PHYT 789 Research Project (1)
Total: 13 Credits

Summer

PHYT662 Clinical Affiliation III** (8 weeks) (4)
PHYT663 Clinical Affiliation IV** (8 weeks) (4)

Total: 8 Credits

TOTAL CREDITS: 130

* *Course numbers and sequence subject to change. Student must complete 6 credits of PHYT649 Independent Study or electives during the three years of the program prior to the third summer.*

** *Upon approval of the Department of Physical Therapy Faculty.*

Course Descriptions

(Note: Credit Hours are given in parentheses)

PHYT 600 Advanced Human Physiology (3)

This course focuses on the major physiological systems of the human body. Topics in this course will cover function of the cardiovascular, respiratory, musculoskeletal, renal, gastrointestinal, genitourinary, neurological, lymphatic, endocrine, and immune systems at the cellular, organ and systemic levels.

PHYT 601 Advanced Human Anatomy (4)

This course focuses on the structure and function of the human body with emphasis on the neuromusculoskeletal, cardiovascular, pulmonary, gastrointestinal, and genitourinary systems. Clinical correlations to the anatomical structures will be presented.

PHYT 602 Neuroscience (4)

This course explores the structure and function of the central, peripheral and autonomic nervous systems on an anatomical, physiological and neurological basis. Three lecture hours and three laboratory hours per week.

PHYT 603 Exercise Physiology (3)

This course provides an overview of exercise physiology theory and principles and an examination of the physiological responses to both acute and chronic physical activity. The role of exercise physiology in the treatment and rehabilitation of various populations is highlighted.

PHYT 604 Analysis of Human Movement (4)

This course analyzes normal and abnormal motor function based upon principles of biomechanics, and musculoskeletal anatomy. The student will be able to perform movement analyses of functional activities with regards to kinematics and kinetics. The student's anatomical knowledge will be reinforced and palpation skills will be taught through hands-on laboratory experiences.

PHYT 605 Life Span Development and Embryology (3)

This course emphasizes a holistic study of normal human growth and development from conception to maturity including embryological development of the major body systems. Emphasis will be placed on the components of sensory and motor development and the development of mature motor patterns. Study will include the four aspects of human behavior and development including biophysical, cognitive, affective, and social. Students will also examine physiological and psychosocial issues involved in the normal aging process.

PHYT 606 Pharmacology, Laboratory Values & Medical Imaging for the Physical Therapist (2)

The first part of this course provides an overview of the basic components of pharmacology with emphasis on pharmacokinetics and pharmacodynamics. A review of common disease states encountered in clinical practice and their pharmacological interventions will be presented. Emphasis will be placed on exploring the relationship between pharmacology and physical therapy practice. Students will be engaged in clinical reasoning and application of pharmacological concepts. The second part of this course will introduce the student to critical laboratory tests and the interpretation of laboratory values. Basic hematology will be reviewed focusing on normal and pathological blood levels. Emphasis will be placed on the interpretation of laboratory data and its impact on safe and effective patient care. The third part of this course covers the principles, procedures and interpretation of diagnostic imaging techniques. Emphasis is on plain film radiography, myelograms, CT scans, magnetic resonance imaging and nuclear medicine. Emphasis will be placed on exploring the relationship between medical imaging and physical therapy practice.

PHYT 607 Advanced Human Anatomy-Lab (2)

The course focuses on the structure and function of the human body with emphasis on the neuromusculoskeletal, cardiovascular, pulmonary, gastrointestinal, and genitourinary systems. The students' understanding of the human body in three dimensions will be facilitated through cadaver dissection.

PHYT 612 Clinical Medicine I Pathophysiology (3)

This course provides an introduction to general pathology and the physiological and anatomical changes accompanying disease, injury or abnormal development. Pathophysiology of the following systems are covered: cardiovascular, respiratory, musculoskeletal, renal, gastrointestinal, genitourinary, lymphatic, endocrine, and immune systems. Current concepts and trends in diagnosis and medical management will be presented throughout the course. Mechanisms of disease processes will be examined.

PHYT 614 Clinical Medicine II Neuropathology (2)

This course will emphasize pathology of the nervous system (CNS, PNS, and ANS) and the physiological and anatomical changes accompanying disease, injury, and abnormal development. Current concepts and trends in differential diagnosis, medical management, and healthcare interventions are covered.

PHYT 615 Clinical Medicine III Orthopedics (3)

In this course, emphasis is placed on the pathology of the musculoskeletal system, and the physiological and anatomic changes accompanying disease, injury, and/or abnormal development along with current concepts and trends in differential diagnosis and medical and surgical management and rehabilitation.

PHYT 616 The Integumentary System & Wound Management (2)

This course will include an overview of the structure and function of the integumentary system, common dermatologic conditions, and the physiology of the normal wound healing process. The etiology and pathophysiology of various types of chronic wounds will be presented including pressure ulcers, arterial and venous insufficiency ulcers, neuropathic ulcers, and burns. The examination, evaluation, and intervention for each type of pathologic condition will be discussed. Students will engage in problem-solving activities through a variety of case study applications.

PHYT 620 Introduction to Clinical Examination, Evaluation and Differential Diagnosis (1)

This course will consist of the principles of the patient management model including examination, evaluation, diagnosis, and prognosis. Emphasis will be placed on the process of obtaining a history, performing a systems review, and selecting and administering tests and measures to gather data. The principles of differential diagnosis will be introduced with an emphasis on distinguishing between neuromusculoskeletal and systemic conditions. The course will also cover differential diagnosis of upper and lower extremity conditions of musculoskeletal and non-musculoskeletal origin with the use of an upper and lower quarter scanning exams.

PHYT 621 Physical Therapy in the Acute Care Setting (3)

Students will be introduced to basic physical therapy examination, evaluation and intervention skills to ensure safe patient interactions including gross assessment skills, patient communication, safe and effective patient positioning and movement, monitoring of vital signs, use of assistive ambulatory devices, universal precautions and sterile procedures. An emphasis is placed on psychomotor performance of examination and intervention skills and will also include safe procedures in transfers, gait training, positioning, and basic patient handling skills. Equipment and procedures utilized in the acute care setting will be introduced including IVs, cardiac monitoring devices, catheters, and respiratory support apparatus.

PHYT 622 Tests and Measures (3)

This course presents examination/evaluation skills pertinent to physical therapy including, postural assessment, goniometry, specific and group manual muscle testing, isokinetic testing, sensation testing, limb length and girth measurements, and reflex testing. Students will apply techniques to specific patient case situations.

PHYT 623 PT Procedures I – Physical Agents (2)

The course addresses: 1) the physical principles and physiological effects of physical agents/modalities; 2) the ethical use and application of physical agents in the management of pain, soft tissue trauma, and edema; 3) the role of physical agents/modalities in prevention of secondary complications and their adjunct use to therapeutic exercise and movement therapy; 4) the relationship of physical agents/modalities, temperature regulation and vascular supply, indications and contraindications; and 5) modification in the application of physical agents/modalities in unique patient populations.

PHYT 624 Therapeutic Exercise I –Basics and Essentials (3)

This course serves as an introduction to the modality of therapeutic exercise. It includes principles of aerobic conditioning and the use of various types of resistance, range of motion, postural, and breathing exercises along with their therapeutic application to specific regions of the body. Emphasis will be centered on providing a foundation of knowledge and skills that can be used to manage a large number of patient problems seen in clinical practice. Students will be able to design safe and effective therapeutic exercise programs for a variety of patient diagnoses.

PHYT 625 Therapeutic Exercise II (2)

This course is a continuation of Therapeutic Exercise I and includes advanced therapeutic techniques for special patient populations in rehabilitation. Special topics techniques such as bariatric rehabilitation, pre-prosthetic training, post-surgical protocols, oncology rehabilitation, and selected topics in neurologic physical therapy will be covered. Therapeutic exercise interventions will also target comprehensive management of the medically complex patient, including lab value and comorbidity analysis. Exercise will be approached from an evidence-based perspective, with appropriate attention to those contributions from the basic and clinical sciences. Students will gain exposure to more advanced rehabilitation equipment management such as complex seating systems, NeuroCom training, and treadmill unweighting. In addition, web-based activities will give students the opportunity to discuss patient case studies and to analyze current evidence for specific interventions. Problem-based activities in both the laboratory and clinical setting will focus on stimulating effective clinical decision-making.

PHYT 626 PT Procedures IV – Electrophysiology (3)

Analysis of the physical and physiological principles underlying the application of therapeutic electricity in patient/client management is provided. Basic principles underlying electro diagnostic procedures are covered.

PHYT 627 PT Procedures II – Soft Tissue Techniques (2)

This course encompasses practical and theoretical aspects of soft tissue techniques used in the physical therapy management of musculoskeletal impairments. Emphasis is placed on examination skills, specific tissue examination, and intervention techniques. The potential influence of soft tissue on movement and pain in mechanical and neurological impairments is discussed.

PHYT 630 PT Procedures III Musculoskeletal (3)

This course will consist of the principles of upper and lower extremity examination including the special testing of the upper and lower extremity joints and assessment of accessory motion. The principles of joint mobilization as a therapeutic intervention will be included with a discussion of the history, various philosophies, grading systems, and techniques. Joint mobilization techniques specific to the upper and lower extremities will be emphasized.

PHYT 631 Prosthetics and Orthotics (2)

This course focuses on patient management for individuals requiring the use of prostheses and orthoses. Emphasis is placed on the skills of examination of limb impairments and evaluation of the factors that influence the normalization of function. Students will develop plans and intervention strategies to maximize the health care of individuals with various amputations and limb impairments. In addition, students will learn to proficiently measure appropriate changes in function and communicate the findings to the prosthetist/orthotist and other members of the health care team.

PHYT 632 Therapeutic Exercise III -Exercise Testing and Prescription for Special Populations (2)

This course basic exercise testing procedures and precautions, as well as exercise prescription for selected patient populations. An emphasis is placed on monitoring patients for normal and abnormal responses to activity, and specific indications and contraindications to exercise. Populations to be addressed will include individuals with arthritis, diabetes, cancer, AIDS, and cardiovascular and pulmonary conditions, among others.

PHYT 633 Patient Management –Cardiac (2)

Emphasis during lecture and laboratory experiences will be placed on cardiovascular structure, physiology, function, and the response to acute and chronic exercise. Interventions such as medications, surgical procedures, and exercise will be highlighted, along with the nature of cardiovascular pathology, cardiovascular rehabilitation, prevention strategies, and the role of the physical therapist.

PHYT 634 Patient Management –Musculoskeletal I (2)

The course is the first part in a series of physical therapy management and treatment interventions for the musculoskeletal system. Patient examination, differential considerations, treatment interventions, and re-assessment procedures will be emphasized throughout the course. Musculoskeletal dysfunctions, with and without surgical intervention, of the extremities and evidenced based treatment strategies will be integrated into clinically relevant scenarios. Anatomy, biomechanics, and special tests will be reviewed and applied via classroom education and advanced dissections.

PHYT 635 Patient Management – Musculoskeletal II (1)

This course is the second part in the series of physical therapy management and treatment interventions for the musculoskeletal system. Patient examination, differential considerations, treatment interventions, and re-assessment procedures will be emphasized throughout the course. Musculoskeletal dysfunctions, with and without surgical intervention, of the extremities and evidenced based treatment strategies will be integrated into clinically relevant scenarios. Anatomy, biomechanics, and special tests will be reviewed and applied via classroom education and advanced dissections.

PHYT 636 Patient Management –Musculoskeletal III (3)

This course is the third part in the series of physical therapy management and treatment interventions for the musculoskeletal system. Patient examination, differential considerations, treatment interventions, and re-assessment procedures will be emphasized throughout the course. Musculoskeletal dysfunctions of the spine, pelvis and TMJ will be emphasized. Evidenced based treatment strategies, with consideration of surgical procedures, will be integrated into clinically relevant scenarios. Anatomy, biomechanics, and special tests will be reviewed and applied via classroom education and advanced dissections.

PHYT 637 Patient Management –Pulmonary (2)

Emphasis during lecture and laboratory experiences will be placed on recognition of pulmonary structure, physiology, function, and pathological conditions. The role of physical therapy in the integration of various examination, evaluation and intervention procedures in order to provide acute care, rehabilitation, and prevention programs are also highlighted.

PHYT 640 Patient Management –Pediatrics I (2)

This course will cover examination, evaluation, and intervention procedures for common pediatric conditions including primary and secondary neurological, musculoskeletal, developmental, neuromuscular and cardiopulmonary disorders. Influences of psychosocial, cultural, and environmental factors will be addressed for children with disabilities and their families/caregivers. Students will be introduced to current principles and legal issues in the provision of pediatric services in community-based and educational programs including family-centered care, practice models, and the Individuals with Disabilities Education Act (IDEA).

PHYT 641 Patient Management –Pediatrics II (1)

This course will focus on screening, examination, and evaluation and planning methods used for pediatric patients. A variety of standardized developmental assessment instruments will be examined. Students will learn to select, apply, and analyze developmentally appropriate procedures for pediatric screening, examination, and evaluation. Students will gain experience in the formulation of appropriate plans of care including Individualized Family Service Plans (IFSPs) and Individualized Education Plans (IEPs)

PHYT 642 Patient Management –Neuromuscular I (2)

This course is the first part in the sequence of management and treatment of the neurologically impaired adult. The course explores the theoretical basis of traditional and current approaches for the management of persons with CNS, PNS, ANS and congenital disorders of traumatic and/or vascular etiology. The primary concerns are: (a) brief review of traditional methods, their historical perspectives, strengths and weaknesses; (b) in-depth analysis of Brunnstrom's method of evaluation and treatment of patients post-CVA and post selected vascular disorders of cortical etiology, strengths and weaknesses; (c) introduction to theories of motor control, motor learning and skill acquisition and their potential application in skill learning and rehabilitation; (d) current issues in "functional" interventions, strategies and outcome expectations.

PHYT 643 Patient Management –Neuromuscular II (1)

The course is the second in a sequence of courses that explore the theoretical basis of traditional and current approaches of managing persons with CNS, PNS, ANS disorders of progressive and non-progressive, acquired and/or congenital etiologies. The course focuses on the examination, evaluation, diagnosis, prognosis, and intervention of the adult with impaired motor function and sensory integrity. This course will cover the management of patients with traumatic brain injury (TBI) in the acute and chronic phases of rehabilitation. The role of the physical therapist as a direct caregiver and team member will be discussed.

PHYT 644 Patient Management –Neuromuscular III (3)

This course is the third in a sequence of courses, which explore the theoretical basis of traditional and current approaches of managing persons with CNS, PNS, ANS disorders of progressive and non-progressive, acquired and/or congenital etiologies (e.g., Parkinson's Disease). The skills of examination, evaluation, program planning, and intervention for the patient with neurological impairments will be emphasized. Attention will also be directed to the environment into which the patient is being discharged, re-evaluation of status, health care regulation changes and their implication of care for patients with dysfunctions of the neurological system.

PHYT 645 Patient Management –Selected Topics (2)

This course will present examination and intervention skills for management of patients with unique problems such as the rheumatoid diseases, HIV-AIDS, arterial insufficiency, and vestibular dysfunction. This course will also present issues pertinent to the health, function, and physical therapy management of the geriatric client. Normal and abnormal changes in cognition and mobility will be addressed, along with the implications of psychosocial, legal, ethical, and nutritional concerns. Course material will include examination, data collection, and intervention activities geared towards optimizing functional outcomes with geriatric clients. Students will have the opportunity to perform community balance screening activities.

PHYT 649 Independent Study (1-3)

The independent study offers a means for students to pursue academic interests beyond the scope of course work in the program under the direction of a faculty advisor. The content and methods of study for this course will vary and are arranged by the student and Advisor. Areas of study may include cardiopulmonary, orthopedics, neurology, pediatrics, women's health, or other fields of study. Repeatable Credit. Each student is required to complete six credits of Independent Study or Electives. In lieu of Independent Study, the student may take electives offered by a graduate school of the University System of Maryland as approved by the faculty advisor.

PHYT 651 Clinical Practicum I –Acute Care Focus (1)

Students are involved in a practical part-time clinical experience in the application of physical therapy procedures while under direct supervision of a clinic instructor. Emphasis is on the management of patients in the hospital setting. The student will directly apply the knowledge and skills obtained in PHYT 621: Physical Therapy in the Acute Care Setting.

PHYT 652 Clinical Practicum I (1)

Students are involved in a practical part-time clinical experience in the application of physical therapy procedures while under direct supervision of a clinic instructor. Students rotate through a variety of clinical settings.

PHYT 653 Clinical Practicum III (1)

Students are involved in a practical part-time clinical experience in the application of physical therapy procedures while under direct supervision of a clinic instructor. Students rotate through a variety of clinical settings.

PHYT 658 Clinical Judgment &Integration Seminar (1)

This course combines instruction in clinical problem solving through problem synthesis, critical thinking, clinical reasoning, and decision-making. Case studies presented by faculty and students are used to facilitate the development of reasoning and decision-making skills that are applicable to current health care issues as well as to clinical practice. Students integrate didactic knowledge with clinical applications through the presentation and discussion of actual patient case studies. Repeatable credit.

PHYT 659 Advanced Clinical Judgment & Integration Seminar (1)

This course will focus on advanced clinical problem solving and analysis with an emphasis on the application of differential diagnostic skills. Students will develop skills in critical analysis of complex medical conditions and in formulating appropriate plans for intervention. The course is designed to enhance students' critical thinking abilities that are particularly pertinent to the autonomous practitioner who practices in states with direct access to physical therapy services. Repeatable credit.

PHYT 660 Clinical Affiliation I (3)

This clinical session will consist of six weeks of full-time clinical experience. Students will incorporate examination, evaluative and therapeutic procedures presented in the classroom and laboratory in direct patient care under the supervision of clinical instructor. 40 clinical hours per week/6 weeks.

PHYT 661 Clinical Affiliation II (4)

This clinical session will consist of eight weeks of full-time clinical experience. Students will incorporate examination, evaluative and therapeutic procedures presented in the classroom and laboratory in direct patient care under the supervision of a clinical instructor. 40 hours per week/8 weeks.

PHYT 662 Clinical Affiliation III (4)

This clinical session will consist of 8 weeks of full-time clinical experience in preparation for competency as an entry-level practitioner. Students will incorporate examination, evaluative and therapeutic procedures presented in the classroom and laboratory in direct patient care under the supervision of a clinical instructor. 40 hours per week/8 weeks.

PHYT 663 Clinical Affiliation IV (4)

This clinical session will consist of 8 weeks of full-time clinical experience in preparation for competency as an entry-level practitioner. Students will incorporate examination, evaluative and therapeutic procedures presented in the classroom and laboratory in direct patient care under the supervision of a clinical instructor. 40 hours per week/8 weeks.

PHYT 670 Introduction to Health Care Systems and Patient Care (2)

Students are introduced to the role and function of the physical therapist in contemporary health care with an awareness of ethical principles, historical foundations of the profession, current health care issues, and health care economics. The patient management model in physical therapy will also be introduced, including patient examination, evaluation, diagnosis, prognosis, intervention and outcomes. The course will emphasize the team approach to health care in both urban and rural areas and will present strategies to promote cultural competency within the health care system.

PHYT 671 Interpersonal Communication and Psychosocial Aspects of Disability (3)

This course focuses on the psychological, social, and cultural contexts of patient care emphasizing those variables identified as important for managing clients with disabilities. Emphasis will be placed on both verbal and non-verbal communication skills. Students develop initial skills in patient interviewing and in establishing a therapeutic therapist-patient relationship. Psychosocial characteristics of various patient populations are discussed. Emphasis is placed on how personal adjustment to disability influences the rehabilitation process. Students explore the various factors affecting the patient, the family, and the patient therapist relationship in situations of chronic illness, disability, and loss.

PHYT 672 Patient & Community Health Education & Promotion (2)

This course will explore the basic principles and theories of health care delivery and epidemiology in community based settings. The impact of demographic, cultural, economic and other factors that may affect delivery of health care will also be discussed. The course is designed to promote wellness and prevention through the development of patient and community education programs. Health belief models and adult learning theories and principles will be incorporated in the development and implementation of health education programs for individual patients and local community groups.

PHYT 674 Professional Development & Practice Issues in PT (1)

An introduction to job searching skills including resume writing and interviewing skills, preparing for the National Physical Therapy Examination and state licensure procedures are the focus of this course. The course will also include discussion of current and relevant issues facing the physical therapy profession.

PHYT 675 Physical Therapy Administration (3)

This course addresses the principles of organization, management, and reimbursement in health care settings. Legal and ethical issues will be discussed including those pertaining to health care personnel administration.

PHYT 681 Research Methods I (3)

This course is designed to be a comprehensive review of basic experimental and non-experimental methods for research using the scientific method. Inductive and deductive approaches will be discussed with emphases on causal ordering, theoretical framework development, hypothesis testing and critical analysis of current literature.

PHYT 789 Research Project (1)

This course emphasizes problem formulation suitable for the completion of a Doctoral project. Data collection, hypotheses testing, argumentation from data, and completion of the Doctoral project by the end of the professional training is expected. All research undertaken is supervised by the student's research Advisor. Repeatable credit.

For more information on the program, please contact:

Graduate Program Coordinator
Department of Physical Therapy
Hazel Hall
University of Maryland Eastern Shore
Princess Anne, MD 21853
Email: rblakely@umes.edu

School of Pharmacy

Degree Offered

Doctor of Pharmacy (Pharm.D.)

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Pharm.D., Doctor of Pharmacy

Objective of the Program

The School of Pharmacy is a partner in the community of healthcare educators and practitioners who are patient advocates, dedicated to the delivery of superior care and enhancement of the quality of life for all citizens through the development of highly trained, culturally-competent, articulate, and caring pharmacists. The program offers small class sizes and seeks to provide students with a strong foundation in the pharmaceutical, social/administrative, and clinical sciences. The UMES program is unique in that it encompasses a year round curriculum, allowing students to complete their Doctor of Pharmacy (Pharm.D.) degree in three years. The program also emphasizes the provision of high quality patient-centered care and medication therapy management, the development of skills for lifelong learning, and opportunities for multi-cultural development. The faculty, through its teaching, mentoring, and scholarship, will work to maximize student potential and to contribute to the advancement of the profession by preparing potential leaders and innovators in pharmacy practice and research.

Accreditation

The Doctor of Pharmacy program of the University of Maryland Eastern Shore, School of Pharmacy was awarded candidate accreditation status during the June 20-24, 2011 meeting of the ACPE Board of Directors, based upon an on-site evaluation conducted April 5-7, 2011, and discussion with University and School officials. The Doctor of Pharmacy program is not subject to the regulations of the UMES Graduate School.

For more information on the ACPE accreditation process, consult the Office of the Dean at 410-651-8327 or the Accreditation Council for Pharmacy Education 20 North Clark Street, Suite 2500, Chicago, IL 60602-5109. Phone: 312/644-3575; Fax: 312/664-4652; website www.acpe-accredit.org.

Admissions Requirements

Physical Examination and Immunization Requirements

Each student admitted to the Doctor of Pharmacy program is required to have a physical examination at his/her own expense. The results of the physical examination must be signed by a licensed physician and placed on file in the Charles R. Drew Student Health Center, no later than 30 days prior to matriculation. Please print and complete the UMES SOP Health and Immunization History Form by visiting this website: www.umes.edu/WorkArea/linkit.aspx?LinkIdentifier=id&ItemID=30064.

UMES SOP Health and Immunization History Forms

The following immunizations are required for Doctor of Pharmacy students:

- a. Tetanus (within last 10 years)
- b. Hepatitis B Series
- c. Varicella (chickenpox) [if no history of having the disease]

- d. MMR (Measles, Mumps and Rubella) 2 doses
- e. PPD (Tuberculosis skin test) within the previous 6 months
- f. Meningitis Vaccine or waiver (on campus student)

Health Insurance Requirement

All students admitted to the program are required to have health insurance. The University will provide limited health insurance to students. Please visit the Charles Drew Student Health Center website for information regarding the health insurance provided and fees.

www.umes.edu/studenthealth/Default.aspx?id=2222

Criminal Background Check Requirement

All students are required to have a criminal background check (CBC) report on file in the School of Pharmacy Office of Student Affairs and Office of Experiential Education. The criminal background check is performed by Certified Background, Inc, at the expense of the student.

Please note the following:

1. The Criminal Background Check is MANDATORY.
2. Information from the CBC must be on file with the Offices of Student Affairs and Experiential Education, in the School of Pharmacy before the student secures a seat in the class.
3. Additional background checks may be required of external institutional partnerships prior to participation in experiential activities. Financial and other responsibilities for these CBCs are the sole responsibility of the student.
4. Information on obtaining the initial CBC is mailed to each student who has accepted an offer of admission with the School of Pharmacy for the incoming class.

The Pharmacy College Admission Test

The Pharmacy College Admission Test (PCAT) may be taken at any time, but no later than January of the year the student is seeking admission. Please contact the Psychological Corporation at 1-800-622-3231 or visit their website www.pcatweb.info for a PCAT application and additional PCAT information.

TOEFL Requirement

For ALL students born outside the United States, the Test Of English As A Foreign Language (TOEFL) is required. Please refer to the following website – www.ets.org/toefl/ – for information on the TOEFL and test dates. The test needs to be completed no later than the application deadline (February 1).

Grade Point Average

The minimum GPA for admission is 2.5. This GPA is calculated based on the pre-requisite coursework requirements listed below.

Course Requirements (Pre-requisites)

(Note: Credit Hours are given in parentheses)

Pre-pharmacy requirements may be taken at the University of Maryland Eastern Shore or any accredited institution in the United States. AP, CLEP and International Baccalaureate Credits may be transferrable for non-science pre-requisite coursework. The requisite course work necessary to qualify a prospective student for admission consideration is as follows:

General Chemistry (with lab, for science majors) 2 semesters (8)

Organic Chemistry (with lab, for science majors) 2 semesters (8)

General Biology (with lab, for science majors) 1 semester (4)

Anatomy and Physiology (with lab) 2 semesters (8)

Microbiology (with lab) 1 semester (4)

Physics+ 1 semester (4)

Calculus 1 semester (3-4)

Statistics 1 semester (3)

Public Speaking/Interpersonal Communications 1 semester(3)

English Composition and Literature 2 semesters (6)

Economics 1 semester (3)

Humanities/Social Sciences* (12)

Total Minimum Credits (Semester Credit Hours): 66-67 credits

+ With lab; May be Algebra or Calculus-based.

* Recommended Sociology, Psychology, Arts, Music, History

Please note: An Introductory Biochemistry Course is strongly encouraged.

Curriculum and Course Descriptions

The three years of the program are designated SP-1 (first year), SP-2 (second year) and SP-3 (third year.) The SP-1, SP-2 and SP-3, will be divided into two terms, a fall term and a spring term. These terms are longer than a regular semester to allow for completion of the required credit hours. There are two major components of the program: the didactic and the experiential components.

Didactic Component

The didactic component consists primarily of classroom and laboratory experiences in the first two professional years (SP-1 and SP-2 years). The didactic content is delivered as a modular system in which students concentrate on one content area at a time. Each content area is allotted the appropriate amount of time to adequately cover the topic. The didactic portion of the SP-1 year is composed of 16 sequential modules plus four term-long courses (Pharmacy Calculations, Concepts in Diversity and Communication for the Pharmacist, Direct Patient Care in Pharmacy Practice, and Public Health for Pharmacists). The didactic material in the SP-1 year is predominantly composed of integrated basic science modules, with clinical correlates, and administrative science modules. The didactic portion of the SP-2 year consists of 15 sequential modules, four term-long courses (Top 200 Drugs and Integration of Pharmacy Practice I & II and Scientific Writing). The curricular content in the SP-2 year focuses on integrated clinical science modules with basic science correlates, and additional administrative science topics.

Experiential Component

The experiential component begins in the SP-1 year, is distributed throughout the program, and culminates in the Advanced Pharmacy Practice Experiences (APPEs) in the SP-3 year. An eight-hour Introductory Pharmacy Practice Experience (IPPE) occurs every two weeks throughout the SP-1 and SP-2 year. An IPPE seminar will accompany these practice experiences. Two concentrated IPPEs will occur in January and/or the summer between the SP-1 and SP-2 year. The APPEs will start in the summer of the SP-2 year and continue throughout the SP-3 year. The Professional Seminar course is a capstone course that will allow students to pull together elements of their entire educational experience. This course will include student presentations, case studies, and a board review.

First Professional Year (Sp-1 Year) Didactic Curriculum

(Note: Credit Hours are given in parentheses)

PHAR 501 Basics of Drug Information and Introduction to Pharmacy Profession (1.5)

This course provides an introduction to drug information skills and basic concepts in informatics. An overview of the historical development of the pharmacy profession in terms of its role in the United States Health Care Delivery System will also be discussed.

PHAR 510 Fundamentals of Drug Action and Metabolism (4.5)

A study of the composition and structure of proteins, classification of enzymes and coenzymes, enzyme kinetics and regulations, drug biotransformation, drug receptor properties, structural features of drugs, functional group properties and receptor interactions, fundamentals of pattern recognition that relate chemical structure to pharmacological action, drug dose response curves, membrane structure and transport, and mechanisms of signal transduction.

PHAR 511 Genetic Controls of Cell Function, Cell Reproduction and Protein Synthesis (2.5)

A study of the basic concepts of mammalian biochemistry including the biosynthesis of proteins, nucleic acid structure and function in gene expression at the cellular level in both normal and disease states. Additionally, there is an overview of nucleotide metabolism, an introduction to pharmacogenomics and an introduction to the pharmacology of antineoplastic agents.

PHAR 512 Metabolism of Carbohydrates, Lipids, and Amino Acids (4)

A study of the basic concepts and principles of mammalian biochemistry including the digestion, absorption, biosynthesis and metabolism of carbohydrates, lipids and amino acids at the cellular level in both the normal and disease states. The principles of energy transformations are also studied.

PHAR 513 Hematology and Immunology (4)

A study of basic hematology and immunology and the fundamental principles related to clinical immunology.

PHAR 514 Biostatistics and Clinical Trial Design (1.5)

Basic biostatistical concepts are studied and applied to the evaluation of pharmacy drug literature and clinical trial design.

PHAR 520 Principles of Neurobiology and Neuropharmacology (1)

This module reviews principles of neurobiology, and introduces basic concepts of pharmacology as applied to the autonomic and somatic nervous systems.

PHAR 521 Cardiovascular and Renal Systems; Pharmacology and Medicinal Chemistry (2)

This module introduces basic concepts of pharmacology and medicinal chemistry particularly as applied to the cardiovascular and renal systems. In this module, a study of the basic principles of drug action is presented for specific drug classes including: the chemical properties, mechanisms of drug action, routes of administration, clinical uses, disposition, contraindications, adverse reactions, clinically significant drug interactions, and drug disease interaction.

PHAR 522 Gastrointestinal and Genitourinary: Pharmacology and Medicinal Chemistry (1)

This module introduces basic concepts of pharmacology and medicinal chemistry particularly as applied to gastrointestinal and genitourinary systems. In this module, a study of the basic principles of drug action is presented for specific drug classes including: the chemical properties, mechanisms of drug action, routes of administration, clinical uses, disposition, contraindications, adverse reactions, clinically significant drug interactions, and drug disease interaction.

PHAR 523 Endocrine System: Pharmacology and Medicinal Chemistry (1.5)

This module introduces basic concepts of pharmacology and medicinal chemistry as applied to the endocrine system. In this module, a study of the basic principles of drug action is presented for each specific drug class including: the chemical properties, mechanisms of drug action, routes of administration, clinical uses, disposition, contraindications, adverse reactions, clinically significant drug interactions, and drug disease interaction.

PHAR 524 Toxicology (1)

This module provides a study of the basic principles of toxicology along with an introduction to clinical toxicology.

PHAR 525 Neuropharmacology and Medicinal Chemistry (3.5)

This module continues a review of neurobiology and extends basic concepts of pharmacology and medicinal chemistry as applied to the autonomic and somatic nervous systems, and the central nervous system. In this module, a study of the basic principles of drug action is presented for specific drug classes including: the chemical properties, mechanisms of drug action, routes of administration, clinical uses, disposition, contraindications, adverse reactions, clinically significant drug interactions, and drug disease interaction.

PHAR 530 Pharmaceuticals and Biopharmaceutics (3)

A study of the application of physical and chemical principles to the development, preparation, and stabilization of pharmaceutical dosage forms. Also included is a study of biological and physicochemical factors that influence the availability of a drug from a dosage form and the subsequent disposition and response of the drug in the body.

PHAR 531 Pharmacokinetics (3.5)

The application of the concepts of biopharmaceutics and pharmacokinetics to the processes of absorption, distribution, metabolism and excretion of drugs are discussed with the purpose of assessing drug dosage forms/regimens and improving the therapeutic management of patients. Additionally, the relationship between physiology, pharmacokinetics, pharmacodynamics and disease state is presented to help explain clinical variability to drug response.

PHAR 540 Pharmacy Administration I – Health Care Delivery (2)

This course provides a study of the evolution and organization of the US health care system, the role of pharmacy in the US health care system, influence of stakeholders, and the laws that have shaped contemporary pharmacy practice. Basic concepts of pharmacovigilance, informatics, and pharmacoeconomics will be discussed.

PHAR 541 Pharmacy Law (1.5)

A study of the basic provisions of State and Federal pharmacy laws and regulations pertaining to pharmacy practice, licensure, controlled substances, poison, legal liabilities, laws and regulations of other health care providers, and pharmacy case law.

PHAR 542 Concepts in Diversity and Communication for the Pharmacist (3)

This longitudinal course (held throughout the 1st term of the SP-1 year) emphasizes the vital role of communication in contemporary pharmacy practice. Students are evaluated in both oral and written formats. Course content includes: an overview of diversity and differences important for the pharmacist to understand; study of professional interpersonal communication, verbal and nonverbal communication strategies, effective interviewing techniques, and patient counseling.

PHAR 543 Public Health for Pharmacists (2)

This course (held throughout the 2nd term of the SP-1 year) will prepare students to identify public health issues and to identify populations at risk for a variety of diseases. Principles of epidemiology as a diagnostic discipline of population health will be explored. In addition, this course will enable the student to critically evaluate current trends in the care of patient populations. Issues relating to disaster planning and emergency preparedness will be discussed. Focus will be placed on the role of the pharmacist in the public health policy.

PHAR 544 Direct Patient Care in Pharmacy Practice (3)

This longitudinal course (held throughout the 2nd term of the SP-1 year) is designed to develop life-long essential skills students will utilize in patient-centered care. It will cover topics such as self-care & OTC products consultation, complementary and alternative medicine consultation, point of care devices, immunizations certification and smoking cessation education.

PHAR 550 Pharmaceutical Calculations (2)

This course (held throughout the 1st term of the SP-1 year) covers all aspects of pharmaceutical calculations including: fundamentals of measurement and calculation, measurement systems, dosage and concentration units, isotonic solutions, electrolyte solutions, and calculations related to compounding.

Second Professional Year (Sp-2 Year) Didactic Curriculum

(Note: Credit Hours are given in parentheses)

PHAR 610 Pharmacotherapy and Medication Management: Principles of Pharmacotherapy (2)

This course provides an introduction to the concepts involved in ensuring the safe, appropriate, and economical use of drugs in patient care. Students will develop a basic foundation in medication therapy management through an overview of the general principles of case-based problem-solving and a systematic approach to rational drug selection.

PHAR 611 *Pharmacotherapy & Medication Management: Fluids, Electrolytes & Nephrology(2)*

An integrated study of anatomy, pathophysiology, physical and laboratory assessment, pharmacology, therapeutics, clinical pharmacokinetics, patient care, alternative/complementary therapies, pharmacoeconomic issues, medication use in special populations, and review of pertinent drug literature as they relate to fluid and electrolyte homeostasis, and the renal system.

PHAR 612 *Pharmacotherapy and Medication Management: Cardiology (5.5)*

An integrated study of anatomy, pathophysiology, physical assessment, pharmacology, therapeutics, clinical pharmacokinetics, patient care, alternative/complementary therapies, pharmacoeconomic issues, medication use in special populations, and review of pertinent drug literature as they relate to the cardiovascular system.

PHAR 613 *Pharmacotherapy & Medication Management: Immunology & Rheumatology (3)*

An integrated study of anatomy, pathophysiology, physical assessment, pharmacology, therapeutics, clinical pharmacokinetics, patient care, alternative/complementary therapies, pharmacoeconomic issues, medication use in special populations, and review of pertinent drug literature as they relate to the immune and musculoskeletal systems.

PHAR 614 *Pharmacotherapy & Medication Management: Pulmonology & Ophthalmology (2)*

An integrated study of anatomy, pathophysiology, physical assessment, pharmacology, therapeutics, clinical pharmacokinetics, patient care, alternative/complementary therapies, pharmacoeconomic issues, medication use in special populations, and review of pertinent drug literature as they relate to major the respiratory system and the eyes.

PHAR 615 *Pharmacotherapy and Medication Management: Gastroenterology (3)*

An integrated study of anatomy, pathophysiology, physical assessment, pharmacology, therapeutics, clinical pharmacokinetics, patient care, alternative/complementary therapies, pharmacoeconomic issues, medication use in special populations, and review of pertinent drug literature as they relate to the digestive system and nutrition therapy. In addition, optimal nutrition for healthy adults and children will be reviewed.

PHAR 616 *Pharmacotherapy and Medication Management: Infectious Disease I (3)*

Review of medical microbiology and the basic principles of antibiotic action including, for each specific antibiotic class, the mechanism of action, routes of administration, disposition, contraindications, adverse reactions, and clinically relevant drug interactions. Principles of antimicrobial regimen selection, susceptibility testing and trends in resistance will be discussed. Also included is an integrated study of anatomy, pathophysiology, physical assessment, pharmacology, therapeutics, clinical pharmacokinetics, patient care, alternative/complementary therapies, pharmacoeconomic issues, medication use in special populations, and review of pertinent drug literature as they relate to major bacterial infectious diseases.

PHAR 617 *Pharmacotherapy and Medication Management: Infectious Disease II (3)*

A continuation of PHAR 616, this module will include an integrated study of anatomy, pathophysiology, physical assessment, pharmacology, therapeutics, clinical pharmacokinetics, patient care, alternative/complementary therapies, pharmacoeconomic issues, medication use in special populations, and review of pertinent drug literature as they relate to additional bacterial infections, as well as viral, mycobacterial, and fungal infectious diseases.

PHAR 618 Pharmacotherapy and Medication Management: Psychiatry (2.5)

An integrated study of anatomy, pathophysiology, physical assessment, pharmacology, therapeutics, clinical pharmacokinetics, patient care, alternative/complementary therapies, pharmacoeconomic issues, medication use in special populations, and review of pertinent drug literature as they relate to mental status.

PHAR 619 Pharmacotherapy and Medication Management: Neurology (3)

An integrated study of anatomy, pathophysiology, physical assessment, pharmacology, therapeutics, clinical alternative/complementary therapies, pharmacoeconomic issues, medication use in special populations, and review of pertinent drug literature as they relate to the nervous system.

PHAR 620 Pharmacotherapy and Medication Management: Hematology/Oncology (3)

This module explains the pharmacological principles of chemotherapeutic agents. Also included is an integrated study of anatomy, pathophysiology, physical assessment, pharmacology, therapeutics, clinical pharmacokinetics, patient care, alternative/complementary therapies, pharmacoeconomic issues, medication use in special populations, and review of pertinent drug literature as they relate to the hematological system and neoplasms. A focus on pain management will be included.

PHAR 622 Pharmacotherapy and Medication Management: Endocrinology and Urology (3)

An integrated study of anatomy, pathophysiology, physical assessment, pharmacology, therapeutics, clinical pharmacokinetics, patient care, alternative/complementary therapies, pharmacoeconomic issues, medication use in special populations, and review of pertinent drug literature as they relate to endocrine, reproductive and urinary systems.

PHAR 624 Integration of Pharmacy Practice I (2.5)

Part one of a two part series. This longitudinal module is designed to integrate the material from the various Pharmacotherapy and Medication Management modules and prepare the students for management of patient care in a clinical setting prior to the Advanced Pharmacy Practice Experiences (APPE). A study of the practical applications of pharmacy practice is presented with an emphasis on the use of patient charts, assessments, diagnostics, assessment of pharmacotherapy and patient education. Additional emphasis is placed on literature evaluation and the practice of evidence-based medicine.

PHAR 625 Integration of Pharmacy Practice II (2.5)

Part two of a two part series. This longitudinal module is a continuation of PHAR 625 and is designed to integrate the material from the various Pharmacotherapy and Medication Management modules and prepare the students for management of patient care in a clinical setting prior to the Advanced Pharmacy Practice Experiences (APPE). A study of the practical applications of pharmacy practice is presented with an emphasis on the use of patient charts, assessments, diagnostics, assessment of pharmacotherapy and patient education. Additional emphasis is placed on literature evaluation and the practice of evidence-based medicine.

PHAR 630 Sterile Products (1.5)

This course introduces concepts and properties of sterile products including application of aseptic techniques and laminar flow theory in the preparation of sterile products such as total parenteral nutrition and chemotherapy preparations. Emphasis will be placed on parenteral calculations, sterile dosage forms and quality assurance programs.

PHAR 640 Pharmacy Administration II- Management (3)

This module examines the economic, social, and political forces affecting the delivery of health care services. In addition, the effect of these forces on pharmacy practice and the impact of pharmacy on the health care system are explored. Also included are concepts related to purchasing and operating a pharmacy practice and people management skills.

PHAR 641 Practice of Drug Information and Literature Evaluation (2)

This module provides a study of the practice of drug information, drug literature evaluation, literature searching techniques, and principles of evidence-based medicine.

PHAR 650 TOP 200 Drugs (1)

This longitudinal course (held throughout the 1st term of the SP-2 year) focuses on familiarizing students with the 200 most frequently prescribed drugs. For each drug, students will: identify the dosage form and strengths available; describe the mechanism of action; and identify drug interactions, contraindications, and black box warnings associated with the use of the drug.

PHAR 660 Scientific Writing (1)

This course (held throughout the 2nd term of the SP-2 year) will review basic principles of scientific writing. A series of assignments are included to give students an opportunity to apply skills learned in PHAR 501, 514, and 641 pertaining to searching, evaluating, summarizing, and referencing literature sources.

Third Professional Year (Sp-3 Year) Didactic Curriculum

(Note: Credit Hours are given in parentheses)

PHAR 799 Professional Seminar (2)

This capstone course is offered at the end of the third (SP-3) and final academic year after the students have completed the experiential curriculum. The course offers 30 hours of classroom instruction that consists of a review of all curricular competencies and prepares the student for licensure examination and entrance into the profession.

Experiential Curriculum

(Note: Credit Hours are given in parentheses)

PHAR 571 Introductory Pharmacy Practice Experience I (3)

The overarching objective of an IPPE is to emphasize the relevance of the didactic curriculum in relationship to contemporary pharmacy practice. The students will spend an eight-hour day in a pharmacy setting every other week. Students will complete instructor designed activities/assignments, Classroom Connections (CC), in experiential settings based on what is being taught in the classroom. Students will also complete Experiential Learning Objectives (ELO) while at the site. These opportunities allow students to observe first-hand the drugs, patients and disease states discussed in class, thus reinforcing didactic learning experience. Student competencies will progress as the student develops through the didactic curriculum. Students will be in a community or institutional setting. During the alternating week, students will discuss activities involving the previous week's assignments which will allow the use of small group interactions to strengthen the learning experience. In addition, students will learn basic characteristics of the top 200 drugs through self-study.

PHAR 572 Introductory Pharmacy Practice Experience I (3)

The overarching objective of an IPPE is to emphasize the relevance of the didactic curriculum in relationship to contemporary pharmacy practice. The students will spend an eight-hour day in a pharmacy setting every other week. Students will complete instructor designed activities/assignments, Classroom Connections (CC), in experiential settings based on what is being taught in the classroom. Students will also complete Experiential Learning Objectives (ELO) while at the site. These opportunities allow students to observe first-hand the drugs, patients and disease states discussed in class, thus reinforcing didactic learning experience. Student competencies will progress as the student develops through the didactic curriculum. Students will be in a community or institutional setting; students who were in a community setting for PHAR 571 will be placed in an institutional setting for PHAR 572 and students who were in a institutional setting for PHAR 571 will be placed in an community setting for PHAR 572. During the alternating week, students will discuss activities involving the previous week's assignments which will allow the use of small group interactions to strengthen the learning experience. In addition, students will learn basic characteristics of the top 200 drugs through self-study.

PHAR 573 Concentrated IPPE I

When: Between the Fall and Spring terms or the summer between their first and second year.
Number of Hours: 160-hour experience (4).

This Concentrated Introductory Pharmacy Practice Experience (CIPPE) course is designed to help students make the successful transition from the classroom to the practice environment via practical application of materials learned. The integration of classroom knowledge and experiential training serves as the cornerstone of the student's education, instilling professionalism, and ensuring competency in the provision of pharmaceutical care. CIPPE reviews the basic technical and distributive functions of pharmaceutical care in the community environment, while providing students the opportunity to expand their knowledge base, practice their skills, and develop professional attitudes in an actual pharmacy setting.

PHAR 671 Introductory Pharmacy Practice Experience III (3)

The overarching objective of an IPPE is to emphasize the relevance of the didactic curriculum in relationship to contemporary pharmacy practice. The students will spend an eight-hour day in a pharmacy setting every other week. Students will complete instructor designed activities/assignments, Classroom Connections (CC), in experiential settings based on what is being taught in the classroom. Students will also complete Experiential Learning Objectives (ELO) while at the site. These opportunities allow students to observe first-hand the drugs, patients and disease states discussed in class, thus reinforcing didactic learning experience. Student competencies will progress as the student develops through the didactic curriculum. Students will be in a community or institutional setting. During the alternating week, students will discuss activities involving the previous week's assignments which will allow the use of small group interactions to strengthen the learning experience.

PHAR 672 Introductory Pharmacy Practice Experience IV (3)

The overarching objective of an IPPE is to emphasize the relevance of the didactic curriculum in relationship to contemporary pharmacy practice. The students will spend an eight-hour day in a pharmacy setting every other week. Students will complete instructor designed activities/assignments, Classroom Connections (CC), in experiential settings based on what is being taught in the classroom. Students will also complete Experiential Learning Objectives (ELO) while at the site. These opportunities allow students to observe first-hand the drugs, patients and disease states discussed in class, thus reinforcing didactic learning experience.

Student competencies will progress as the student develops through the didactic curriculum. Students will be in a community or institutional setting; students who were in a community setting for PHAR 671 will be placed in an institutional setting for PHAR 672 and students who were in an institutional setting for PHAR 671 will be placed in a community setting for PHAR 672.

During the alternating week, students will discuss activities involving the previous week's assignments which will allow the use of small group interactions to strengthen the learning experience.

PHAR 673 Concentrated IPPE II

When: Between the Fall and Spring terms or the summer between their first and second year.

Number of Hours: 80-hour experience (2).

This Concentrated Introductory Pharmacy Practice Experience (CIPPE) course is designed to help students make the successful transition from the classroom to the practice environment via practical application of materials learned. The integration of classroom knowledge and experiential training serves as the cornerstone of the student's education, instilling professionalism, and ensuring competency in the provision of pharmaceutical care. CIPPE reviews the basic technical and distributive functions of pharmaceutical care in the

institutional environment, while providing students the opportunity to expand their knowledge base, practice their skills, and develop professional attitudes in an actual pharmacy setting.

Advanced Pharmacy Practice Experience (APPE)

The student must take 8 five-week rotations (minimum of 40/hours/week) for a total of 1600 hours. Each student will participate in five required APPEs, 2 personal choice APPEs, and 1 elective APPE.

Required APPEs

(Note: Credit Hours are given in parentheses)

PHAR 700 Advanced Pharmacy Practice Experience (APPE) – Advanced Community Practice (5)

This is one of five required rotations. The Advanced Community rotation affords students the opportunity to effectively participate in the patient care decision-making process. Emphasis will be placed on the student's ability to demonstrate his or her understanding of common disease states and treatment modalities as well as the ability to provide patient-centered care and medication management. APPE Competencies and Ability-based Outcomes, self-reflections and documented interventions will be used by the preceptor to evaluate the student; the electronic evaluation is submitted for review by the School after the third week and at the end of the rotation.

PHAR 701 APPE – Advance Institutional Practice (5)

This is one of five required rotations. The purpose of this rotation is for students to gain professional skills in an institutional pharmacy setting. The Institutional Pharmacy rotation affords students the opportunity to effectively participate in the patient care decision-making process. Students will participate in a variety of clinical activities, functioning as an integral member of the health care team. Emphasis will be placed on the student's ability to demonstrate his or her understanding of common disease states and treatment modalities as well as the ability to provide patient-centered care and medication management. APPE Competencies and Ability-based Outcomes, self-reflections, and documented interventions will be used by the preceptor to evaluate the student; the electronic evaluation is submitted for review by the School after the third week and at the end of the rotation.

PHAR 702 APPE – Acute Care (5)

This is one of five required rotations. The purpose of this rotation is for students to gain professional skills in an internal general medicine setting. The Internal General Medicine rotation affords students the opportunity to effectively participate in the patient care decision-making process. Students will participate in a variety of clinical activities, functioning as an integral member of the health care team. Emphasis will be placed on the student's ability to demonstrate his or her understanding of common disease states and treatment modalities as well as the ability to provide patient-centered care and medication management. APPE Competencies and Ability-based Outcomes, self-reflections, and documented interventions will be used by the preceptor to evaluate the student; the electronic evaluation is submitted for review by the School after the third week and at the end of the rotation.

PHAR 703 APPE – Ambulatory Care (5)

This is one of five required rotations. The purpose of this rotation is for students to gain professional skills in an ambulatory care practice environment. The Ambulatory Care rotation affords students the opportunity to effectively participate in the patient care decision-making process. Students will participate in a variety of clinical activities, functioning as an integral member of the health care team. Emphasis will be placed on the student's ability to demonstrate his or her understanding of common disease states and treatment modalities as well as their ability to provide patient-centered care and medication management. APPE Competencies and Ability-based Outcomes, self-reflections, and documented interventions will be used by the preceptor to evaluate the student; the electronic evaluation is submitted for review by the School after the third week and at the end of the rotation.

PHAR 704 APPE – Public Health (5)

This is one of five required rotations. Emphasis will be placed on the student's ability to demonstrate his or her understanding of evidence-based practice, health promotion (disease prevention), health systems and policy, as well as community service. Through partnerships with local health departments students will actively participate in a multidisciplinary team and provide patient-centered care to the local patient population. Also, during the 5 week APPE the student will participate in a population-based research project. APPE competencies, Ability-based Outcomes, self-reflections and the research project will be used by the preceptor to evaluate the student; the electronic evaluation is submitted for review by the School after the third week and at the end of the rotation.

Personal Choice APPEs

Each student must choose two APPEs from the following list.

PHAR 710 Personal Choice APPE – Drug Information (5)

This may be used as one of two personal choice APPEs. This rotation is designed to allow the student to develop a systematic approach to responding to drug information inquiries. This rotation includes: identifying the question, researching, and evaluating relevant literature; applying the results of the research to the question; and communicating the answer to the inquirer under the supervision of a preceptor. APPE Competencies and Ability-based Outcomes, self-reflections, and documented interventions will be used by the preceptor to evaluate the student; the electronic evaluation is submitted for review by the School after the third week and at the end of the rotation.

PHAR 711 Personal Choice APPE – Home Infusion (5)

This may be used as one of two personal choice APPEs. This experience will focus on providing infusion services from a community-based pharmacy operation for home bound or institutionalized patients. The student will gain experience in the research, preparation and distribution of various home-infusion therapies. Home-infusion therapies to be covered include, but are not limited to; parenteral and enteral nutrition, intravenous (IV) antimicrobials, IV hydration, IV chemotherapeutic agents, and pain management. Participation on the home infusion clinical/operational team will enhance the student's understanding of interprofessional teamwork. Business aspects will be covered, including key financial and operational issues, reimbursement, regulatory issues, quality assurance, and patient safety. APPE Competencies and Ability-based Outcomes, self-reflections, and documented interventions will be used by the preceptor to evaluate the student; the electronic evaluation is submitted for review by the School after the third week and at the end of the rotation.

PHAR 712 Personal Choice APPE – Management (5)

This may be used as one of two personal choice APPEs. This rotation is designed to further develop the student's knowledge and understanding of pharmacy administration / management under the supervision of a preceptor. The practice setting and scope of practice

will vary according to the individual site. APPE Competencies and Ability-based Outcomes, self-reflections, and documented interventions will be used by the preceptor to evaluate the student; the electronic evaluation is submitted for review by the School after the third week and at the end of the rotation.

PHAR 713 Personal Choice APPE – Emergency Medicine (5)

This may be used as one of two personal choice APPEs. The student will gain experience in providing comprehensive clinical pharmacy services for the emergency department (ED) and all associated areas (e.g., pediatrics, trauma, urgent care). Specific activities include: providing pharmacokinetic services and therapeutic consultative services which focus on appropriate evidence based medication utilization, monitoring patient therapeutic responses to administered medications, providing drug information for emergency department healthcare providers, obtaining accurate medication histories and participating in the medication reconciliation process throughout the admission/transfer/discharge process, performing a prospective review of high-risk medication orders, providing discharge medication counseling, provision of cost saving measures for medication use in the ED, and interprofessional teamwork within the ED and with other units throughout the hospital. APPE Competencies and Ability-based Outcomes, self-reflections, and documented interventions will be used by the preceptor to evaluate the student; the electronic evaluation is submitted for review by the School after the third week and at the end of the rotation.

PHAR 714 Personal Choice APPE Hematology/Oncology (5)

This may be used as one of two personal choice APPEs. The student will gain experience in providing comprehensive clinical pharmacy services for the hematology/oncology unit. Preparation, distribution and administration of chemotherapy will also be covered. The student will participate in the provision of patient-centered care for hematologic and oncologic disease states, palliative care, pain management, oncologic emergencies and critical care issues. Participation on the hematology/oncology team will enhance the student's understand of interprofessional teamwork. APPE Competencies and Ability-based Outcomes, self-reflections, and documented interventions will be used by the preceptor to evaluate the

student; the electronic evaluation is submitted for review by the School after the third week and at the end of the rotation.

Elective APPEs

(Note: Credit Hours are given in parentheses)

PHAR 720 APPE – Elective (5)

One APPE can be an elective and choices may include: Adult Medicine, Cardiology, Intensive Care, Long Term Care, Psychiatry, Pediatrics, Academic, Organizational Pharmacy, Rehabilitation, Pharmacoeconomics, Independent Pharmacy, Compounding, Nuclear Pharmacy, Regulatory, Research, and Industry. Elective clerkships can be performed in non patient-care environments. The elective provides the student the opportunity to pursue a specific area of pharmacy under the supervision of a preceptor. Specialty areas will vary according to preceptor and site availability. APPE Competencies and Ability-based Outcomes, self-reflections, and documented interventions will be used by the preceptor to evaluate the student; the electronic evaluation is submitted for review by the School after the third week and at the end of the rotation.

Elective Offerings

Elective courses are typically offered during the SP- 2 year. It is possible to take electives in the spring of the SP-1 year with approval by the Associate Dean of Academic Affairs. Not all elective courses will be offered every academic year. The student must have 6 credits of electives to be able to graduate.

PHAR 680 Independent Studies in Pharmaceutical Research (1-6)

This elective module will introduce student to methods of basic science research in pharmaceutical sciences through a faculty mentor-directed project. This involves application of the scientific process that includes: (1) formulating the hypothesis, (2) reading of scientific literature and evaluation, (3) experimental design, (4) development of technical skills, (5) data acquisition and analysis, (6) presentation of results.

PHAR 681 Directed Studies in Pharmacy Sciences (1-6)

This course provides an opportunity for qualified pharmacy students to engage in specialized study or investigative work in pharmaceutical, social/administrative or clinical sciences with specific faculty, through a faculty mentor-directed project. This project is intended to provide students with a practical hands-on experience to apply knowledge obtained from the didactic setting. The student(s) and faculty will develop a detailed study plan with discrete objectives and outcomes Credits: 1-6

PHAR 682 Introductory Spanish for the Pharmacist (3)

This course taught provides the student with the introductory tools to develop sufficient listening and speaking skills in Spanish for the pharmacy setting to facilitate patient counseling and education in the appropriate use of medications.

PHAR 683 Advanced Immunology (1)

This course will discuss the current progress of areas related to immunology including tumor immunity, virus immunity, or auto-immune diseases. Each year will focus on one of these three topics. Contents include lectures by faculty, seminar by invited speakers, and article presentation by students.

PHAR 684 Advanced Topics in Cardiovascular Pharmacotherapy (2)

This is an elective course designed to expand on the topics covered during the prerequisite PHAR 612 PTMM: Cardiology module. Students will be exposed to advanced issues involving cardiovascular therapeutics through a combination of online presentations and face-to-face discussions. A systematic approach to the identification and resolution of drug therapy problems will be developed through the use of various methodologies, including work-ups of patient cases, journal club exercises, and debates of clinical controversies. Students will be expected to justify their decisions based on an evaluation of the current literature.

PHAR 685 Advanced Topics in Emergency Medicine & Clinical Toxicology (1)

This elective is designed to enhance the students' knowledge of therapeutic and practice areas in emergency medicine and clinical toxicology. Evidence-based medicine and clinical scenarios will be emphasized and utilized for managing patients with emergent medical or toxicological conditions. Examples of topics to be covered include: trauma, respiratory and hypertensive emergencies, toxic alcohols, venomous creatures, and overdoses of salicylates, cardiovascular agents, anti-diabetic medications, and drugs of abuse. Establishing a clinical pharmacy practice in emergency medicine will also be discussed.

PHAR 686 American Sign Language for Pharmacists (3)

The goal of this course is to provide the pharmacy student with the tools to develop sufficient communication skills in American Sign Language in order to engage in basic conversation, provide basic patient education and medication interaction information.

PHAR 687 Beyond the Mortar and Pestle of Pharmaceutical Compounding (1)

This elective course will provide advanced training in the art, science and technology of pharmaceutical compounding. Various aspects of the art and science of compounding will be discussed and demonstrated. Students will apply and practice their calculation and compounding skills with formulations used commonly by current practitioners.

PHAR 688 Complementary & Alternative Medicine (CAM): Prevention, Maintenance, & Treatment for Health (1)

An introduction to complementary and alternative medicine, an overview of its current use in the prevention, maintenance and treatment of human disease will be provided. The integration of CAM with western medicine will be reviewed.

PHAR 689 Critical Care: An Overview of Critical Care Disorders & Critical Care Pharmacotherapy (1)

The critical care elective is designed to facilitate patient-centered care for adult critical care patients and to expand students' knowledge regarding roles that pharmacists play in the intensive care unit. Evidence-based medicine and clinical variables will be emphasized and applied to the management of pharmacotherapy in acute care clinical practice. Students will be exposed to the pathophysiology and complex pharmacotherapy of a broad scope of disease states frequently encountered in an intensive care setting. Examples of topics to be covered include: acid-base disorders, acute coronary syndromes, delirium, fluid and electrolyte management, renal disorders, respiratory disorders, severe sepsis, shock.

PHAR 690 A Pharmacy Student's Guide to Early Clinical Drug Development (1)

This course will focus on the early clinical drug development including the rationale and study design of studies needed for the clinical pharmacology section of new drug applications. Lectures will involve the challenges regarding discovery research, development, formulations

and manufacturing and regulatory issues in the creation of new products for patient care. The course will require students to assimilate the information from pharmaceuticals, pharmacokinetics, pharmacology and pharmacotherapy and be able to write out and verbally present on drug development issues. The class will be an interactive format with student questions / discussion being fostered in class, along with student product presentation by each student.

PHAR 691 Home Infusion Pharmacy Practice (1)

This module provides an overview of home infusion therapy including history, business and therapy overviews, VAD and Infusion Device Overview, Overview of the home infusion clinical/operational team, Reimbursement and Regulatory Issues (general information only), Quality Outcomes and Patient Safety (general information only), Future practice considerations

PHAR 692 Venous Thromboembolism (VTE) Pharmacotherapy in the Acute Care Setting (1)

This course will provide in depth coverage of current practice, clinical assessment skills and guidelines pertaining to drug therapy selection, monitoring and dosing of anti-thrombosis therapy used to treat and prevent VTE in hospitalized patients.

PHAR 693 Venous Thromboembolism (VTE) Pharmacotherapy in the Chronic Care Setting (1)

This course will provide in depth coverage of current practice, clinical assessment skills and guidelines pertaining to drug therapy selection, monitoring and dosing of anti-thrombosis therapy used to treat and prevent VTE in outpatients.

PHAR 694 Channelopathies: When Good Channels Go Bad (1)

This elective module will introduce students to channelopathies, or the pathology of ion channels. Channelopathies are implicated in various disorders that can alter the function of skeletal muscle, neurons and other organ systems in the body including epilepsy, migraines, cystic fibrosis, and fibromyalgia. These disorders can originate from genetic changes or from changes in gene expression. Students will learn about the various channelopathies based on the ion channels affected, the pathological characteristics of the disease and pharmacological interventions. Students will also learn about the development of novel techniques in the treatment of channelopathies.

PHAR 695 Leadership & Advocacy in Pharmacy (1)

This elective course is offered to provide leadership and political advocacy development for pharmacy students. Students will examine the role of pharmacists in political advocacy and community action as they explore current healthcare issues. Students will have the opportunity to interact with local and national political leaders.

PHAR 696 Inter-Professional Team Interactions (1)

This course will be open to pharmacy, physical therapy, physician assistant and re-habilitation graduate students. This inter-professional course focuses on understanding roles, teamwork and communication to improve patient outcomes in the health care environment. National standards and initiatives serve as a major focus for this to the course. Students will work in teams to explore cases with elements common to all professionals such as ethical, behavioral, social and psychological issues and prepare a collaborative practice project or model.

PHAR 697 Pharmaceuticals and Personal Care Products (PPCP) as Pollutants (1)

This course provides an overview of the different aspects of PPCP pollutants. This includes discussions on: 1) common examples of PPCPs such as chemical substances, i.e. prescription and OTC therapeutic drugs, veterinary drugs, fragrances and cosmetics, 2) different sources of

PPCPs such as human activity, manufacturing, hospitals, illicit drugs, veterinary use and agribusiness, 3) fate of PPCPs in the environment and 4) the strategies that are and can be used to protect the health of both the environment and the public.

Doctor of Pharmacy Curriculum Overview

Credit hours are received for the sequential courses through regularly scheduled assessments. Each term is divided into two-week blocks; an assessment will be given at the end of the two-week block. Since the sequential modules are not uniform in length, the assessment block may contain material from one module, part of a module, or a combination of two modules.

Credit hours are also assigned to longitudinal courses, electives, and experiential rotations. A total of 58 credit hours must be complete to advance to the SP-2 year. A total of 120.5 credits must be completed to be eligible to advance to the SP-3 year and a total 162.5 credits must be completed to be eligible for graduation.

Credit hours are assigned with the general rule that 15 class hours are equivalent to one semester credit hour, 3 laboratory hours are equivalent to one class hour, and 40 experiential hours are equivalent to one semester credit hour. Minor changes may be required in credit hours from year to year, based on changes to the curriculum.

First Academic Year (SP-1)

(Note: Credit Hours are given in parentheses)

Assessment Blocks 1-17	(38)
Pharmaceutical Calculations	(2)
Pharmacy Communications	(3)
Public Health for Pharmacists	(2)
Direct Patient Care in Pharmacy Practice	(3)
IPPE I & II	(6)
CIPPE I	(4)
Total Semester Credit Hours: 58	

Second Academic Year (SP-2)

(Note: Credit Hours are given in parentheses)

CIPPE II	(2)
Assessment Blocks 18-35	(41.5)
Top 200 Drugs	(1)
Scientific writing	(1)
IPPE III & IV	(6)
Didactic Electives	(6)
Integrated Pharmacy Practice I & II	(5)
Total Semester Credit Hours: 62.5	

Third Academic Year (SP-3)

(Note: Credit Hours are given in parentheses)

APPEs Required	(25)
APPEs Personal Choice	(10)
APPE Elective	(5)
Professional Seminar	(2)
Total Semester Credit Hours: 42	

Total Required Hours: 162.5

For more information on the program, please visit
www.umes.edu/pharmacy/Default.aspx?id=12982

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