College of Marine and Earth Studies

Graduate Program

Policy Statement C/2/07
(Supersedes Policy Statement C/1/82, C/1/85, C/1/05)

Part I. Program History

The College of Marine and Earth Studies, originally established as the College of Marine Studies by the Board of Trustees in 1970, offers programs leading to master's and Ph.D. degrees. M.S. degrees are offered in Geology, Marine Policy, Marine Studies, Ocean Engineering, and Oceanography. A non-thesis Master of Marine Management (M.M.M.) degree is also available. Ph.D. degrees are offered in Geology, Marine Studies, Oceanography, and Ocean Engineering.

The goal of the college is to educate scholars who will provide intellectual leadership in the areas of the geological sciences, marine biosciences, marine policy, oceanography, and physical ocean science and engineering. Graduates of the college are expected to understand the complex interactions of these areas in real-world situations, in addition to mastering advanced work in the area of their specialty.

Part II. Admission

A. Admission Requirements

1. General Requirements for Admission to the College

   Admission to any of the graduate programs in the College is evaluated on the basis of the applicant's GRE scores, undergraduate record, letters of recommendation, and research interests.

2. Requirements for Admission in the Department of Geological Sciences

   Applicants must submit GRE scores and should have a combined verbal and quantitative GRE score of at least 1050. For international applicants whose first language is not English, the University requires an official paper-based TOEFL score of at least 550, at least 213 on the computer-based TOEFL, or at least 79 on the Internet-based TOEFL to be considered for admission.. International students applying for a teaching assistantship must report a paper-based TOEFL score of at least 600, at least 250 on the computer-based TOEFL. Admission to the graduate program in the Department of Geological Sciences is selective and competitive based on the number of qualified applicants and the availability of faculty and facilities.

3. Requirements for Admission in the M.S. and Ph.D. Programs in Marine Studies, M.M.P. Program, Ph.D. Program in Oceanography, and M.S. and Ph.D. Program in Ocean Engineering:

   Applicants must submit GRE scores and should have a combined verbal and quantitative GRE score of at least 1050. For international applicants whose first language is not English, the University requires an official paper-based TOEFL score of at least 550, at least 213 on the computer-based TOEFL, or at least 79 on the Internet-based TOEFL for an applicant to be considered for admission..

   Applicants should also submit a letter of intent, stating specific interests and objectives for seeking graduate study.

4. Requirements for Admission in the Masters of Marine Management Program

   The requirements for admission to this program include a Bachelor's degree in an appropriate natural or social science program. Applicants must submit GRE scores and should have a combined verbal and quantitative GRE score of at least 1050. For international applicants whose first language is not English, the University requires an official paper-based TOEFL score of at least 550, at least 213 on the computer-based TOEFL, or at least 79 on the Internet-based TOEFL for an applicant to be considered for admission..

   Evidence of professional experience is encouraged and will be an important consideration for admission.

5. Requirements for Admission in the Ocean Engineering Program

   The minimum requirements for admission to the graduate program are as follows: a Bachelor of Science in engineering, an undergraduate grade point average of at least 3.0 (out of a possible 4.0), GRE scores (verbal and quantitative combined) of at least 1200,
   and a TOEFL score (for international students) of at least 600 on the paper based TOEFL; 250 on computer based TOEFL; 100 on IBET TOEFL.

B. Application deadlines

Application deadlines for students seeking financial aid consideration are March 1 for fall admission and October 1 for spring admission.

C. University Admission Statement

Admission to the graduate program is competitive. Those who meet stated requirements are not guaranteed admission, nor are those who fail to meet all of those requirements necessarily precluded from admission if they offer other appropriate strengths.

Part III. Academic Degree Requirements

A. Course Requirements

1. Course Requirements for the Degrees in Geological Sciences

   Requirements for the Master of Science degree include 30 credits of graduate study (6 of which are thesis credits) and the research, preparation, and defense of a thesis. Requirements for the Doctor of Philosophy degree include a Master of Science degree, an oral and written comprehensive exam, a course program developed with the student's dissertation committee (including 9 credits of dissertation research), and the research, preparation, and defense of the dissertation. All graduate students are required to register for GEOL 601 (Geological Sciences at Delaware) during their first fall term at the University. GEOL 605 (Stratigraphy) is also required of all graduate students. For both the M.S. and Ph.D. degrees, course programs are otherwise developed on an individual basis to meet the specific needs of the student. The program of study and research is formed by student consultation with the advisor and thesis or dissertation research committee. Because of the value of the teaching experience, Ph.D. candidates are required to teach a course or laboratory section for at least one semester.

2. Course Requirements for the Degrees in Marine Studies with a concentration in Marine Biosciences

   All students in the master's program are required to complete 30 graduate credits. A course outside of the Marine Biosciences Program and the student's area of concentration is also required. All students must write a thesis. Students may bypass the master's degree and work directly toward the Ph.D. upon petition. Written and oral qualifying examinations are required before students are admitted to candidacy for the Ph.D. degree.

   MS IN MARINE STUDIES with a concentration in MARINE BIOSCIENCES
   Required courses:
   MAST 627 Marine Biology
   MAST 634 Marine Biochemistry
   MAST 821 Seminar (once each academic year)
   One course (minimum 3 credits) outside of the program. This may be one of the specially designed introductory courses or a more advanced course.
   Introductory courses include MAST 602 (Physical Oceanography), MAST 637 (Geological Oceanography), 646 (Chemical Oceanography) and MAST 670 (U.S. Ocean and Coastal Policy).
   Thesis: 6 credits
   Additional graduate-level course work as determined by advisory committee.

PH.D. IN MARINE STUDIES with a concentration in MARINE BIOSCIENCES
Required courses:
MAST 621 Coastal Field Biology
MAST 627 Marine Biology
MAST 634 Marine Biochemistry
MAST 821 Seminar (once each academic year)
Dissertation: 9 credits
Additional graduate-level course work as determined by advisory committee.

3. Course Requirements for the Degrees in Marine Studies with a concentration in Oceanography and Ph.D. in Oceanography

   All students in the master's program are required to complete 30 graduate credits. A course outside of the Oceanography program and the student's area of concentration is also required. All students must write a thesis. Students may bypass the master's degree and work directly toward the Ph.D. upon petition. Requirements for the Ph.D. degree are similar to those for the master's degree, but are more intensive. Written and oral qualifying examinations are required
   before students are admitted to candidacy for the Ph.D. degree.

   MS IN MARINE STUDIES with a concentration in OCEANOGRAPHY
   Required courses:
   Any two of the following core courses:
   MAST 602 Physical Oceanography or equivalent
   MAST 646 Chemical Oceanography or equivalent
   MAST 637 Geological Oceanography or equivalent
   MAST 627 Marine Biology or equivalent
   MAST 853 Oceanography Seminar or equivalent must be taken at least one semester during each year of residence.
   At least three (3) credits of 800-level courses other than courses used to meet seminar and core required courses must be completed.
   One three (3) credit course in Marine Policy or one three (3) credit course outside of the student's declared sub-discipline of interest (not including courses taken to meet the program core course requirement) as approved by the advisor and the program director must be completed.
   Thesis or Research: 6 credits
   Additional courses may be required by the student’s advisory committee.

   Ph.D. IN OCEANOGRAPHY or Ph.D. IN MARINE STUDIES with a concentration in
   OCEANOGRAPHY
   Required courses:
   MAST 602 Physical Oceanography or equivalent
   MAST 646 Chemical Oceanography or equivalent
   MAST 637 Geological Oceanography or equivalent

MAST 627 Marine Biology or equivalent
MAST 853 Oceanography Seminar or equivalent must be taken at least one semester during each year of residence.
At least six (6) credits of 800-level courses other than courses used to meet seminar and core required courses must be taken.
One three (3) credit course in Marine Policy or one three (3) credit course outside of the student's declared sub-discipline of interest (not including courses taken to meet the program core course requirement) as approved by the advisor and the program director must be completed.
Dissertation or Research: 9 credits
Additional courses may be required by the student's advisory committee.

4. Course Requirements for the Degrees in Marine Policy and Marine Management

All students in the master's of marine policy program are required to complete 39 graduate credits. A course outside of the Marine Policy Program and the student's area of concentration is also required. Students pursuing this degree must write a thesis. Students
may bypass the master's degree and work directly toward the Ph.D. upon petition. Requirements for the Ph.D. degree are similar to those for the master's degree, but are more intensive. Written and oral qualifying examinations are required before students are admitted to candidacy for the Ph.D. degree.

All students in the master's of marine management program are required to complete at least 31 graduate course credits over the period of fall, winter and spring semesters of one year. There is no
thesis required for this degree.

MASTER OF MARINE POLICY (M.M.P.) or MASTER OF MARINE STUDIES with a concentration inMARINE POLICY
Required courses:
MAST 670 U.S. Ocean & Coastal Policy
MAST 873 Marine Policy Seminar taken three times
MAST 675 Natural Resource Economics
MAST 676 Environmental Economics
MAST 677 International Ocean and Environmental Policy
MAST 817 Research Design and Methods
or
MAST 672 Applied Policy Analysis
CMES course outside the marine policy program.
Thesis: 6 credits
Elective courses in policy and policy analysis approved by advisor (12 credits)

MASTER OF MARINE MANAGEMENT (M.M.M.)
Required courses:

(Fall Term):
MAST 663 Decision Tools for Policy Analysis (3)
MAST 670 U.S. Marine Policy
or
MAST 677 International Marine Policy (3)
Science Elective (3)
Policy Elective (3)
MAST 821, 853, or 822 Science Seminar (1)
(Winter Term):
MAST 801 Environmental Measurement Tools (5)
(Spring Term):
MAST 802 Case Study in Coastal and Ocean Management (3)
Policy or Science Electives (9)
MAST 873 Policy Seminar (1)
Students select Science and Policy electives from CMES courses and other courses offered at the University. These selections are reviewed by the M.M.M. Advisory Committee.

PH.D. IN MARINE STUDIES with a concentration in MARINE POLICY
Required courses:
Completion of M.M.P. or equivalent work at another university or M.M.P. bypass.
MAST 873 Marine Policy Seminar taken three times *
CMES course outside the Marine Policy Program. *
Disciplinary concentration approved by advisor (e.g., economics, political science)
Additional Research and Methodology course approved by advisor.
Dissertation: 9 credits
Additional graduate-level course work as determined by advisory committee.
*Does not apply to students who satisfied the requirement during M.M.P.

5. Course Requirements for the Degrees in Physical Ocean Science and Engineering

All students in the master's program are required to complete a minimum of 30 graduate credits. A course outside of the POSE program and the student's area of concentration is required. All students must write a thesis. Students may bypass the master's degree
and work directly toward the Ph.D. upon petition. Requirements for the Ph.D. degree are similar to those for the master's degree, but are more intensive. Written and oral qualifying examinations are required before students are admitted to candidacy for the Ph.D. degree.

PHYSICAL OCEAN SCIENCE AND ENGINEERING
Required courses:
Minimum of 24 graduate course credits (including those listed below):
MEEG 690 Intermediate Engineering Mathematics
MAST 693 Waves in the Marine Environment

MAST 691 Ocean Fluid Dynamics
MASTS 882 POSE Seminar
One of the following courses:
MEEG 864 Engineering Analysis II
MAST 800 Dynamical Physical Oceanography
One course outside of the student's home program (minimum of 3 credits). This may include one of the specially designed introductory courses or a more advanced course. Students may not test out of these classes. Introductory courses outside of this program include MAST 627 Marine Biology or MAST 670 U.S. Ocean and Coastal Policy. NOTE: MAST 601 Introduction to Oceanography will not meet this requirement. Physical oceanography courses will not meet this requirement.
Thesis or Research: 6 credits
Additional graduate-level course work as determined by advisory committee.

PH.D. IN MARINE STUDIES with a concentration in PHYSICAL OCEAN SCIENCE AND ENGINEERING
Required courses:
MEEG 690 Intermediate Engineering Mathematics
MAST 693 Waves in the Marine Environment
MAST 691 Ocean Fluid Dynamics
MASTS 882 POSE Seminar
MEEG 864 Engineering Analysis II
MAST 800 Dynamical Physical Oceanography
One course outside of the student's home program (minimum of 3 credits). This may include one of the specially designed introductory courses or a more advanced course. Students may not test out of these classes.
Dissertation: 9 credits.
Additional graduate-level course work as determined by dissertation advisory committee.

6. Course Requirements for the Degrees in Ocean Engineering

The Ocean Engineering Master of Science requires a minimum of 30 credit hours. This includes a thesis and independent research. Students shall defend their thesis in an open oral examination chaired by the advisor. Students must enroll in six thesis credits.

The doctoral program is planned around a central engineering objective. The total program is comprised of 72 credits beyond the bachelor’s degree that include a minimum of 36 credits of coursework, 6 credits for the Master’s Thesis (if applicable), 9 credits for the Ph.D. Dissertation, and a minimum of 9 credits for research. For students holding a master’s degree in an appropriate field of study, the coursework from the master’s degree will be taken into account in the design of

the doctoral program. All graduate students work in close cooperation with the faculty on their dissertation area.

B. Non-registered requirements

1. The requirements for all degrees offered by CMES are described at http://www.ocean.udel.edu/academics/degrees.shtml and in the University Catalog. All degrees except the M.M.M. degree require a thesis or dissertation describing original work completed by the student.

2. A student must complete his/her graduate work within the time limits imposed by the University and CMES. The time limits for the various steps in completing the M.S. or Ph.D. are given at http://www.ocean.udel.edu/academics/policies_current/index.shtml.

   On petition, waivers of the time limits may be granted for good cause. Students must provide justification for any extensions past the limits. The justification must be approved by the student's advisor, committee and the Associate Dean. In the case of University time limits, the official request to the graduate office must come from the Associate Dean of CMES.

3. The composition of the student advisory committee shall be defined by the academic programs or departments, except for the following guidelines: A doctoral student's committee shall consist of at least four members but not more than six. It is required that one member of the committee be external to the University. A masters student's committee shall consist of at least three members.

4. Only core or joint appointees may serve as committee chairs, except in the case of an emeritus professor who has, prior to retirement, been the advisor of a student when that student's committee was formed.

5. A qualifying examination is required to obtain admission to candidacy for the Ph.D. In order to take the examination, each student must be in good academic standing and have approval of the advisory committee. A research proposal is required, but the program or department shall decide on whether this proposal is approved prior to or after the qualifying exam.

6. The qualifying examination shall include both oral and written parts and will test the depth and breadth of the student's intellectual achievement and academic knowledge in their proposed field of research. The examination shall be prepared and administered in consultation with the student's advisory committee. Each academic program or department shall define the general format of these examinations.

a. At least 60 days prior to the examination, the advisor will inform the student of the areas to be examined and the format of the written and oral parts of the examination.

b. The student shall be informed of their success or failure of the qualifying examination within 30 days of completion.

c. A student who fails the qualifying examination is entitled to only one re-examination, which must be taken within six months of the first examination.

7. The defense of the dissertation or thesis, which is required for all degrees except the M.M.M. degree**,** is addressed to the candidate's research. The examination focuses on the scope of the research, its contribution to the field, its significance to advancing the body of knowledge, and its potential for follow-up. The student's advisory committee serves as the examining board.

   a. The defense is oral and open to the public and should be announced before the defense date. The timing of the announcement shall be set by the programs or departments.

   b. The defense will begin with a presentation of the work by the candidate. The defense will be open to questions addressed to the candidate by the examiners and by the public.

   c. At the close of the public questioning, the advisory committee will retire immediately for deliberation and decision. Upon reaching a decision, the advisory committee will communicate that decision to the candidate, to the department chair (if the student is in a department) and to the Associate Dean of the College of Marine and Earth Studies. Submissions of theses and dissertations to the Office of Graduate Studies must conform to the policies and procedures established on their webpage at http://www.udel.edu/gradoffice/current/stepby.html

C. Change in Student Status

1. A student may change advisor in consultation with the assigned advisor and the potential advisor. If the advisor is changed, the student shall follow the guidelines regarding changes in the advisory committee.

2. Students in CMES programs who have formed an advisory committee and who have completed an M.S. thesis proposal may petition for admission to the Ph.D. program after one year of residency in the college (“bypass option”).

To petition, students must submit evidence of performance to their M.S. advisory committee. Such evidence generally includes:

- Excellent grades in graduate courses
- Promising research results
- Sound plans for Ph.D.-level research

The following steps are necessary for approving the bypass:

i. Chair of advisory committee sends a letter of approval on behalf of the majority of the advisory committee to the Program Director. The letter should note dissent, if any;
ii. Associate Dean reviews the letter and input from Program Director;
iii. Student completes a change-of-status form and continues as a Ph.D. student in the College.

3. Students who want to continue for a Ph.D. after completing an M.S. or M.M.P. shall seek readmission according to University policy.

4. Any petitions for variance in the abovementioned policies must be approved by the student's advisor, Program Director or Department Chair and Associate Dean.

Part IV. Financial Aid

Students in CMES programs and departments (except Marine Management) may be supported by research assistantships, fellowships, teaching assistanships or scholarships subject to availability from the College or University..

CMES Awards are made competitively, on the basis of merit, by the recommendations of the CMES Academic Council to the Associate Dean. Funding eligibility is determined by University and College policy.

Graduate students who hold a graduate assistantship, fellowship, or scholarship in CMES must register for a minimum of nine graduate credits and must remain in good academic standing according to University guidelines. Students holding teaching assistantships must register for a minimum of six graduate credits and must remain in good academic standing according to University guidelines.

It is the policy of the College to support all graduate students making satisfactory progress toward their degrees, subject to the availability of funds.

Part V. Laboratory Safety and Research Regulations

Graduate students performing laboratory research are subject to all University regulations regarding safety, use of human subjects and animals, and hazardous/radioactive material

use and disposal. These guidelines may be found in the University of Delaware Policies and Procedures manual.

Legislative History

- Draft given by Associate Dean Carolyn A. Thoroughgood to Program Directors for review and comment - December 1981.
- Draft C/1/82 circulated to Faculty - 10 February 1982.
- Faculty recommended adoption of draft C/1/82.
- Dean W.S. Gaither adopted and promulgated C/1/82 - 3 March 1982.
- COMSEX reviewed and recommended retention after modification - 25 February 1985.
- Dean Thoroughgood promulgated - 1 December 1985.
- Revised draft approved by Faculty – 7 February 2005.
- Promulgated by Interim Dean Targett – 7 February 2005.
- Discussed and approved by Academic Council – 30 May 2006.
- Revised by Associate Dean's Office to fit format of University Graduate Office – 30 June 2007.
- Promulgated by Dean Targett – 23 August 2007.