# MARINE SCIENCE, M.S.

## Learning Outcomes

- Students will conduct independent scientific research at the graduate level.
- Students will demonstrate teaching skills.
- Students will communicate orally to demonstrate their ability to present scientific results clearly, logically, and critically.
- Students will communicate in writing to demonstrate their ability to present scientific results clearly, logically, and critically.
- Students will apply scientific methodology, quantitative problem-solving, and experimental techniques within the core areas of marine science.

## Degree Requirements (30 Hours)

General requirements for degrees in Marine Science are the same as those established by the Graduate School. The M.S. program of study and other specific degree requirements are planned in consultation with the graduate student, the graduate student's advisory committee, the Marine Science Graduate Studies Committee, and the Marine Science Program Director.

The M.S. degree requires the satisfactory completion of a minimum of 30 credit hours, including 12 hours of core courses and one additional course numbered 700 or above (other than 799, Thesis Preparation). The remaining credits may be earned in courses numbered above 500, including 6 hours of 799.

M.S. students must achieve and maintain an overall GPA of 3.00 on all courses taken for graduate credit and complete each of the core courses with a minimum grade of B.

A written thesis is required of all Masters students. Students must successfully defend their thesis in a final Comprehensive Examination according to the calendar approved by the Graduate School. As a portion of the comprehensive assessment of the thesis, the material will be presented in a public seminar. This presentation must take place no earlier than sixty (60) days after successful MS Thesis Research Plan presentation. The student's major professor must notify the Graduate Studies Director of an impending defense in writing (an email is sufficient) not less than 14 days prior to the scheduled defense date. This notification must include an abstract of the thesis. The defense must be publicly announced not less than seven days prior to the defense and is open to all faculty and students. At the end of the seminar, the audience will be excused and the defense will continue with only the candidate, the advisory committee and interested members of the faculty present. The thesis advisor must inform the Graduate Studies Director via appropriate form when the thesis is satisfactorily defended and accepted by the committee.

### Required Courses for Marine Science Program

The following courses are required for students in the Marine Science Program unless they are specifically exempted:

| Course | Title | Credits |
|---|---|---|
| MSCI 545 | Geological Oceanography | 3 |
| MSCI 750 | Advanced Biological Oceanography | 3 |
| MSCI 781 | Physical Oceanography | 3 |
| MSCI 782 | Chemical Oceanography | 3 |
| **Total Credit Hours** | | **12** |

### Areas of Emphasis in Marine Science

A number of courses exist in various departments and colleges that enable students to specialize in a particular area of emphasis in marine science.

- Marine biology/Biological oceanography
- Marine chemistry/Chemical oceanography
- Marine geology/Geological oceanography
- Physical oceanography/Atmospheric dynamics

### Non-MSCI Courses Acceptable for Major Credit

| Course | Title | Credits |
|---|---|---|
| BIOL 534 | Animal Behavior | 3 |
| BIOL 534L | Animal Behavior Laboratory | 1 |
| BIOL 543 | Comparative Physiology | 3 |
| BIOL 543L | Comparative Physiology Laboratory | 1 |
| BIOL 570 | Principles of Ecology | 3 |
| BIOL 570L | Principles of Ecology Laboratory | 1 |
| BIOL 651 | Limnology | 4 |
| BIOL 722 | Aquatic Bacteriology | 3 |
| BIOL 722L | Aquatic Bacteriology Laboratory | 1 |
| BIOL 727 | Marine Phytoplankton | 3 |
| BIOL 728 | Advanced Phycology | 3 |
| BIOL 729 | The Biology of Fish | 3 |
| BIOL 730 | The Biology of Fish | 3 |
| BIOL 731 | Advanced Invertebrate Zoology I | 3 |
| BIOL 755 | Quantitative Ecology | 3 |
| BIOL 759 | Physiological Ecology | 3 |
| BIOL 760 | Electron Microscopy | 3 |
| BIOL 760L | Electron Microscopy Laboratory | 1 |
| CHEM 511 | Inorganic Chemistry | 3 |
| CHEM 541L | Physical Chemistry Laboratory | 2 |
| CHEM 542 | Physical Chemistry | 3 |
| CHEM 542L | Physical Chemistry Laboratory | 2 |
| CHEM 729 | Special Topics in Analytical Chemistry | 3 |
| CHEM 741 | Chemical Thermodynamics | 3 |
| EMCH 501 | Engineering Analysis I | 3 |
| EMCH 502 | Engineering Analysis II | 3 |
| EMCH 741 | Viscous and Turbulent Flow | 3 |
| EMCH 751 | Advanced Heat Transfer | 3 |
| EMCH 794 | Thermodynamics | 3 |
| ECIV 751 | Water and Wastewater Treatment Theory I | 3 |
| ECIV 752 | Water and Wastewater Treatment Theory II | 3 |
| ECIV 755 | Industrial Wastewater Treatment | 3 |
| ECIV 765 | Erosion and Sediment Control | 3 |
| GEOG 510 | Special Topics in Geographic Research | 3 |
| GEOG 531 | Quantitative Methods in Geographic Research | 3 |
| GEOG 541 | Advanced Cartography | 3 |
| GEOG 545 | Synoptic Meteorology | 4 |
| GEOG 546 | Applied Climatology | 4 |

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| GEOG 551 | Principles of Remote Sensing | 3 |
| GEOG 554 | Spatial Programming | 3 |
| GEOG 563 | Advanced Geographic Information Systems | 3 |
| GEOG 763 | Seminar in Geographic Information Systems | 3 |
| GEOL 516 | Sedimentology | 4 |
| GEOL 518 | Surface to Subsurface Stratigraphy | 3 |
| GEOL 520 | Isotope Geology and Geochronology | 3 |
| GEOL 546 | Marine Geophysics | 3 |
| GEOL 570 | Environmental Hydrogeology | 3 |
| GEOL 722 | Aqueous Geochemistry | 3 |
| GEOL 750 | Basin Analysis Seminar | 3 |
| GEOL 751 | Carbonate Petrology | 3 |
| MATH 520 | Ordinary Differential Equations | 3 |
| MATH 521 | Boundary Value Problems and Partial Differential Equations | 3 |
| MATH 526 | Numerical Linear Algebra | 4 |
| MATH 527 | Numerical Analysis | 3 |
| MATH 544 | Linear Algebra | 3 |
| MATH 723 | Differential Equations | 3 |
| MATH 726 | Numerical Differential Equations I | 3 |
| PHYS 503 | Mechanics | 4 |
| PHYS 506 | Thermal Physics and Statistical Mechanics | 3 |
| POLI 760 | American Government and Politics | 3 |
| POLI 774 | The Public Policy Process | 3 |
| POLI 777 | Policy Evaluation | 3 |
| STAT 515 | Statistical Methods I | 3 |
| STAT 516 | Statistical Methods II | 3 |
| STAT 518 | Nonparametric Statistical Methods | 3 |
| STAT 519 | Sampling | 3 |
| STAT 700 | Applied Statistics I | 3 |
| STAT 701 | Applied Statistics II | 3 |
| **Total Credit Hours** | | **198** |