

# Marine Science (Ph.D.)

## Degree Requirements

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### Doctor Of Philosophy (Ph.D.) Program

The Doctor of Philosophy (Ph.D.) Program in marine sciences is designed to provide formal course work and advanced research in marine sciences that produces significant, original contributions to knowledge. The Ph.D. degree is awarded to students who have reached and formally demonstrated a level of competence and accomplishment that enables them to pursue careers as marine science professionals. The Ph.D. degree confers eligibility for many positions in academia, industry, and government.

The marine sciences program offers courses and opportunities for research in multiple sub-disciplines: biological, chemical, physical, and geological oceanography as well as marine ecology and fisheries. Each student receives formal training in each of these disciplines while concentrating in a specific research area. The requirements and procedures that follow are specifically for the Department of Marine Sciences. However, the general rules and policies of the Graduate School also apply.

### Minimum Requirements For Admission

Students are normally admitted in the Fall Semester. Although applications for admission and fellowships are accepted throughout the year, application before February 1 is encouraged; beginning February 15 the admissions committee will make initial recommendations about applicants for the following Fall class, with formal letters sent to applicants by the end of April. Depending on availability of space and funding, applications may be approved and students admitted throughout the year. In addition to the general admissions requirements of the Graduate School, requirements for admission to the Marine Sciences Ph.D. program are:

1. A narrative statement indicating the student's research interests, professional goals and commitment to full-time study for completion of degree requirements.
2. Three letters of recommendation.
3. For students with baccalaureate degrees:
  - a. Official scores from the Graduate Record Examination General Test with a minimum score of 300 combined on the verbal and quantitative subtests.
  - b. A baccalaureate degree in a discipline related to marine sciences (e.g., biology, chemistry, geology, physics) from an accredited four-year college or university.
  - c. Applicants to graduate programs in Arts and Sciences typically have a minimum GPA of at least a 3.0 on all undergraduate work. In exceptional cases, applicants may be considered with at least a 2.5 GPA on all undergraduate work, or at least a 2.75 GPA on the last 60 hours of undergraduate work.
4. For students with MS degrees:
  - a. An MS degree in a discipline related to marine sciences (e.g., biology, chemistry, geology, physics) from an accredited college or university.
  - b. A graduate minimum grade-point average of 3.00 overall (A=4).
5. International students must submit an official score of at least 71 on the Test of English as a Foreign Language (TOEFL), or equivalent score on computer administered tests.

To ensure research compatibility between the student and the faculty in the marine sciences program, attention will be given to the statement of research interests. A faculty member will be asked to act as a mentor for the applicant based on the statement of interests and, if necessary, a personal interview. Through this process, the student's interests will be matched to the expertise available within the faculty. Moreover, the mentor may also be able to offer the student financial support if a stipend is not available. Students whose interests do not correspond to those of a particular faculty mentor, and have not identified a faculty member willing to serve as a mentor, will not be admitted into the Ph.D. degree program in marine sciences.

Application for admission to the program can be found <https://universityofsouthalabama2022.liasoncas.com/applicant-ux/#/login>

### Fellowships And Assistantships

The School of Marine and Environmental Sciences offers at-large fellowships to Ph.D. students annually on a competitive basis. In addition, there are a variable number of doctoral assistantships that are sponsored by externally funded grants and contracts to faculty. The current stipend for Ph.D. fellowships is \$20,000 per year plus a tuition fellowship and waiver of out-of-

state fees. Prospective students must submit applications by February 1 to receive consideration for departmental fellowships. Information about assistantships is available from the Office of the Dean of the Graduate School, Administration Building Room 340, University of South Alabama, Mobile, AL 36688-0002.

### **Degree Requirements**

The Doctor of Philosophy degree is awarded in recognition of the student's demonstrated ability to conduct original, scholarly research at the highest levels without extensive supervision. The degree is not granted upon completion of a stated amount of course work, but rather after demonstration by the student of a comprehensive knowledge and research capability in a specialized field of study. The student must demonstrate this ability in writing and by defending a dissertation based upon the results of an original investigation.

### **General**

#### **Required Credit**

A minimum of 60 semester hours of approved graduate credit is required. Details about the curriculum are given below.

#### **Transfer Credit**

Graduate courses taken at another accredited university, such as for students with MS degrees in the same (or a closely related) subject as that of the Ph.D. program, may be considered in the Ph.D. plan of study up to a maximum of 30 semester hours. Only grades of "A" or "B" may be accepted as transfer credit. The student's mentor, in consultation with the Chair, and if necessary, the advisory committee, will evaluate transfer credit and the transfer credit is then approved by the Dean of the Graduate School.

#### **Residence, Full-time Study, And Continuous Registration**

A minimum of two consecutive semesters of full-time study in residence is required. The residency requirement may be met at USA or the Dauphin Island Sea Lab.

Employment other than University activities directly associated with graduate study is not allowed during full-time study, unless specifically approved by the Chair.

#### **Time Limit**

All requirements for the Ph.D. degree must be completed within five years from the date of matriculation. A student who has not satisfactorily completed a dissertation in a five-year period must apply for a defined extension to complete the degree. This request must be recommended by the major professor, the Chair of the Department, the Director of Graduate Studies, and approved by the Dean of the Graduate School.

If the student does not complete the degree requirements in the defined extension period, the Director of the Graduate Program may recommend and the Dean of the Graduate School may take whatever action is necessary up to and including dismissal.

The comprehensive examination must be passed within three years of the beginning of doctoral study, or within four years if the student entered with a master's degree in the same or a closely related field.

Failure to complete the work within the periods specified shall necessitate reevaluation of the student's program and may result in a recommendation for dismissal by the Director of Graduate Studies to the Graduate Dean.

### **Course Requirements**

#### **Core Courses**

A field of specialization is required of all candidates for the Ph.D. degree. All students must have formal course work in the core marine science subdisciplines. This requirement is normally met by completion of two (2) core courses (see below) and seminar, representing ten (10) credit hours.

The two (2) core courses consist of four (4) semester hours each for a total of 8 semester hours in physical (MAS 601), and chemical (MAS 602), or equivalent transfer courses.

#### **Other Required Courses**

At least 44 semester hours in courses beyond the baccalaureate degree are required in addition to the core courses, at least half of which must be taken in formal courses exclusive of directed studies or directed research. No more than 18 hours of dual-listed courses (400- and 500- level listing for the same course) may be counted toward meeting the minimum hours required for a degree. Graduate students will only receive graduate credit for the 500 level version of dual-listed courses.

At least 12 semester hours of dissertation course credit is required. Not more than 15 hours in this category can be counted toward the minimum requirement of 60 semester hours.

Two (2) semester hours of seminar (two, one (1) semester hour enrollments) are required.

Schematic of Typical Program	Credit Hours
Core Courses (2)	16
MAS 601	4
MAS 602	4
Seminar (two enrollments)	2
Marine Science Electives at least 31	31
Directed Studies	8 (maximum)
Dissertation (1-5 per semester) 15 (maximum) at least 12	12

### Comprehensive Examinations

Written and oral examinations in marine sciences are required of all students seeking the Ph.D. degree in marine sciences. These examinations are given after at least two full years but before five full years of graduate study are completed. The written comprehensive examination is taken first and normally is more general in scope than the oral comprehensive examination. The examinations may be taken no more than twice.

### Candidacy

A doctoral student is admitted to candidacy upon passing both the written and oral comprehensive examinations and after completing all formal course work requirements. The doctoral candidate is a student who has fulfilled all preliminary requirements for the Ph.D. and has only completion of the dissertation research as the remaining requirement.

### Defense Of Dissertation

The final oral defense of the dissertation is scheduled after the dissertation is completed except for such revisions as may be necessary as a result of the defense. The final oral defense will not be given earlier than one semester after admission to candidacy and not before all required course work has been completed or is currently in progress.

## Department Information

[School of Marine and Environmental Sciences website](http://www.southalabama.edu/colleges/artsandsci/marinesciences)  
<http://www.southalabama.edu/colleges/artsandsci/marinesciences>

### Undergraduate Minor In Marine Sciences

Seventy percent of the Earth's surface is occupied by oceans. This dominance means that oceans exert a major influence on atmospheric dynamics and terrestrial ecology. The societal and economic importance of healthy ocean ecosystems cannot be overstated or ignored. The School of Marine and Environmental Sciences welcomes qualified students who wish to better focus their academic training towards oceanography and marine biology. The undergraduate minor in marine sciences is designed to complement many science and non-science majors offered at USA. Ocean-related science is relevant to many contemporary environmental issues and problems and central to understanding earth-system evolution, dynamics, climate and sustainability.

The minor consists of courses and research opportunities offered primarily by faculty and researchers in the School of Marine and Environmental Sciences and the Dauphin Island Sea Lab.

Requirements for a Minor in Marine Sciences include a minimum of 18 hours in Marine Sciences related classes. The student must take MAS 134 Ocean Science, MAS 134L Ocean Science Lab, MAS 331 Marine Sciences I and MAS 332 Marine Science II. In addition to these core requirements, students must take 2-3 elective courses (MAS 371, MAS 367, MAS 430, MAS 451, MAS 471, MAS 475 or other electives approved by the Chair). Up to 6 hours required by a student's major may be applied toward the minor. The Marine Science minor places a strong emphasis on a rigorous natural science foundation; thus, several

of the upper division courses related to the minor have prerequisites. Students planning the minor should check catalog course descriptions carefully and should meet with advising staff in the Marine Science Program office.

### **Bachelor Of Science (B.S.) In Marine Sciences**

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The School of Marine & Environmental Sciences offers a Bachelors in Marine Sciences to address society's growth need for specialized understanding of the marine environment. This program is designed to prepare students for tackling challenges and opportunities presented by the "Blue Economy". The "Blue Economy " encompasses a broad range of job opportunities related to the marine environment allowing graduates to pursue careers in government, academic, commercial and industrial settings. The degree program takes advantage of the location of the University South Alabama as well as its partnership with the Dauphin Island Sea Lab , DISL, to provide a unique educational experience as well as experiential learning opportunities. This degree program takes advantage of the location of the University South Alabama as well as its partnership with the Dauphin Island Sea Lab , DISL, to provide a unique educational experience as well as experiential learning opportunities. These institutional locations give students direct access to the natural marine laboratories of the Mobile Tensaw Delta, Mobile Bay, and the Gulf of Mexico where students will be immersed in all things marine! A cornerstone of this program is the Semester by the Sea at DISL where students in this program will spend their spring semester of junior or senior year taking coursework at DISL with the option of living in residence at DISL.

#### **Core Courses**

The Marine Science core courses are as follows: MAS 134 and MAS 134L Introduction to Ocean Sciences, MAS 331 and MAS 331L Marine Sciences I: Geological & Physical Oceanography, MAS 332 and MAS 332L Marine Science II: Chemical & Biological Oceanography, Dauphin Island Sea Lab Summer Course Electives (e.g. Shark and Ray Biology, Marine Technical Methods, Marine Vertebrate Zoology, Marine Invertebrate Zoology, and more), and courses in residence at DISL during the spring semester of a student's junior or senior year: Marine Operations and Research (Capstone Course), Marine Geology, Marine Ecology, and Field and Lab Measurements in Marine Science.

### **Bachelor Of Science (B.S.) In Environmental And Sustainability Sciences**

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The School of Marine & Environmental Sciences, SOMES, offers a Bachelor's program in Environmental Science & Sustainability to address the need for a broad understanding of the natural world and its interaction with the demands of human development.

A fundamental component of environmental science is its interdisciplinary essence and how this integrative approach can be used to develop mutually beneficial solutions to some of society's most pressing challenges. The Environmental Science & Sustainability degree program is designed to provide a foundational knowledge base coupled with specialized skills so that students will be able to immediately begin addressing environmental issues in sustainable ways. A major goal of this program is to provide a workforce that will be trained to address the inevitable environmental pressures that coastal communities are, and will be, facing as global warming continues to accelerate. Students that complete the undergraduate degree program will be prepared to conduct analysis and mitigation of environmental problems in a range of fields (e.g. sustainability, renewable energy, conservation, agriculture, urban planning and development, natural resource management, education, environmental toxicology, etc.) and employers (e.g. environmental consulting firms, health and safety field (HAZMAT), non profit agencies, research labs, education and outreach, government agencies: AL Department of Environmental Management, EPA, Fish and Wildlife Service, Bureau of Land Management, Forest Service, etc.).

#### **Core Courses**

Students will take the following course courses: ENV 337 and ENV 337L Environmental Science I, ENV 338 and ENV 338L Environmental Science II, ENV 339 Climate Change, ENV 340 Fundamentals of Environmental Toxicology & Chemistry, ENV 334 and ENV 334L Environmental Monitoring and Assessment, ENV 335 and ENV 335L Environmental Conservation & Sustainability, GY 425 Hydrology, GIT 460 Intro to Geographic Information Technology, and BEO 410 Biogeography.

### **Master Of Science (M.S.) In Marine Sciences**

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The Master of Science (M.S.) Program in marine sciences is designed to train and prepare superior students for a career in this field. The marine sciences program offers courses and opportunities for research in four main areas: biological, chemical, physical, and geological oceanography. Each M.S. student receives formal training in at least three of these disciplines while concentrating in a specific research area. Thus, the program is structured to develop the capacity for productive and innovative research, founded on a solid background of broad scientific knowledge. The requirements and procedures that follow are specifically for the Department of Marine Sciences. However, the general rules and policies of the Graduate School also apply.

### Minimum Requirements For Admission

Application before January 15 is encouraged; beginning February 1, the admission committee will make initial recommendations about applicants for the following Fall class, with formal letters sent to applicants by the end of April. Although students are normally admitted in the Fall Semester, depending on availability of space and funding, applications may be approved and students admitted throughout the year. In addition to the general admissions requirements of the Graduate School, minimal requirements for admission in full standing to the Marine Sciences M.S. Program are:

1. A baccalaureate degree in marine sciences or in a discipline related to marine sciences (e.g., biology, chemistry, geology, physics) from an accredited four year college or university
2. Applicants to graduate programs in Arts and Sciences typically have a minimum GPA of at least a 3.0 on all undergraduate work. In exceptional cases, applicants may be considered with at least a 2.5 GPA on all undergraduate work, or at least a 2.75 GPA on the last 60 hours of undergraduate work.
3. A minimum score of 300 combined on the verbal and quantitative subtests of the Graduate Record Exam (GRE)

The applicant will be required to submit:

1. A completed application including a statement indicating the student's interests and professional goals
2. Official transcripts from all undergraduate institutions attended
3. Three letters of recommendation
4. Official scores from the Graduate Record Exam (General Test)

Assessment of credentials will be supplemented by evaluation of letters of recommendation and the educational background of the student. Foreign applicants will be required to pass the TOEFL exam with a score of 71 or greater, or equivalent score on computer administered tests.

To insure compatibility between the student's research interests and the faculty expertise in the School of Marine and Environmental Sciences, particular attention will be given to the statements of research interests. A faculty member will be asked to act as a "mentor" for the applicant based on the statement of interest and, if necessary, a personal interview. Through this process the student's interests will be matched to the expertise available within the faculty. Moreover, the mentor also may be able to offer the student financial support if a departmental stipend is not available. Students whose interests do not correspond to those of a faculty member and/or have not identified a faculty willing to serve as a mentor, will not be admitted into the M.S. degree program in marine sciences.

Application for admission can be found at <https://universityofsouthalabama2022.liasoncas.com/applicant-ux/#/login>

### Fellowships And Assistantships

The School of Marine and Environmental Sciences offers a variable number of research assistantships that are sponsored by externally funded grants and contracts. The current stipend for M.S. students is \$17,000 per year. Additional funding for tuition fellowship may also be available through extramural grants. Information about assistantships is available from the Office of the Dean of the Graduate School, Administration Building Room 340, University of South Alabama, Mobile, AL 36688-0002.

### Master Of Science (M.S.) In Marine Conservation And Resource Management

The M.S. in Marine Conservation and Resource Management is designed to provide a formal course of training and professional development in the marine sciences that will enable students to contribute to the sustainable management of marine resources.

The program does not require thesis research, but instead offers professional development through group projects and professional internships with government agencies, NGOs, and environmental consulting firms. The curriculum and other requirements can accommodate students currently in the workforce.

### Minimum Requirements For Admission

Applications for Fall admission are due by April 15 of each year. Enrollment normally begins in the fall semester; however spring admissions will be considered on a case by case situation. In addition to the general admissions requirements of the Graduate School, minimal requirements for admission in full standing to the M.S. Program in Marine Conservation and Resource Management are:

1. A baccalaureate degree in a discipline related to marine sciences (e.g., biology, chemistry, geology, physics, and engineering) or conservation biology (economics, sociology) from an accredited four year college or university
2. Applicants to graduate programs in Arts and Sciences typically have a minimum GPA of at least a 3.0 on all undergraduate work. In exceptional cases, applicants may be considered with at least a 2.5 GPA on all undergraduate work, or at least a 2.75 GPA on the last 60 hours of undergraduate work.

3. A minimum score of 300 combined on the verbal and quantitative subtests of the Graduate Record Exam (GRE)

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## Doctor Of Philosophy (Ph.D.) Program

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4. For students with M.S. degrees:
  - a. An M.S. degree in a discipline related to marine sciences (e.g., biology, chemistry, geology, physics) from an accredited college or university
  - b. A graduate minimum grade-point average of 3.00 overall (A=4)
5. International students must submit an official score of at least 71 on the Test of English as a Foreign Language (TOEFL), or equivalent score on computer administered tests

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