

PROPOSAL FOR AN EXTERNAL DEGREE

Date: September 1, 2020

Department/Division: Marine Sciences

School/College: Franklin College of Arts and Sciences

Program (Major and Degree): Marine Sciences (M.S.)
Marine Sciences (M.S., Non-Thesis)
Marine Sciences (Ph.D.)

Which campus(es) will offer this program? Skidaway Institute of Oceanography, Savannah GA

Will any approved areas of emphasis be offered under this major? No

Proposed Effective Date: Spring 2021

1. Assessment

The Department of Marine Sciences within Franklin College at UGA has offered the major in Marine Sciences under the Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) since 1995. In 2013, the Skidaway Institute of Oceanography was merged into UGA. Skidaway Institute faculty became part of the Department and began teaching and advising graduate students in their existing program. The Marine Sciences program receives approximately 30 highly qualified graduate student applications each year and on average 10 students are accepted into the program. Acceptance is dependent on providing an excellent match between students and faculty. Skidaway Institute faculty conduct research in areas of physics, chemistry, biology, and geology of the oceans, and there is strong interest from graduate students to conduct their M.S. thesis or Ph.D. dissertation work with these faculty. Skidaway Institute, located on the coast of Georgia, is an attractive home base for graduate students to gain research-based instruction working under the direction of Skidaway-based Marine Science faculty. Potential students from Georgia express a strong desire to remain in the state or region after their training to address local marine environmental problems and the development of Georgia's marine resources.

The Skidaway Institute provides Georgia with a nationally and internationally recognized center for research, educational, and service excellence in marine science. This is achieved through the development of strong programs across a broad range of sub-disciplines, ranging from global processes and phenomena to local economic and environmental issues. Its faculty hold tenured or tenure-track appointments at the University of Georgia in the Department of Marine Sciences and serve as mentors, advisors, and educators of undergraduate and graduate students. For the past 50 years, the Institute has demonstrated effectiveness at the international, national, and state level in producing world-class research, training tomorrow's scientists and citizens, and serving as a reliable and ready resource to coastal stakeholders.

Since its establishment in 1968, the Institute has had a long and distinguished track record by its faculty of world class oceanographic research at an international level. In its first two decades, interdisciplinary studies funded by the Department of Energy focused on the virtually unknown ecological systems of the continental shelf of the Southeastern United States. The interdisciplinary inclination and nature of the research conducted at the Institute endures, although increasing competition for research dollars at the federal level has made this goal harder to achieve. As a rule, faculty are sea-going scientists who use

large and small vessels operated by both the Institute and other institutions to conduct their research. Current disciplines represented at the Institute include biological oceanography (4 faculty), chemical oceanography (3 faculty), physical oceanography (2 faculty), and geological oceanography (1 faculty). The chemical and biological sciences have always been dominant at the Skidaway Institute. Two faculty members were awarded Sloan Fellowships, which recognize outstanding potential in research; out of approximately 125 awards each year, only 8 were awarded in Ocean Sciences in 2019, and UGA faculty in all disciplines have only won this award 14 times since its inception in 1958. The faculty continue to pursue fundamental and applied research questions to create new knowledge and actively provide science to critical needs in management of the coastal environment.

2. Admission Requirements

Graduate admission to the University of Georgia is a collaborative process involving the Graduate School and the graduate faculty of UGA. The Department of Marine Sciences has a designated Graduate Coordinator who serves as a liaison between the department and the Graduate School and provides detailed information about program entry requirements, resources, and special opportunities.

Persons seeking admission to the University of Georgia Graduate School must hold a baccalaureate degree from an institution accredited by the appropriate regional accrediting association or its international equivalent prior to the expected semester of matriculation, with the exception of University of Georgia undergraduate students enrolled in linked bachelor's/master's programs. Applicants should be ranked in the upper half of their undergraduate class. Applicants are responsible for submitting application materials required for admission. These items include, but are not limited to, the following: (1) on-line application for admission; (2) application processing fee; (3) transcripts; (4) foreign student credentials and language scores (e.g., TOEFL); (4) three letters of recommendation; (5) CV and statement of interest; and (6) supplemental material required by the department.

Application materials are reviewed by the Graduate School and the Department of Marine Sciences Graduate Affairs Committee. The Graduate School reviews the department's recommendation and makes the final determination on acceptance. Applicants must be admitted to the Graduate School before they are eligible to register. Official acceptance is conveyed to the applicant in a formal letter issued by the Office of Graduate Admissions. Admission is granted for a specific semester and is validated by registration for that semester.

The Department does not require any minimum scores on standardized tests or grade point averages required for admission into the program, but the University of Georgia Graduate School admission criteria will apply to these degree programs. The Graduate Affairs Committee of the Department of Marine Sciences screens applicants for: (1) strong letters of recommendation; (2) rigorous undergraduate course work in areas of life and physical sciences and engineering; (3) internship experiences; and (4) student interests that fit with faculty research.

3. Program Content

The Department of Marine Sciences offers graduate degree programs at the M.S. and Ph.D. levels. Applicants should have a B.S. or M.S. in marine science or in an appropriate related basic scientific discipline. All students at the Skidaway Institute of Oceanography follow the same curriculum as students on the Athens campus.

M.S. Thesis Program

The M.S. program is research-based and is designed to prepare the student for further graduate training at the doctoral level or for employment in management, policy, or technical positions in government or industry.

The M.S. Thesis program requires a minimum of 30 hours of graduate-level credit, of which 9 must consist of core courses in Biological Oceanographic Processes (MARS 8010), Chemical Oceanography (MARS 8020), and General Physical Oceanography (MARS 8030). Additional graduate courses from Marine Sciences and other departments are available to complete each student's program. Students will conduct an independent research project and submit and defend a thesis.

M.S. Non-Thesis Program

The M.S. non-thesis program requires a minimum of 30 hours of graduate-level credit, of which 9 must consist of core courses in Biological Oceanographic Processes (MARS 8010), Chemical Oceanography (MARS 8020), and General Physical Oceanography (MARS 8030). Additional graduate courses from Marine Sciences and other departments are available to complete each student's program. In lieu of a research project and thesis, students will be required to participate in an internship or data analysis project that requires a written and oral presentation of the work.

Ph.D. Program

Students develop a program of study in biological, chemical, geological, or physical oceanography. Typical areas of research emphasis include marine biogeochemistry, coastal ecology, coastal ocean processes, coastal geology, microbial ecology, marine ecosystem modeling, and polar microbiology.

The Ph.D. requires a minimum of 30 hours of graduate-level credit, of which 9 must consist of core courses in Biological Oceanographic Processes (MARS 8010), Chemical Oceanography (MARS 8020), and General Physical Oceanography (MARS 8030). Additional graduate courses from Marine Sciences and other departments are available to complete each student's program. Students will also acquire field experience by participation in at least one major oceanographic cruise and one extended shore-based study. Students are also required to obtain teaching experience by participating as a Teaching Assistant for at least one semester or by taking MARS 7360 (Teaching Internship in Marine Sciences) under the direction of a faculty mentor. Students will design and conduct an independent research project, take the candidacy written and oral exams, and submit and defend a dissertation.

Double Dawgs

Students can now earn a B.S. in Biology and an M.S. (non-thesis) through the Double Dawgs program. This is intended for those students who have a strong interest in pursuing careers related to biological aspects of the marine environment. This program will provide students with the knowledge and quantitative skills necessary to participate in a range of environment- and marine-related fields.

4. Student Advising

The Department of Marine Sciences has a Student Affairs Professional who works with students and faculty on collecting annual progress reports in order to make sure students are on track for completion of their degrees. All Ph.D. and M.S. students in the department have a Marine Sciences faculty advisor providing oversight of their program of study. Further, students are provided with advice and oversight by an M.S. thesis advisory committee consisting of two members and a Ph.D. dissertation committee of four members. Each student is also encouraged to select a faculty mentor, independent of their research project, who can provide support and guidance on resources available to students.

5. Resident Requirements

Resident requirements will be identical to those on the Athens campus.

6. Program Management

The M.S. and Ph.D. degrees in Marine Sciences offered on the Skidaway Institute campus are the same programs offered on the Athens campus. All Skidaway Institute faculty are faculty in the Marine Sciences department; faculty recruit students and manage the graduate program collaboratively and as a single entity. The oversight of the program is done collaboratively between the Marine Sciences Department Head, the Institute Director, and the Graduate Coordinator.

All academic programs are reviewed annually to assess student learning outcomes and program outcomes. This program will be also be subject to a Comprehensive Program Review at 7-year intervals as mandated by the USG Board of Regents for all academic programs (*Board of Regents Policy 3.6.3 Comprehensive Program Review*). The program review process includes a thorough self-study by the unit under review and an evaluation by a team of faculty external to the unit, leading to a report with recommendations that inform program and unit decision making; a follow-up with administrators responsible for the unit occurs after one year of receiving program recommendations. Included in the comprehensive review of the program will be:

- Yearly collection of student learning outcomes data
- Review and analysis of the data
- Quantitative assessment of the overall program quality
- Using assessment results to make recommendations for program improvement

The Department of Marine Sciences has developed direct and indirect student learning outcomes for its graduate program, and a process is in place that explains what is measured, how it will be measured, when the assessment will occur, who is responsible for the assessment activities, and how the assessment information will be used to improve the program.

7. Library and Laboratory Resources

The University of Georgia has 15 libraries available to students on the Athens campus. The university library offers many online services dedicated to support students. All online services and digital resources provided on the main campus, including access to the special collections, are available to students at Skidaway. This includes the ability to have books shipped to the Skidaway campus through UGA and the entire university system through Interlibrary Loan (ILL). Books usually arrive within 2-3 days.

Skidaway Institute of Oceanography has a newly renovated Historic Cattle Barn, with new research, education, and outreach space that will include a large teaching lab that can accommodate 20 students, two high-tech classrooms with distance learning technology that can accommodate 20 students each, several offices, and science exhibition spaces. This renovation was accomplished with \$3M in funding from the state legislature; to assure that these spaces meet the needs of on-campus educational activities, Skidaway Institute has contributed \$200,000 to the project in addition to those funds. Construction began December 2018, and the building was dedicated in October 2019.

Skidaway Institute operates a small fleet of research vessels, ranging from small skiffs suitable for inshore work, up to the 92-foot ocean-going Research Vessel (RV) Savannah, which operates primarily in shelf waters from Chesapeake Bay to the Gulf of Mexico. All of these vessels play an important part in supporting experiential and research-based learning. The program will typically make use of small boats to get students out into the field for educational purposes. When a larger platform is needed for more advanced or capstone courses, Skidaway Institute was awarded an enhancement to their base budget in FY2019 to provide ship days for UGA experiential learning. These ship days will be available on a competitive basis when appropriate courses are offered. Each year the faculty plan to submit a proposal for at least two of these days so students can experience an overnight stay out on the ocean and measurements can be made over a number of tidal cycles. Skidaway Institute also has on-campus housing that can accommodate students for coastal research over days to weeks, or for years, while pursuing their graduate program on-site. Skidaway Institute faculty regularly offer undergraduate summer internships and research opportunities in their laboratories, providing to graduate students a near-peer opportunity for mentoring activities.

The Skidaway Institute has a long track record of having an excellent, reliable, state-of-the-art network upon which the on-campus research community can build, provided by an on-site staff member who provides IT systems and networking services. Capabilities are at a historically high level now that the Skidaway Institute has merged with UGA and has access to EITS resources. EITS leadership has been an excellent partner and continues to work collaboratively with us to improve our information technology capabilities. Recently implemented projects include a VOIP phone system installation and configuration, fiber network infrastructure upgrades for faster, more reliable connections to the internet, and data storage capability expansions.

8. Budget

Skidaway Institute's main revenue streams are from a research allocation from the state legislature of approximately \$3.0 million per year and from research grants, which bring in \$2-3 million annually, with the bulk of support from NSF, NOAA, and other federal agencies. These funds provide graduate stipends for graduate students to train under Skidaway-based faculty and support individual faculty research programs. The faculty conduct cutting edge research and graduate education with in-classroom instruction, associated with laboratory and field-based research experiences. Thus, the Institute has total expenditures of between \$5-6 million dollars per year on research and instruction. These funds have successfully carried the program forward since Skidaway Institute was merged with UGA in 2013 and will continue to do so into the foreseeable future. No interruption of these funding streams is anticipated.

All faculty resources needed for the program are pre-existing. The existing faculty members from Marine Sciences in Athens and at Skidaway Institute are more than adequate to fulfill the instructional needs in the proposed program. In some cases, the equivalent full time (EFT) for teaching for faculty at Skidaway Institute (currently ranging from 0 to 15%) will need to be shifted slightly from research to teaching to reflect increased teaching responsibilities. Skidaway-based faculty have 9-month academic, tenured or tenure-track, faculty appointments.

9. Program Costs Assessed to Students

Students enrolled in the program are charged UGA's standard tuition rate for master's and Ph.D. candidates.

10. Accreditation

No outside accreditation is needed or anticipated.