



Savannah State University

College of Sciences and Technology

Department of Marine and Environmental Sciences



Graduate Student Handbook

Master of Science in Marine Sciences

2018

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Cover: Graduates Jennifer Gut, Johnny Moore, [unknown non-SSU student], Catherine Carroll, Matthew Hunnewell, Brandon Coleman, with Ashton Arnold, BSMS alumni Terry Anderson and Kamilya Daniels with MSMS graduate Chelsea Parrish and Dontrece Smith.

How to Use This Handbook

This guide is the binding set of guidelines for matriculating as a master's student in the Department of Marine and Environmental Sciences. It describes the principles and practices of the thesis-driven process within the degree program. Use it as roadmap to your success from your initial application to your final convocation. The faculty and professional staff are all committed to your success and will assist you in any way they can.



Graduate Jeremy Mitchler casting a throw trap from the floating dock.

History

The Master of Science in Marine Sciences (MSMS) Program is a graduate degree program located within the Department of Marine and Environmental Sciences (MESC) and the College of Science and Technology (COST) at Savannah State University. It is under the authority of the Office of Graduate Studies. The MSMS program was established in 2001 as a natural outgrowth of the highly-successful Bachelor of Science in Marine Biology degree program (1979-1996) that grew into the interdisciplinary Bachelor of Science in Marine Sciences Program (1996-present).

Philosophy and Administrative Structure

The program emphasizes one-on-one mentorship between the advisor and the student. The greatest strides in academic achievement are made within this relationship. Within this relationship are also the greatest challenges. Students are encouraged to establish clear, productive, communication with their advisors and their committee. If obstacles appear, students should contact the program coordinator to address them. If this is not successful, the program coordinator and/or the student will direct the matter to the department chairperson.

Challenges that are not resolved at this level may be directed to the Dean of the College of Science and Technology, the University Graduate Studies Director, Associate Provost, and Provost, in that successive order. A directory of these individuals is found in the appendix of this manual.

The MSMS Program works diligently to build a sense of camaraderie among its faculty, staff, and students. The program personnel work very hard to provide for the professional needs of its students; it is a hallmark of our 17 year history.

Thesis-based Degree

The degree program is thesis-based, which means that students are required to complete their curriculum requirements as well as complete an original research-based thesis document (see page 19) under the guidance of a thesis research advisor and advisory committee (see page 16) that must be defended publicly (see page 21).

Program Structure

All SSU MES faculty within the program may teach graduate-level courses. Marine and Environmental Sciences faculty are listed in Appendix B. Courses are listed in Appendix D. Those who have applied for and acquired graduate faculty status may serve on thesis committees. SSU graduate faculty within the MES program may also serve as thesis advisors. Adjunct or non-SSU faculty with affiliations with the graduate program may serve on thesis committees or as research advisors with the approval of the MSMS Program Coordinator. All policies in this handbook are supervised by the MSMS Program Coordinator with oversight by the Chair of the Department of Marine and Environmental Sciences and the Director of Graduate Studies, in that order. Institutional supervision

beyond that of the Office of Graduate Studies resides with the Provost and Vice President of Academic Affairs in the Office of Academic Affairs.

I. Checklist of Major Steps to Earn the Degree

Pre-admission

- Consider the type of research you would like to do and the career you would like to pursue. Contact the MES professor best aligned with your interests and set up a meeting.
- Complete the graduate program application. Succinctly, but specifically include as much information about your interests, goals, and potential advisor as you can.
- Apply. **Deadline: March 15**

What is next?

1. The Graduate Program will confirm that your application is complete.
2. The MSMS Admissions committee will receive your application to review AFTER it is complete.
3. The committee will make a recommendation to the M.S. program chair and MES Department head. They will document their recommendations and send an admit, provisionally admit, or deny form to the Graduate Studies Office.
4. The Graduate Studies Office will send each applicant a letter that states their admission status.

Post-admission

- Meet with your advisor. Obtain an advisor if you do not have one.
- If you are provisionally admitted, be sure to submit the [Provisional Status Academic Progress form](#) to the department chair by the **2nd Monday of December (Fall admitted students) or May (Spring admitted students)**. Other requirements are listed later in this document.
- Have your advisor or the program coordinator advise you on coursework (repeat each semester until graduation). Send a copy of your registration bill to your funder if you have a fellowship.
- Get familiar with the program policies (<http://www.savannahstate.edu/cost/nat-science/marine-sci-policies.shtml>). Complete the [Liability Release form](#).
- Submit [Thesis Advisor Form](#) **Deadline: 1st Monday of November (Fall admissions) 1st Monday of April (Spring admissions)**
- Select at least two other committee members. Two members of your committee must be MES faculty. This usually includes the thesis advisor. However, a research advisor may be selected from other approved institutions with approval from the M.S. program coordinator.

- Submit [Thesis Committee Form](#) **Deadline: 1st Monday of March Fall admissions) 1st Monday of September (Spring admissions)**

Matriculation

- Have regular meetings with your advisor and periodic meeting(s) w/committee for guidance.
- Write a thesis proposal. Meet with committee members to present/submit thesis proposal and curriculum plan. When you are approved to defend, submit the [Thesis Proposal Defense and Candidacy Qualification Form](#) to MES department chair. **Deadline: 1st Monday of May (Fall admissions) 1st Monday of December (Spring admissions)**
- Conduct research, do analysis, write thesis chapters and manuscripts.
- When you are close to completion, submit a signed final [Application for Admission to Candidacy Form](#) to Office of Graduate Studies and submit an [Application for Graduation](#) to the Registrar's Office. **Deadline: At least one semester prior to the graduation semester.** This includes a graduation fee due to the Cashier's office.
- Order fitted cap and gown at the college bookstore.
- Determine tentative thesis defense date. A thesis date reservation can be made with the program coordinator with advisor approval. A reservation does not indicate permission to defend.
- Have your advisor, and then your committee, review written drafts of your work until you have permission to defend. When you are approved to defend, submit the [Preliminary Thesis Approval and Permission to Defend Form](#)
- Penultimate draft of the thesis must be submitted to thesis committee members **Deadline: no later than three (3) weeks prior to the scheduled thesis defense date unless the committee unanimously agrees to a shorter period.** It should meet the guidelines of the most recent [SSU Graduate Thesis Guide](#), begin with the [Thesis Pages](#) as listed on the Marine Sciences webpage page, and the style defined by your advisor/committee
- Defend your thesis with a public presentation and a closed committee meeting. Publicize the seminar using the [Thesis Defense Flyer](#) example, **No later than 4 weeks prior to the date graduating students' grades are due in the registrar's office (see academic calendar)**
- Submit a signed [Thesis Defense Report Form](#) to the MES department chair and Director of Graduate Studies immediately after the defense.
- Upload the thesis document. Unless you request otherwise, your thesis will be published online only. This is the requirement for the program. Hard copies may be ordered using the Library Thesis Binding Request Form. http://library.savannahstate.edu/forms/thesis_request_form.pdf
- Be awarded the degree by the President (usually the second Saturday in May or December)

II. Application Requirements

A complete application for admission to the graduate program in Marine Sciences consists of a completed application form, a statement of purpose (500-1000 words), two official copies of all transcripts or date they were requested, official Graduate Record Exam (GRE) scores, three letters of recommendation (enclosed in sealed envelopes), and Certificate of Immunization for students who plan to reside on campus.

a. Admissions

Regular Admission

Applicants may be granted regular admission provided they have met the following minimum degree program requirements:

- An undergraduate degree from an accredited college on file in the Office of Graduate Studies and Sponsored Research
- An acceptable grade point average (3.0 preferred, 2.5 minimum*)
- Acceptable combined Verbal + Quantitative scores equal to or greater than 300; Writing equal to or greater than 3
- Coursework that is aligned with intended thesis and that includes Calculus I

A student may be granted regular admission with deficiencies. Deficiencies must be addressed and resolved within the period specified in the acceptance letter.

*MSMS Admissions Committee evaluates all scores (GRE, GPA, letters of recommendation, essay) in admission decisions.

Provisional Admission

Applicants who do not meet the requirements for regular admission may be considered for provisional admission. Provisionally-admitted students are allowed to take a total of up to nine hours of graduate credit. If requirements for full admission are met prior to the completion of 9-credit hours and the student has demonstrated progress in their thesis research, the Provisional Status Review Committee can recommend full admittance before 9-credit hours have been earned. If requirements for full admission have not been met and/or significant progress in thesis research has not been demonstrated by the time 9-credit hours have been received, the Provisional Status Review Committee can recommend removal of the student from the program.

Provisional Status Review Committee

The Provisional Status Review Committee is comprised of three MSMS faculty members. Committee members serve for two years. If there is a conflict of interest (for example, if a committee member is the advisor or advocate of a provisional student under review), then it is the member's responsibility to find a substitute among the MSMS faculty. This substitute must either attend the appropriate portion of the meeting or submit a written evaluation and be available by telephone during the time of the meeting. Students accepted with provisional status will be reviewed every December and May by the Provisional Status Review Committee.

The committee will provide a written assessment/recommendation to each provisional student. Committee findings have the authority to change the funding eligibility status of the student for financial assistance awarded by the department chair or faculty and can also be used to initiate academic termination of the student if significant thesis progress is not made.

Requirements of Provisional Status

The following items are required of students admitted to the MSMS program with provisional status.

1. The student must have a graduate faculty member agree to be his/her major advisor or advocate *prior to admission*. If an advisor is not identified prior to admission, the M.S. program coordinator will serve as faculty advocate for the provisional student in his/her first semester and help in the identification of an appropriate advisor. The advisor is someone who shares the student's scholarly interests, provides assistance in refining thesis topics, and carries out other duties typical of a major advisor. It is the student's responsibility to seek out an advisor or advocate and contact them directly during the application and admission process.
2. The student must obtain a B or better in each core course (listed by track on page 13) and maintain a B overall grade point average.
3. The student must successfully pass (receive a C or better) any undergraduate-level courses deemed necessary by the Admissions Committee prior to completion of his/her first semester in the MSMS program.
4. The student must submit a progress report to the MSMS Program Coordinator by the 2nd Monday of every December and May and the last Monday of July.

5. The student must have his/her advisor submit a 1-page report on his/her thesis progress by the 2nd Monday of every December and May to the MSMS Program Coordinator. This report should include progress on whatever item in their application resulted in their provisional admission as referenced in their admission letter. This report may also include progress in other areas such as library research; thesis development; laboratory and/or field competency; first-hand experience regarding academic performance; acclimation to graduate work, and professional development.
6. If the student was provisionally admitted because of a low GRE score, they must improve GRE results with the aim of obtaining a target score. This typically involves earning a combined verbal and quantitative GRE score equal to or greater than 300; Writing equal to or greater than 3, if deemed necessary by the MSMS Admission Committee. Any student admitted with a GRE score under 300 should retake the GRE prior to the completion of their first semester in the program.

Provisional Student Progress Reports and Committee Review

Progress reports are due to the Provisional Committee Chair on the second Monday of each December and May and on the last Monday of July (if the student is not removed from provisional status in December). In December and May, a full progress report is due. The full progress report consists of two parts: (1) The first part of the report is an academic progress form which documents progress in MSMS courses. The academic progress form will be filled out and submitted to the Provisional Status Review Committee chair by the student. Information requested on the form includes titles of each class taken during the current semester, final course grades, and the signatures of his/her current instructors. If final grades are not yet available, then scores from graded tests, reports, or other class exercises may be submitted instead. (2) The second part of the report is submitted to the Provisional Committee Chair by the student's advisor. This letter should be no more than two pages in length and focuses on progress outside of the classroom, particularly regarding thesis work. Suggested issues to address include: Has a thesis topic been identified? Has a thesis committee been created? Has library research been initiated? Has an appropriate experiment and/or sampling scheme been designed? Have data been collected? Have analyses and/or statistics been completed? How many chapters will the thesis be and what are the titles? How much has been written? Have there been any major obstacles to their progress? If so, what is necessary in order to overcome them?

After all items are received, the Provisional Status Committee Chair convenes the Provisional Status Review Committee and the student record is reviewed. After determining whether the student has addressed the deficiencies that resulted in provisional status, the Provisional Status Review Committee makes

its recommendation by the last Monday of July or January and submits it to the MSMS Program Coordinator and Department Chair.

Mechanisms for Change of Admission Status from Provisional to Regular

Once a provisional student has earned nine credit hours in the MSMS Program, the Provisional Status Review Committee must make a recommendation to the Dean of Graduate Studies and Sponsored Research to either grant full admission to the student or remove the student from the program. See the Provisional Document for details of the progress report contents.

To be removed from provisional status, a student must maintain a B average in all graduate courses taken in the MSMS Program, meet any deficiencies in their admission letter that outlined the reason for provisional status (examples below), and obtain a grade of B or better in all core courses. In addition, the following requirements may apply depending on reasons for admittance with provisional status.

GRE Score

If a student was admitted provisionally due to a GRE score less than the program's target score (combined verbal and quantitative GRE score equal to or greater than 300 and Writing equal to or greater than 3), then the GRE must be retaken, the score improved, and the official scores need to be sent to the Office of Graduate Studies. In addition, provisional students already in the MSMS Program must submit photocopies of the GRE score sheet to the MSMS Program Coordinator. Students who have been accepted into the program, but have not yet begun studies in the MSMS Program, should send a photocopy of the score sheet to the chair of the MSMS Program Coordinator.

Deficiencies in Undergraduate Course Work

Any undergraduate courses recommended by the Admissions Committee must be taken within the first year of study in the MSMS program. It is strongly recommended that undergraduate course deficiencies be made up prior to entrance in the program in order to improve chances of successful and timely completion of graduate courses. If the required courses are taken and passed with a C or better prior to beginning the MSMS Program, the relevant transcripts should be sent to the Office of Graduate Studies to be added to the application file and a photocopy should be sent to the Chair of the MSMS Program Admissions Committee. If the courses are taken and passed with a C or better after studies in the MSMS Program have begun, then copies of the relevant transcripts should be submitted to the MSMS Program Coordinator.

b. Non-degree (Special) Admission

Non-degree seeking students can apply up to 8 semester hours of graduate credit taken at SSU to the MSMS program curriculum requirements if they are admitted to the program. Only 6 semester hours of approved graduate coursework not taken at SSU may be applied to the MSMS program curriculum requirements.

c. Transfer Credits

No more than six semester hours of graduate credit taken at another university or eight semester hours of graduate credit taken as a non-degree student at SSU may be applied toward the MSMS degree. Courses must have been passed with a B or better and must be approved by the students' thesis committee prior to the thesis proposal defense.

III. Orientation

The Marine Science Master's Degree Coordinator or the faculty advisor will provide new students with a copy of the handbook (hard copy or electronic form) no later than the first day of classes of the first semester of enrollment in the program. This handbook includes all of the policies, procedures, forms, and information necessary to complete the degree. Students who have not received the information by this time may request it from the program coordinator.

Students are governed by the course requirements in the version of the handbook published at the time of the admission as well as the SSU graduate catalog. Changes to policies in the handbook are applicable to all students at the time they are published. Electronic forms are on the program website.

IV. Program of Study and Degree Requirements

a. Degree Tracks and the Core Curriculum

All students are required to take the twelve-hour required core curriculum as listed below. This core provides a strong, multi-disciplinary investigation of marine sciences with emphasis on coastal environments. Through seminar, content/knowledge courses, technical writing, and communication courses, students will investigate marine issues and develop professional skills in critical thinking, logical interpretations and professional-quality presentations. With this common core background, the program of study provides three major tracks. Each track, chosen by the student in consultation with an advisor and committee, has specific curriculum requirements as well as options for courses within three curricular areas: a) Policy and Law, b) Research Tools and c) Science.

Track 1: Traditional Marine Science Research

The Traditional Marine Science Research track is designed for students: a) who plan to obtain an M.S. degree in Marine Sciences and continue into a Ph.D. program or b) who wish to obtain a traditional research-based MS degree. Curriculum emphasis in this track is on science and original research.

Track 2: Applied Marine Sciences

The Applied Marine Sciences track is designed for students who wish to obtain an M.S. degree in Marine Sciences which provides them with the opportunity to learn and develop scientific skills applicable to marine science related industries, resource management, fisheries, aquaculture, and research. Curriculum emphasis in this track is on the acquisition of research tools and applied skills.

Track 3: Professional Advancement

Track 3, Professional Advancement, is designed for students who are presently employed in a related field and wish to earn an M.S. degree in Marine Sciences for possible professional development and advancement. Examples of these students are presently employed science teachers, federal, state and local government agency personnel, and persons currently working in industry and the private sector. The curriculum in this track requires the student to take courses from all three curricular areas and allows additional flexibility for additional courses, which are most applicable to his/her particular professional development needs.

Each track requires 30 semester hours of graduate-level coursework in addition to six credit hours of thesis research and preparation. An entering student must have passed an undergraduate-level calculus courses with a grade of 'C' or better or must take such a course, which would not count toward the graduate course requirements. An advisor and an advisory committee will guide each student.

Required Core for all tracks (12 semester hours)

- MSCI 5201** General Oceanography (4)
- MSCI 5202** Introduction to Coastal Oceanography (4)
- MSCI 5401** Technical Writing and Communication (3)
- MSCI 5402** Research/Marine Science Seminar (1)
- MSCI 7991** Thesis I (variable credit)
- MSCI 7992** Thesis II (variable credit)

Track I – Traditional Research: Course Requirements

- MSCI 5560** Advanced Environmetrics
- At least one course from “Policy and Law”
- At least one course from “Research Tools”
- At least two courses from “Science”

Track II – Applied Science: Course Requirements

- MSCI 5560** Advanced Environmetrics
- At least one course from “Policy and Law”
- At least two courses from “Research Tools”
- At least one course from “Science”

Track III – Professional Advancement: Course Requirements

- At least one course from “Policy and Law”
- At least one course from “Research Tools”
- At least one course from “Science”

- MSCI 7991** Thesis I
- MSCI 7992** Thesis II

b. Elective Courses

Elective courses are required to balance the student’s training in the broader marine and oceanic sciences, as well as in policy, management, and technical areas. Each elective course is categorized by the curricular area it satisfies and is listed below.

Policy and Law

- MSCI 6310 Scientific Ethics (3-0-3)
- MSCI 6323 Coastal Law and Policy (3-0-3)
- MSCI 6324 Coastal Zone Management (3-0-3)
- MSCI 7344 Fisheries Management (3-0-3)

Research Tools

- MSCI 5560 Advanced Environmetrics (3-0-3)
MSCI 6542 Fisheries Population Dynamics (3-0-3)
MSCI 6546 Mariculture (2-0-2)
MSCI 6550 Analytical Techniques in Seawater, Sediments and Soils (0-3-3)
MSCI 6552 Marine Biotechnology (3-1-4)
MSCI 6560 Oceanographic Data Methods (3-0-3)
MSCI 6562 Remote Sensing (3-0-3)
MSCI 6572 Advanced Instrumentation (3-0-3)
MSCI 7527 Coastal Environmental Certifications (3-0-3)
MSCI 7564 Geographic Information Systems and Database Management in Coastal Studies (3-1-4)
MSCI

Science

- MSCI 5501 Fish Ecology (3-0-3)
MSCI 6202 Advanced Oceanography (3-0-3)
MSCI 6550 Analytical Techniques in Seawater, Sediments and Soils (0-3-3)
MSCI 6552 Marine Biotechnology (3-1-4)
MSCI 6562 Remote Sensing (3-0-3)
MSCI 6725 Coastal Wetland Ecology (3-0-3)
MSCI 6726 Coastal Botany (3-1-4)
MSCI 6745 Aquatic Pathology (3-1-4)
MSCI 6747 Marine Mammalogy (3-0-3)
MSCI 6781 Benthic Ecology (3-0-3)
MSCI 7527 Coastal Environmental Certifications (3-0-3)
MSCI 7562 Advanced Seminar in Remote Sensing (2-1-3)
MSCI 7660 Oceanic Change (3-0-3)
MSCI 7728 Coastal Processes (3-0-3)
MSCI 7743 Fisheries Oceanography (3-0-3)
MSCI 7754 Marine Biogeochemistry (3-0-3)
MSCI 7782 Marine Microbial Ecology (3-0-3)
MSCI 7783 Water Column Ecology (3-0-3)

Other Courses

- MSCI 7801 Directed Research (0-(1-3)-(1-3))
MSCI 7851 Special Topics ((1-3)-0-(1-3))

C. Grade Requirements and Qualifying Examinations

1. Scholastic Warning/Academic Probation

A regularly admitted graduate student whose GPA falls below 3.0 (on a 4.0 scale) within a semester will receive a letter of scholastic warning from the University placing the student on Academic Probation.

2. Academic Termination

The following are grounds for Academic Termination from the graduate program:

- A provisionally-admitted student fails to achieve a 3.0 GPA after nine semester hours of coursework.
- The Provisional Status Review Committee finds that a provisionally-admitted student fails to make adequate progress toward the degree program requirements
- A regularly-admitted student who is on academic probation fails to achieve a 3.0 GPA after nine additional semester hours of coursework.
- A provisionally or regularly admitted student fails to obtain a faculty advisor or form a thesis committee. See the requirements for advisors on page 15.

NOTE: With the exception of core courses and students who have provisional status, the number of Cs a student earns during their course is irrelevant as long as a cumulative 3.0 GPA is maintained.

All students in the MSMS Program are expected to complete the four core courses (listed below) with a grade of B or better.

MSMS Core Courses:

- MSCI 5201 General Oceanography (3-1-4)
MSCI 5202 Introduction to Coastal Oceanography (3-1-4)
MSCI 5401 Technical Writing and Communication (3-0-3)
MSCI 5402 Research/Marine Science Seminar (1-0-1)

Qualifying Examinations

Students who have successfully completed their core coursework are considered qualified to continue matriculating in the M.S. program and ready to pursue their thesis work. Therefore, students who receive grades of B or better in the core

courses need not take a qualifying exam. Such students should, however, be prepared to answer integrative questions on concepts presented in the core courses at their defense in addition to questions specific to their thesis research.

If a student fails to achieve a grade of B or higher in one of the MSMS core courses, he/she must immediately notify the thesis advisor and the MSMS Program Coordinator. Students only qualify for a test out option if they receive a final C grade. Final Grades of D or F do not qualify for testing out. If a student receives a D or F he/she must retake the course. Where a C grade is present, the student must decide whether they will test out or retake course within 30 days after receiving a deficient grade. The exam must be taken during the next Fall or Spring semester.

The exam should be scheduled no earlier than one month after the receipt of the unsatisfactory grade (< B) to ensure ample preparation time. Based on the schedule of the administering faculty member, the qualifying exam should also be offered well in advance of the start of the semester in which the relevant course(s) will be taught next. The student should notify the instructor within The student works cooperatively with the instructor to schedule the exam and notifies the MSMS Program Coordinator of the date. The exam will be designed and graded by the professor(s) who taught the core course (or the relevant section in the core course) in which unsatisfactory progress was made and will be designed to test competency in that core area. It is the responsibility of the student to seek guidance on preparing for the exam from the relevant faculty member(s).

The qualifying exam will be in a written format with approximately one-half day allotted per exam. It will be initially evaluated by the course instructor. If it falls into a potentially failing category based on the instructor's evaluation, it will be evaluated by no less than three faculty members including the instructor for the course, the thesis advisor, and the coordinator of the program. For cases in which there is overlap (e.g. thesis advisor is coordinator), another faculty member will be selected to serve on the committee.

The student will have one opportunity to pass a written qualifying exam in that core area. Students who pass the qualifying exam need not retake the course. The goal of the written qualifying exam in the core area is to allow continued matriculation, not replace grades. Current policy does not allow grade to be changed after testing out.

If the written exam is not passed prior to the subsequent semester in which the relevant core course is offered, then the student will be required to reenroll in the course and achieve a B or better. Such a student reenrolls at their own expense. Scholarship or fellowship funds may not be used for repeating a course. Students who do not pass the course the second time with a 'B' or 'A' will be recommended for academic termination from the degree program.

When a student receives deficient C grade but has met graduation requirements AND has passed qualifying exam an official letter will be included in the student's graduation packet indicating that student has met all graduation requirements even though he/she received a C grade.

V. Graduate Student Advisement and Thesis Committees

Students must have a thesis advisor named and submitted on the Thesis Advisor form by the first Monday in December (for fall students) or the first Monday in April (for spring students). A temporary advisor and/or final thesis advisor must be a member of the graduate faculty at SSU in the MES department. The thesis advisor must be a full graduate faculty member at SSU. An advisory committee consists of at least three advisory members, of which at least two are graduate faculty members based at Savannah State University. Committees may have a research advisor who is not based at Savannah State University, but the other two committee members must be, and one must be a thesis advisor.

In the case that a student ceases to have an advisor, that student will be placed on provisional status (following all deadlines and processes) until a permanent advisor is identified. The program coordinator will serve as the student's program advocate until the advisor is confirmed. If a student fails to retain an advisor within 60 days of being without an advisor, they will be recommended to the Graduate Studies office for academic termination.

Upon approval by the advisory committee, an original-work major paper may be substituted for a research thesis for students following tracks 2 or 3. In either case, thesis or major paper, a "proposal of research" must be submitted by the student and approved by the student's advisor and advisory committee.

VI. Thesis Proposal

a. Thesis Proposal Preparation and Defense

The thesis proposal must be developed, presented to, and approved by the thesis committee in the form of a formal written document and an oral presentation. The proposal should clearly describe the problem or questions to be addressed by the research with clearly stated hypotheses (or a problem statement), the methodology to be used, a preliminary literature review, and a

timeline for project completion. A statement of needed equipment, supplies, and travel required for the project and how these items will be funded should also be included. The length of the document and its contents are agreed upon by the student and the advisor, however, the advisor has final approval of what the minimum requirements are. Advisors and committees have discretion over the requirements for the oral presentation (e.g. format, length, content).

The proposal is the first document to describe the research approach, not the final thesis. This document is not meant to restrict the student from pursuing different avenues as opportunities arise within their research, but to provide a clear initial guideline for the committee's input and approval. The proposal must be defended by the end of the 2nd semester of study (i.e. 1st Monday of May for those entering in the fall semester and 1st Monday in December for those entering in the spring) for full-time students. The timeline for part-time students is at the discretion of the advisor and committee. Once the thesis proposal and the initial draft of the "Application for Candidacy" form (see below) including curriculum track and courses –see Plan of Study Approval below) are approved/signed by the committee, a student is eligible to enroll in Thesis I.

b. Plan of Study Approval

At the time that the thesis proposal is presented to the thesis committee, an initial draft of the "Application for Candidacy" form should be presented to and approved by the committee. This ensures that the courses taken by a student are approved by the committee as relevant to their particular needs and goals and that the student is on track to graduate in a timely manner. This document is to be submitted to the MES Department chair with an attached copy of transcripts (official or unofficial) from SSU graduate study and transcripts from any off campus graduate work to be applied to the degree. Deviations from this initial plan of study may occur due to restrictions in course offerings or other factors. If this occurs, the advisor and committee must approve the revised plan of study and the advisor must initial any course substitutions made on the original "Application for Candidacy" form prior to course registration. The form can then be updated, printed again, and used as the official Application for Admission to Candidacy for the Master's Degree (see below).

c. M.S. Degree Candidacy

Students who successfully complete their thesis proposal defense move from the classification of "graduate student" to "M.S. candidate." This is independent of whether they have finished their core coursework. This differs from the candidacy for graduation, which indicates that the student has completed all requirements (including the final thesis defense) to graduate from the university.

VII. Thesis Document

Students are expected to begin work on their thesis research immediately upon entering the degree program unless otherwise advised by their advisor or the Program Coordinator. The general process involves extensive literature reviews, synthesis in the forms of draft documents that lead to the thesis proposal. After a successful proposal defense, research areas that were agreed upon by the student and the committee are further developed by the student reading more literature, performing survey or experimental research, and generating drafts for their advisor and/or committee. This process of reading, assimilating information, and exchanging ideas is repeated as the student progresses through the milestones in the checklist on pages 5 and 6.

The work towards a thesis occurs within the classroom as part of coursework and as independent work done on the student's own time. Just as faculty meet with students outside of class time and review student work outside of the formal class setting, graduate-level students are expected to commit this level of work to their individual research projects. Full-time graduate students are expected to be enrolled in a full course load (~9 credit hours). The remaining time of a "fulltime" week, approximately 40 hours per week, are to be used for literature research, data analysis, academic or committee meetings, experimental set up, field work, lab maintenance, or any and all other tasks essential to the research environmental and thesis progress.

Once the above stated work yields a complete draft of the thesis work that is approved by the thesis advisor, it should be distributed to the committee. Ideally, the draft should evolve with committee member input as appropriate and over the course of the project. The maturation of the thesis document will be assessed by the advisor and committee over several meetings during the course of the work. With the final approval of the advisor, the committee and student will decide when to schedule the final thesis defense.

VIII. Thesis Defense

a. Application for Candidacy

The Application for Admission to Candidacy for the Master of Science in Marine Sciences Degree form must be submitted by the advisor for processing prior to scheduling the thesis defense. This form is submitted to the Office of Graduate Studies and notifies the university that the student is prepared to graduate from the program.

All degree program forms and instructions are available from the Program Coordinator or the Department website.

The final thesis defense shall consist of two parts: 1) an oral presentation open to the public with a question and answer period; followed by 2) a closed thesis evaluation attended only by the committee members and the student. It is scheduled only after a student has been given permission to defend evidenced by the Preliminary Thesis Approval and Permission to Defend form. This form must include a tentative defense date that is approved by the program coordinator. The defense is scheduled after the student has submitted the penultimate draft of the thesis to the advisor, and with the advisor's permission, to the committee. A penultimate draft should go to a committee no later than three (3) weeks before the defense (unless the committee agrees unanimously to a shorter period). The defense should occur no later than four (4) weeks prior to the grade submission deadline for graduating students. (The final approved thesis must be uploaded no later than one week before the final grade deadline for graduating students.) The oral presentation must be advertised two weeks in advance.

The purpose of the closed portion of thesis defense is mainly, but not exclusively, to address any outstanding concerns based on the oral presentation, to review substantive changes to the penultimate draft submitted before the defense; and to ask questions that will help determine the readiness of the student to graduate. The committee can set future writing deadline(s) to assist a student in graduating on time. Scheduling a defense before the graduation deadline does not ensure that the candidate will graduate as all committee members must sign the thesis cover page attesting that they approve the final written version.

b. Thesis and Defense Deadlines

The thesis defense includes a public presentation of the thesis in a seminar and a closed thesis committee meeting and examination. A student may set a tentative thesis defense date with the approval of their advisor. This thesis date reservation can be made with the program coordinator but does not indicate permission to defend and must fall within program deadlines. The final thesis defense date should be submitted with the Preliminary Thesis Approval and Permission to Defend Form. This form requires advisor AND committee approval and must be submitted prior to posting any defense flyer.

A penultimate draft of the thesis must be submitted to thesis committee members no later than 3 weeks prior to the scheduled thesis defense date. The penultimate draft is the next to final version in a series of versions of the thesis that the thesis committee has reviewed. The final version is the one containing the signed thesis signature page that will be submitted to the Dean of Graduate Studies.

The defense date must be scheduled to occur no later than four (4) weeks prior to the date graduating students' grades are due in the registrar's office (see academic calendar).

c. Thesis Processing

Final theses are published online. The final thesis draft including Thesis Signature Page with signatures and thesis defense date must be received and uploaded by the Office of Graduate Studies at least one week before final grades are due for graduating students.

Bound copies of the thesis may be ordered through the library and paid for at the online through ProQuest.

For copies of and questions concerning the Application for Candidacy form and thesis defense deadlines see the Coordinator of the MSMS Program. For copies of and questions concerning the Thesis Guide see the Office of Graduate Studies.

IX. Financial Assistance

Applicants and students may apply for financial assistance in the form of research fellowships, teaching assistantships, research awards, and travel awards. Rules pertaining to financial assistance are stated below.

State Funds

Monies that originate from the State of Georgia and are disbursed through a degree granting college, school, department, or program are termed state funds. These funds typically are allocated by or requested from a department head, dean, or another administrative official. Included in these types of funds are teaching assistantships, laboratory coordinator positions, departmental research assistantships, or student employment (not awarded as need-based financial aid through the financial aid office).

Independent Investigator Research Grant (HRG or “independent”) funds

These are funds that have been awarded to a single investigator or multiple investigators by an outside agency (federal, state, foundation, or private) to conduct research on a particular topic. These funds are directed toward the specific research goals of an individual or team and are governed by said individuals. They are mostly in the form of narrowly focused research assistantships associated with one of the principal investigators. They are separate from funds designated to set up research centers, institutes, or integrated programs.

Research Program, Center or Institute (RPCI or “center” funds)

These are federal, private or foundation funds that have been awarded to an institution or investigators to establish an externally-funded center, program, or institute with a research and or educational mission. Such programs include those that award multiple internships/assistantships to students, seed money, or mini-grants to faculty. These funds are typically governed by a program director, coordinator, or manager and are most often research assistantships or student employment that may be awarded to students working with faculty affiliated with the program, center or institute.

Guidelines

- 1) Students requesting state or “center” funds must meet the minimum requirements for regular admission into the program. All students are eligible to receive “independent” funds at the discretion on the Principal Investigator of the award.
- 2) Assistantships and coordinator positions are funded as 20-hour per week commitments and combined with fulltime enrollment are considered fulltime positions. As such, these positions may not be combined with off-campus employment (of any kind) or other 20-hour positions (even on campus)

- 3) Students receiving research assistantships must have a thesis advisor.
- 4) Student loans and need-based financial aid are not evaluated when a student is considered for support.
- 5) Assistantships may be suspended or revoked if a student is not making satisfactory progress towards the research project, teaching assignment, or in the degree program.
- 6) All student employment is limited to 20 hours per week during the academic year (university guidelines).
- 7) Students are bound by all federal financial aid regulations and payroll guidelines of Savannah State University.

Teaching Assistant duties

- 1) To prepare and deliver laboratory instruction and assist with lecture instruction.
- 2) To prepare/administer/grade/record and return assignments, quizzes or examinations to students in a timely manner under the supervision of the professor of record.
- 3) To be available during office hours, via email or phone to students.
- 4) Report student misconduct to appropriate campus officials.

Appendix A. Web Resources for MSMS Students

Marine Sciences Program

<https://www.savannahstate.edu/cost/mar-env-science/marine-science/index.shtml>

Program Policies and Forms

<https://www.savannahstate.edu/cost/mar-env-science/marine-science/marine-sci-policies.shtml>

Department of Marine and Environmental Sciences

<https://www.savannahstate.edu/cost/mar-env-science/index.shtml>

College of Science and Technology

<https://www.savannahstate.edu/cost/index.shtml>

Appendix B. Faculty Directory of the Department of Marine and Environmental Sciences



Savannah State University
Offering B.S. degrees in Marine Science and
Environmental Science, an
M.S. degree in Marine Science, and an A.S. in Aquarium
Science degree

Our Graduate Faculty & Academic Advisors



Dr. Tara Cox, Associate Professor,
Marine Sciences; BSMS Coordinator
coxt@savannahstate.edu
Spatial Ecology, Conservation Biology of
Large Marine Vertebrates
Office: MSC 107D
(912) 358-4097



Dr. Dionne Hoskins-Brown, Associate
Prof. and Director, NOAA Sponsored
Programs.; MSMS Coordinator
hoskinsbrown@savannahstate.edu
Benthic Ecology, Essential Habitat,
Office: MSC 107E
(912) 358-4289



Dr. M. Carla Curran, Professor, Marine
Sciences
curranc@savannahstate.edu
Estuarine Ecology, Fish Biology,
Parasite-Host Interactions, K-12 Outreach
Office: MSC 108C
(912) 358-4438



Dr. Carol Pride, Professor, Marine Sciences;
Department. Chair
pridec@savannahstate.edu
Estuarine Salinification, Identification of
Bio-indicator Species, Marine Sediment
Records
Office: MSRC 106B
(912) 358-4439



Dr. Sue Ebanks, Associate Professor,
Marine and Environmental Sciences
ebankss@savannahstate.edu
Aquatic Invertebrate Responses to
Environmental Change
Office: MSC 108A
(912) 358-4430



Dr. Amanda Kaltenberg, Associate
Professor, Marine Sciences
kaltenberga@savannahstate.edu
Bio-physical interactions, Coastal
Oceanography, Bio-acoustics
Office: MSC 107B
(912) 358-3304



Dr. Chris Hintz, Associate Professor,
Marine Sciences
hintzc@savannahstate.edu
Carbonate Chemistry, Ocean Acidification,
Technique Development (Alkalinity, pCO₂,
pH, pCO₂-controlled culture)
Office: MSC 108D
(912) 358-4096



Dr. Kenneth Sajwan, Professor,
Environmental Sciences; Environmental
Sciences Coordinator
sajwank@savannahstate.edu
Biogeochemistry of Trace Elements, Coal
and Coal Combustion Byproducts, Organic
Waste Co-disposal, PAHs, Organochlorine
Compounds, and Dioxins
Office: Drew Griffith 111
(912) 358-4440

Instructional Faculty and Professional Staff

Dr. Dwight Ebanks, Instructor,
ebanksd@savannahstate.edu
Office: MSC 108B (912) 358-3307

Dr. Victoria Young, LMRCS Education Expert and Visiting
Assistant Professor
youngv@savannahstate.edu
Office: MSC 107C (912) 358-4291

Dr. Shawn Rosenquist, Instructor,
rosenquists@savannahstate.edu
Office: MSC 112 (912) 358-4432

Ms. Robin Perrtree, Marine Science Technician
perrtreer@savannahstate.edu
Office: MSC 111 (912) 358-3301

Ms. Sugeiry Rivera, Administrative Assistant
riveras@savannahstate.edu
Office: MSC 106 (912) 358-4101

Capt. Shawn Smith, Boat Captain/Marine Operations Tech
smithsh@savannahstate.edu
Office: MSC 106A (912) 358-4102

Appendix C. Partners, Collaborators, Funded Programs, Resources, and Employers of Marine and Environmental Sciences Students and Graduates

Our Partnerships & Collaborators

Department of Education (DOEd)
Department of Energy (DOE)
NOAA Living Marine Resources Cooperative
Science Center (LMRCSC)
National Science Foundation (NSF)
Oakland Island Wildlife Center
Savannah Chatham County School System
Sea of Change Foundation
Skidaway Institute of Oceanography (SkIO)

Internships & Fellowships Available

DoED Title VII
NOAA LMRCSC

Department Resources

- Marine Biology Building (main campus)
 - Wet and Laboratories
 - Classroom
 - Experimental Chambers
 - Computer Lab/Student Resource Room
 - Marine Biology Preserved Collections
 - 60 foot floating dock

Marine Science Center (Livingston Ave)

Marine Sciences Center (Erlanger, N.Y.)
Experimental Chambers
Ultracold Freezers
Wet Laboratory with Sea Pump System
Analytical Computing Laboratory
Dolphin Research Laboratory and Necropsy Facility
Fish Ecology Laboratory
Coastal Biophysics Laboratory
Coastal Geobiology Laboratory
Environmental Toxicology Laboratory
Benthic Ecology Laboratory
Instrumentation Research Laboratory
Mesocosm Laboratory
Water Quality Laboratory
Radiation Laboratory
Standard Research Laboratory
Floating Dock
22 ft Boston Whaler, *Tiger II*
36 ft (22 PAX) Newton, *Margaret C. Robinson*
25 ft. (24 PAX) Rookie Flat Tour Boat

Herty Hall
GIS Laboratory



MSMS Graduate Kellie Edwards

Where Are Our Students Working Now?

Chatham County Engineering
City of Savannah
The Georgia Aquarium
Georgia Department of Natural Resources
Grand Bahama Port Authority
Loggerhead Marine life Center, Juno Beach, FL
Meritech Environmental Laboratory, NC
Mote Marine Laboratory
Natural Fisheries Research Center, Gainesville, FL
National Zoo, Fairfax, Virginia
NOAA Corps
NOAA Fisheries
Savannah Chatham County Public Schools
Savannah State University
Sea Turtle Program, Ossabaw Island, Georgia
SC Department of Natural Resources
T. Baker Smith, LLC Consulting Company
Tennessee Aquarium, Chattanooga, TN
Test America Savannah
The Nature Conservancy's Caribbean Program
Tybee Island Marine Science Center
UGA Marine Extension Service
UGA Shellfish Laboratory
UGA Skidaway Institute of Oceanography
UGA Georgia Coastal Ecosystems Long Term Ecological
Research (GCE-LTER)
US Army Corps of Engineers
United States Navy

Appendix D. MSMS Course Descriptions

MSCI 5201 General Oceanography (3-1-4)

Graduate level survey of the major disciplines of marine science including physics, geology, chemistry, and biology. Emphasis will be placed on global scale processes including forces driving major ocean currents, tectonic activity, equilibrium chemistry, chemical and biological processes involved in nutrient cycling, and the determinants and effects of global climate change on major ocean processes. Prerequisite: physics, chemistry or biology.

MSCI 5202 Introduction to Coastal Oceanography (3-1-4)

The course will consist of a variety of lectures, labs, and field experiences related to coastal oceanographic processes. Topics will include coastal physical oceanography (tides, wind driven currents, estuarine processes, and stratification), coastal geology (depositional and erosion in coastal and offshore regions), biology, and biogeochemical cycling in the coastal zone (benthic and water column processes). Prerequisite: MSCI 5201

MSCI 5401 Technical Writing and Communication (3-0-3)

Explores the elements of communicating scientific and technical information. It provides an overview of communication design, audiences, formats, style, mechanics, graphics, literature search, manuscript preparation, and seminar presentation.

MSCI 5402 Research/Marine Science Seminar (1-0-1)

Participation in preparation, presentation, and discussion of marine-related seminar topics.

MSCI 5403 Research/Marine Science Seminar II (1-0-1)

Participation in preparation, presentation, and discussion of marine-related seminar topics.

MSCI 5501 Fish Ecology (3-0-3)

Presents the differences in morphology, ecology, behavior and life-history traits of the most common groups of cartilaginous and bony fishes. The course structure is based on an overview of each fish group followed by active discussion of specific ecological characteristics of families and/or species based on primary literature selected by students.

MSCI 5560 Advanced Environmetrics (3-0-3)

Reviews linear statistical methods and teaches nonparametric approaches to treat environmental/biological data. May include but not be limited to power tests, randomization, and experimental design, analyses of variance, covariance and deviance, simple to polynomial regression, non-parametric tests of significance, pairwise and multiple comparisons, and response surfaces. Prerequisite: statistics.

MSCI 6202 Advanced Oceanography (3-0-3)

A continuation of principles introduced in MSCI 5201 Introduction to Marine Sciences. Lectures and problem sets will develop a working knowledge of physical and chemical ocean processes, particular those important to continental shelves and other upwelling environments. Physical processes that will be discussed include buoyancy input, wind forcing, tidal stirring, tidal rectification, and seasonal mean circulation. Chemical processes that will be discussed include kinetic predictions for reactions in seawater, vertical and horizontal transport of materials, isotopic clocks and tracers, nutrients, and chemical fluxes across major marine interfaces, including estuaries. Fundamental physical, chemical, and biological interactions will be explored using readings and sample problems. Prerequisites: College Physics, Chemistry, Calculus, and MSCI 5201 Introduction to Marine Sciences.

MSCI 6310 Scientific Ethics (3-0-3)

The basics in philosophical and ethical thought in science, expanded to include the faculty/student relationship, peer review, data treatment, analysis and interpretation of data, funding sources and competition, proprietary research, politics of science in America and abroad (what factors shape funding emphases, how research foci vary regionally and globally). Prerequisites: None

MSCI 6323 Coastal Law and Policy (3-0-3)

An exploration of common federal and state law principles and legislation affecting uses of the lands, waters, and natural resources of the coastline and the adjacent ocean waters. Topics studied include doctrines defining public and private property rights in the shoreline and submerged lands, coastal wetlands protection, beach management, marine fisheries, aquaculture regulation, marine protected species in coastal areas, pollution control, energy and mineral development, food sources, marine transportation, and coastal land use control. Prerequisites: None

MSCI 6324 Coastal Zone Management (3-0-3)

All coastal states now cooperate with the U.S. Government in managing the coastal zone to maximize human and natural value. The laws, regulations, policies, public goals, and agencies involved in this effort will be described and evaluated for effectiveness. Prerequisites: None

MSCI 6542 Fisheries Population Dynamics (3-0-3)

Formulation and use of mathematical models used in stock assessment of commercial and recreational fisheries. Includes stock concept, estimation of growth, mortality rates, gear selectivity, estimating CPUE, maximum sustainable yield, stock/recruitment relationships, analytical and holistic models, data requirements and start to finish methods for fisheries stock assessment reports. Microcomputer modeling and analysis packages will be used. Prerequisite: calculus.

MSCI 6546 Mariculture (2-0-2)

Introduction to the principles and practice of the culture of marine organisms. Includes site selection, water quality, production systems, feeds and nutrition, health, broodstock management and husbandry, and economics, an overview of finfish, molluscan, crustacean, and aquatic plant culture, physiology of growth and reproduction including exposure to advanced technology (e.g. molecular methods, neuroendocrinology). Prerequisites: biology, MSCI 5201.

MSCI 6550 Analytical Techniques in Seawater, Sediments, and Soils (0-3-3).

Students will obtain competency in a variety of analytical techniques for the analysis of seawater, marine sediments, and soils. Nutrient analysis, chemical constituents, contaminant analysis including both organic and inorganic contaminants, and bacteriological water quality. Prerequisite: chemistry.

MSCI 6552 Marine Biotechnology (3-1-4)

An overview of concepts, approaches, techniques, and applications of biotechnology with emphasis on marine biotechnology. Principles of recombinant DNA technology, its relevance to genetic engineering, and its uses in basic and applied biology. Methodology and concepts of genetic engineering technology; molecular mechanisms of gene transfer, integration, and expression of transgenes in target tissues/organisms. Applications of marine biotechnology in aquaculture, marine environmental protection, the use of transgenic fish, production of fuels from algae and natural products of pharmaceutical value from marine organisms, and other applications. Prerequisite: genetics.

MSCI 6562 Remote Sensing (3-0-3)

Principles, characteristics, and applications of environmental remote sensing. Topics include concepts and foundations of remote sensing photographic systems and interpretation of thermal and multispectral scanning radar systems, satellite remote sensing and digital image processing. Aspects of oceanographic data such as phytoplankton abundance, sea-surface temperatures, ocean wind speeds and instrumentation such as SeaWiFS, AVHRR, and SSM/I will be emphasized. Prerequisites: calculus, statistics.

MSCI 6725 Coastal Wetland Ecology (3-0-3)

Introduction to coastal wetlands (brackish/fresh water marshes, swamps, and bogs), with an emphasis on typical southeast US flora and fauna. Wetland physical diagnostic characteristics (hydrology, pedology), as well as biological parameters (primary productivity, biogeochemistry, and nutrient transport), will be covered. Prerequisites: None

MSCI 6726 Coastal Botany (3-1-4)

Identification, classification, the ecology of coastal plants and algae; wetland and barrier island plant communities and functions; physiological ecology of coastal plants and algae. Prerequisite: botany or ecology.

MSCI 6745 Aquatic Pathology (3-1-4)

Systematics, life history, spread, etiology, diagnoses, and treatment of selected diseases among shellfish, fish, and marine mammals. Viral, bacterial, fungal, protozoan, and invertebrate pathogens. The importance of aquatic diseases in aquaculture and to public health. Prerequisite: biology.

MSCI 6747 Marine Mammalogy (3-0-3)

Natural history, taxonomy, anatomy, physiology, ecology, conservation, and economic importance of the cetacea, pinnipedia, and sirenia. Prerequisite: biology.

MSCI 6781 Benthic Ecology (3-0-3)

Ecology course describing the general chemical, biological, and physical nature of the sediment environment, comparing these traits across saltmarsh, deep sea and shelf habitats. Including trophic relationships and distribution of organisms, the role of microbial communities, the formation of detritus, and sediment transport.

MSCI 7344 Fisheries Management (3-0-3)

Environmental ecology, conservation, and processes used to manage living marine and aquatic resources harvested or otherwise impacted by human activities. Examples from global, regional, and local areas will be highlighted.

MSCI 7527 Coastal Environmental Certifications (3-0-3)

Provides background, basis in law, descriptions, and requirements for a variety of certifications and training associated with environmental regulation compliance in coastal areas.

MSCI 7562 Advanced Seminar in Remote Sensing (2-1-3)

The course will build on principles covered in Remote Sensing MSCI 6562. Topics will include satellite, airborne and in situ ocean sensors and their use for observing planetary, regional, and local scale oceanographic process. Visiting experts in remote sensing will augment lectures and student-led discussions. The student will be required to present lectures on specific topics and conduct individual or group research-based projects in remote sensing. Prerequisites: MSCI 6562 Remote Sensing and MSCI 7564 Geographic Information Systems and Database Management in Coastal Systems.

MSCI 7564 Geographic Information Systems and Database Management in Coastal Studies (3-1-4)

Theory, concepts, limitations, and implementation of geographical spatial analysis systems for the study of coastal processes. Through a “hands-on” approach, students will become familiar with the use of GIS and other information management systems for analysis of complex large databases pertaining to coastal processes.

MSCI 7728 Coastal Processes (3-0-3)

Changes in the highly dynamic coastal environment are best understood by evaluating the major physical processes that control coastal configuration, including tides and currents, storm impacts, sea level change, sediment transport, barrier island, and delta formation, and river input. In addition, organism impacts on the coastal environment will also be evaluated (marsh vegetation, dune vegetation, human alterations, estuarine nurseries).

Prerequisites: MSCI 5201, MSCI 5202.

MSCI 7743 Fisheries Oceanography (3-0-3)

Introduction to the physical and biological processes (i.e., recruitment variability, compensatory mechanisms, and species interactions) that control the abundance of living marine resource populations. Includes case studies of contemporary multidisciplinary research.

MSCI 7754 Marine Biogeochemistry (3-0-3)

Chemistry course, which focuses on the sources, transport, and fate of organic matter in natural environments including marine sediments, soils, and natural waters. Includes the global carbon cycle, analytical methods in organic geochemistry, geochemistry of organic matter constituents, geochemistry of humic substances. Prerequisite: MSCI 5202.

MSCI 7782 Marine Microbial Ecology (3-0-3)

Emphasizes the diversity and role of microorganisms in marine ecosystems. Nutrient cycles, methods of microbial analysis, genetic diversity, and the functional roles of microorganisms in marine systems.

MSCI 7783 Water Column Ecology (3-0-3)

Major biological processes in the water column of estuarine, coastal, and open sea environments, with emphasis on interactions of biota with marine chemical and physical processes.

MSCI 7801 Directed Research (0-(1-3)-(1-3))

Directed readings or research at the graduate level to meet the needs of individual students. Consent of instructor required. Variable credit.

MSCI 7851 Special Topics ((1-3)-0-(1-3))

Content to be determined each semester. May be repeated. Variable credit.

MSCI 7991 Thesis I (3-0-3)

Thesis research and preparation. Consent of research advisor required.

MSCI 7992 Thesis II (3-0-3)

Thesis research and preparation. Consent of research advisor required.

Master of Science in Marine Sciences Graduate Handbook



Groundbreaking at the site of the new Marine Sciences Building

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