

FISHERIES AND MARICULTURE, MS

Program Description

The Master of Science in Fisheries and Mariculture is designed for graduate students who wish to become knowledgeable leaders and professionals in the field of fisheries and/or mariculture. This program promotes competency through hands-on experience: either through the application of scientific methods of investigation to research or through internships within governmental agencies or companies in the fisheries or mariculture industry. Graduates of the program have the in-depth education and specialized skills necessary to successfully compete for positions in the fisheries and/or mariculture industries, as well as research experiences that provide an avenue to continuing their education in doctoral programs. Returning Peace Corps volunteers who have completed their assignment are eligible for the Paul D. Coverdell Fellowship.

Student Learning Outcomes

Students will:

- Exhibit a basic mastery of essential and emerging knowledge and techniques in the fields of fisheries and mariculture, and an in-depth mastery of the concepts and methods of their specific area of study.
- Work closely with their graduate advisory committee members to develop an academic plan that provides the student with chances to use the scientific method, is grounded in the principles of fisheries and mariculture, and includes experiences that are appropriate for each student's chosen career path.
- Demonstrate the ability to collect data, to organize and interpret data in the context of the relevant literature, and then to accurately describe their findings (orally and in writing).
- Develop an advanced skill set and record of contributions to the discipline such that they can continue in academia or secure employment in federal, state, or local agencies, in private companies, or in non-governmental organizations where they can apply the skills and knowledge acquired in the program.

Graduate Credit From Other Disciplines

Graduate students in the Master of Science in the Fisheries and Mariculture program may take courses from other disciplines in the College of Science such as BIMS, CHEM, ESCI, GISC, GSEN, MARB, FAMA, MATH, and CMSS with approval from the student's graduate advisor/advisory committee.

For Additional Information

Website:

<http://fama.tamucc.edu>

Campus Address:

Tidal Hall, Room 309
phone (361) 825-2754

Mailing Address:

Fisheries and Mariculture Program, Unit 5800
College of Science
Texas A&M University – Corpus Christi
6300 Ocean Drive

Corpus Christi, Texas 78412-5800

Admission Requirements

To be considered for admission to the MS Program in Fisheries and Mariculture, an applicant should consult the Admissions (<http://catalog.tamucc.edu/graduate/admissions/> (<http://catalog.tamucc.edu/graduate/admissions/>)) section of this catalog for university requirements for admission. Applicants must provide the following: a completed application form; application fee; official transcripts of all college and university coursework; an essay (not more than 1000 words) describing educational and career goals, and interests as they relate to program faculty (<https://www.tamucc.edu/science/roster.php?program=fama>), a list of the program faculty members contacted; and three letters of evaluation from people familiar with their potential for graduate studies.

Students must contact potential advisors prior to and during the application process to discuss research opportunities in faculty member labs. A faculty member must be willing to serve as the chair of the applicant's Graduate Advisory Committee and the applicant must include a summary of their discussions with faculty members in their essay. Applicants who do not have a faculty member willing to serve as their committee chair will not be admitted to the program.

Additional requirements exist for international students. These include TOEFL or IELTS scores from ETS taken within the last two (2) years for students from countries where English is not the native language and a course-by-course foreign transcript evaluation through an approved service (refer to the Admissions section of this catalog). All relevant supplemental materials (such as publications or resumes that include information about relevant experiences) that are submitted with the application will be considered.

No criterion is weighted more heavily than any other criterion. A campus visit including personal interviews with prospective faculty mentors is recommended. Incomplete applications are not considered. Applications received or completed after the deadline for admission during one semester may be considered for admission in the following semester at the applicant's request. Applicants will be notified of the outcome of their application by email.

Completed applications must be received by the Office of Recruitment and Admissions by the specified priority deadlines:

- Fall Semester: February 1
- Spring Semester: August 1

Incomplete applications are not considered. The applicant will be notified of acceptance or rejection by letter.

Teaching assistantships and graduate research assistantships may be available to admitted degree-seeking students who maintain full-time graduate student status (9 hours/fall and spring semester, and 3 hours/summer). The completed Teaching Assistant Application (<http://gradcollege.tamucc.edu/funding/assistantships.html>) and all other materials requested for evaluation should be submitted to the office indicated on that form. For full consideration, the deadline for submitting applications is February 1 for fall semester and August 1 for spring semester. Faculty members conducting funded research projects often hire qualified graduate students as Research Assistants. Students will need to contact faculty members in their field of interest for information on these opportunities.

Non-degree students may enroll in courses for which they have adequate academic preparation, but they may not apply more than nine credit hours of work taken in non-degree status to a graduate degree program. Non-degree students must consult with the Fisheries and Mariculture Program Coordinator to determine those courses in which they may enroll and those courses they may later apply to a Fisheries and Mariculture degree, should they be admitted into the program. Students must earn a grade of "B" or better in each of the prescribed courses in order to have the courses apply to the plan of study.

Academic Preparation

Students entering the Fisheries and Mariculture Program are expected to have a strong background in biological and physical sciences, with competencies equivalent to those required of Texas A&M University-Corpus Christi undergraduate biology majors (see the biology section of the undergraduate catalog). A student who lacks adequate academic preparation in a particular subject area, but who is otherwise well-qualified to enter the graduate program, may be required to complete appropriate leveling courses at the undergraduate level in addition to courses specified for the graduate degree. Such courses (4000-sequence or lower) do not count as credit towards the total required for completion of the graduate degree.

Program Requirements

Each Master of Science degree candidate must complete a minimum of 36 graduate semester credit hours. Undergraduate courses (4000-sequence or lower) are regarded as foundation (i.e., leveling) work and will not count toward the total. A student may request approval for transfer of a maximum of 9 semester credit hours of graduate courses from other colleges or universities to a Master of Science in Fisheries and Mariculture degree plan.

After admission to the graduate program, the student's graduate advisor will guide them in all matters relating to degree requirements and procedures until the Graduate Advisory Committee is formed. By the end of the first semester of graduate study the student, in consultation with their graduate advisor will select the remaining members of the Graduate Advisory Committee. This committee will advise the student in all matters pertaining to graduate requirements and procedures. A student's Graduate Advisory Committee must consist of a minimum of three members, at least two of whom must be members of the graduate faculty in the Department of Life Sciences. Additional committee members must be members of the graduate faculty at Texas A&M University-Corpus Christi or an adjunct graduate faculty member in the Department of Life Sciences. The Chair of the student's Graduate Advisory Committee must be a member of the graduate faculty in the Department of Life Sciences. The student and all members must mutually agree to the size and composition of the Graduate Advisory Committee. The committee will recommend a Degree Plan for the student that will then be submitted to the Dean of the College of Science for approval.

There are three plans for obtaining the Master's Degree in Fisheries and Mariculture: the Thesis Plan, the Professional Plan (Applied), and the Professional Plan (Internship). All students are expected to have a working knowledge of both fisheries science and mariculture, but most students will emphasize one of the disciplines, and this will be reflected in their degree plan and research or internship focus.

Code	Title	Hours
Core Courses		
FAMA 5102	Graduate Defense Seminar	1

MATH 6315	Statistical Methods in Research I	3
Foundations		6-8
Take 2 courses from this list:		
BIOL 5360	Computation for 21st Century Biologists	
BIOL 5432	Ichthyology	
CMSS 6312	Communicating Science Seminar	
CMSS 6323	Experimental Design	
FAMA 5312	Mariculture Techniques	
FAMA 5314	Aquatic Animal Nutrition	
FAMA 5315	Diseases and Parasites of Aquatic Organisms	
FAMA 5328	Fisheries Ecology and Management	
FAMA 5329	Fisheries Techniques	
FAMA 5338	Applied Fisheries Statistics	
FAMA 5355	Public Aquarium and Animal Care Operations	
FAMA 5370	Mariculture	
FAMA 5421	Chemistry of Natural Waters	
MARB 6340	Marine Organisms and Processes	
MARB 6341	Evolution and Genomics of Marine Organisms	
MARB 6312	Communicating Science Seminar	
MARB 6353	Down the River: Ecology of Gulf Coast Fishes	
MARB 6373	Biodiversity and Conservation	
MATH 6316	Statistical Methods Research II	
Total Hours, Core Courses		10-12

Thesis Plan

The thesis Master's Degree requires a thesis based upon original research. The research must include a review of relevant literature, a description of the results from original research on a topic or question approved by the student's Graduate Advisory Committee, statistical analysis when appropriate, and an appropriate discussion of the results that contextualizes them within the larger body of literature on the topic or question. The research must be conducted while the student is enrolled at Texas A&M University-Corpus Christi. As much as possible, graduate students are expected to present their research at a scientific meeting (other than their graduate seminar) prior to graduation.

Thesis Plan

Code	Title	Hours
Core Courses		10-12
FAMA 5392	Thesis Proposal	3
FAMA 5393	Thesis Research	3
FAMA 5394	Thesis Submission	3
Advanced Electives ^{1,2}		15-17
Total Hours, Thesis Plan		36

1

The advanced electives must be approved by the student's Graduate Advisory Committee to be counted towards the graduate degree.

2

Up to 6 hours of FAMA 5940 Project Research may be applied to MS FAMA Thesis Plan electives.

Professional (Non-Thesis) Plan

The Professional (non-thesis) Master's Degree is designed to provide a broad understanding of Fisheries and Mariculture. The curriculum will especially benefit those individuals in professional employment who seek

advancement or additional training to enhance their knowledge and skills. There are two tracks in the Professional Plan: Applied and Internship. Regardless of the track professional plan students choose, they must complete a written product (FAMA 5397 Professional Paper Submission), the style and scope of which is at the discretion of the graduate advisory committee, and give an oral presentation and pass an oral examination prior to graduating (FAMA 5102 Graduate Defense Seminar).

Professional Plan (Applied)

In the Applied track, students takes more elective coursework than either Thesis or Internship plan students. The Applied track has a research component that is substantially more constrained than the thesis in scope and has a narrower topic or question. The professional paper details the results of this research project.

Professional Plan (Applied)

Code	Title	Hours
<i>Core Courses</i>		<i>10-12</i>
FAMA 5397	Professional Paper Submission	3
Advanced electives ^{1,2}		21-23
Total Hours, Professional Plan (Applied)		36

1

The advanced electives must be approved by the student's Graduate Advisory Committee to be counted towards the graduate degree.

2

Up to 3 hours of FAMA 5940 Project Research OR FAMA 5998 Internship may be applied to the FAMA Professional Plan (Applied) electives.

Professional Plan (Internship)

The Internship track will be chosen by students who are looking for an on-the-job-training experience and coursework beyond the core is constrained by the number of credit hours of Internship (FAMA 5998) the student takes. Students should understand that, for the most part, they must make their own arrangements for any internship and the possibility of a paid internship is minimal. In addition, the internship must be approved by their Graduate Advisory Committee, and ideally, the internship sponsor/supervisor will be a member of the Graduate Advisory Committee. As noted above, internship track students must produce a written product, give a public talk related to their written product and/or internship experience, and pass an oral examination.

Professional Plan (Internship)

Code	Title	Hours
<i>Core Courses</i>		<i>10-12</i>
FAMA 5397	Professional Paper Submission	3
FAMA 5998	Internship	9-18
Advanced electives ¹		3-14
Total Hours, Professional Plan (Internship)		36

1

The advanced electives must be approved by the student's Graduate Advisory Committee to be counted towards the graduate degree.

Courses

FAMA 5102 Graduate Defense Seminar

1 Semester Credit Hour

Formal presentation of the research activities conducted for the MS degree. To be taken the final semester of resident graduate study.

FAMA 5312 Mariculture Techniques

3 Semester Credit Hours (2 Lecture Hours, 2 Lab Hours)

The study and hands-on application of biological, mechanical, and other concepts required to develop the skills and techniques necessary for efficient operation and management of public and private aquaculture facilities.

Co-requisite: SMTE 0091.

FAMA 5314 Aquatic Animal Nutrition

3 Semester Credit Hours (3 Lecture Hours)

The study of current concepts in aquatic animal nutrition including nutrient sources and requirements, deficiency effects, ingestive/digestive/metabolic processes, formulation and processing of feeds, and practical feeding considerations for selected aquatic species.

FAMA 5315 Diseases and Parasites of Aquatic Organisms

3 Semester Credit Hours (3 Lecture Hours)

Identification, epizootiology and control of viral, bacterial, fungal, parasitic and nutritional diseases of commercially cultured molluscs, crustaceans and fish.

Co-requisite: SMTE 0092.

FAMA 5327 Marine Restoration Ecology

3 Semester Credit Hours (3 Lecture Hours)

Overview of the rapidly expanding practice of restoring degraded marine, estuarine, and coastal ecosystems. Teaching methods will include lectures, discussion, paper critiques, field visits, and restoration plans. Course will explore ecological theory as it applies to restoration, restoration planning and implementation strategies, and controversies surrounding the practice of restoration.

FAMA 5328 Fisheries Ecology and Management

3 Semester Credit Hours (3 Lecture Hours)

Advanced study of theory and techniques in fisheries science including behavior of fisheries populations and applications to resource management with emphasis in tidal-influenced waters. Includes readings in the current literature and a research project.

FAMA 5329 Fisheries Techniques

3 Semester Credit Hours (2 Lecture Hours, 3 Lab Hours)

Designed to provide students with practical experience in the theory and application of traditional and modern fisheries sampling and management techniques with an emphasis on practical sampling design and data interpretation. This is a hands-on field and laboratory based course that will develop skills that are commonly used by fisheries scientists and sought be future employers.

Co-requisite: SMTE 0091.

FAMA 5338 Applied Fisheries Statistics

3 Semester Credit Hours (3 Lecture Hours)

Data analysis is a critical component in fisheries research and management. Throughout this course, the students will learn to practice the series of data analysis and techniques that are relevant to fisheries science, with the aids of the personal computer software.

FAMA 5355 Public Aquarium and Animal Care Operations

3 Semester Credit Hours (3 Lecture Hours)

This course examines the unique requirements needed for aquariums and zoos to balance animal care and health with public display for general education and conservation research. Offered in Summer. Cross-listed with BIOL 4355, BIOL 5355.

Co-requisite: SMTE 0091.

FAMA 5370 Mariculture

3 Semester Credit Hours (3 Lecture Hours)

Survey of physiological, behavioral, environmental and economic parameters governing the culture of selected aquatic species. Included are techniques and methods employed worldwide to produce various marine species.

FAMA 5392 Thesis Proposal

3 Semester Credit Hours

Thesis students must submit a completed proposal for their thesis project. A course section will be created for the student to enroll. Upon successful completion and submission of the proposal signed by the graduate committee of the student, students may then register for FAMA 5393 - Thesis Research.

FAMA 5393 Thesis Research

3 Semester Credit Hours

Implementation of the Thesis Proposal, and the production of a rough draft of the thesis submitted to the graduate committee of the student for initial editing and comment. A course section will be created for the student to enroll.

Prerequisite: FAMA 5392.

FAMA 5394 Thesis Submission

3 Semester Credit Hours

Completion of the final draft of the thesis, signed by the graduate committee of the student and ready for binding and distribution. A course section will be created for the student to enroll.

Prerequisite: FAMA 5392 and 5393*.

* May be taken concurrently.

FAMA 5397 Professional Paper Submission

3 Semester Credit Hours

Completion of the final draft of the professional paper (professional track students), signed by the graduate committee. A course section will be created for the student to enroll.

Prerequisite: FAMA 5998.

FAMA 5421 Chemistry of Natural Waters

4 Semester Credit Hours (3 Lecture Hours, 3 Lab Hours)

The examination of water as an environmental medium and how it may be monitored and managed for maximizing the growth and survival of various aquatic species.

Prerequisite: CHEM 1411.

Co-requisite: SMTE 0093.

FAMA 5590 Special Topics

1-5 Semester Credit Hours (1-5 Lecture Hours)

In?depth study and discussion of selected topics relevant to mariculture or fisheries. May be repeated when topics vary.

FAMA 5596 Directed Independent Study

1-5 Semester Credit Hours (1-5 Lecture Hours)

Study in areas of mariculture or fisheries interest.

FAMA 5940 Project Research

1-9 Semester Credit Hours

Research related to the MS project. Students can only apply 6 hours of credit toward the MS degree in Fisheries and Mariculture with approval of the committee.

FAMA 5998 Internship

1-9 Semester Credit Hours

Professional Track students are required to undertake an extensive internship program with an approved agency, institution, or commercial operation to develop skills and techniques relating to fisheries science or the culture of aquatic species. Students will participate in internship activities at selected aquaculture or fisheries facilities.