

## ACADEMIC CREDIT

All courses offered through The University of Southern Mississippi's School of Ocean Science and Engineering are accredited by the Southern Association of Colleges and Schools Commission on Colleges. Upon completion, a

transcript request must be submitted to transfer credit hours to the home institution. To order a transcript, contact the USM Registrar's Office at 601.266.5006.

Depending on the status of the COVID-19 pandemic, it is possible courses may be shifted to a hybrid, or partially web-supplemented, format. The safety of students and staff is of the highest importance and any decisions will be made in the best interest of health and safety. Once you have applied for the program, your contact information will be on file, and you will be notified if there are any changes to course format. Information will also be posted on the GCRL Summer Field Program Facebook page. The most up to date university-wide information can be found on USM's COVID-19 response website:

<https://www.usm.edu/covid-19/index.php>



Celebrating Our  
**75<sup>th</sup>**  
Anniversary



[usm.edu/sfp](http://usm.edu/sfp)

**A premier marine laboratory on the Gulf of Mexico,** The University of Southern Mississippi's Gulf Coast Research Laboratory is home to the School of Ocean Science and Engineering's Division of Coastal Sciences, Marine Education Center, Center for Fisheries Research and Development and the Thad Cochran Marine Aquaculture Center.

### APPLICATION REQUIREMENTS/PROCESS

#### Undergraduate Students

Apply to the GCRL Summer Field Program at [usm.edu/GCRL-apply](http://usm.edu/GCRL-apply). For questions, contact [margaret.firth@usm.edu](mailto:margaret.firth@usm.edu) or call 228.818.8852.

1. Submit the \$45 non-refundable application processing fee for undergraduate students (*fees not applicable to current USM students*). Make check payable to The University of Southern Mississippi. Electronic or credit card payments can not be accepted.
2. Official transcript (electronic transcripts preferred, send to [margaret.firth@usm.edu](mailto:margaret.firth@usm.edu))
3. Copy of immunization records

#### Graduate Students

To apply, contact Margaret Firth for admission instructions at 228.818.8852 or [margaret.firth@usm.edu](mailto:margaret.firth@usm.edu).

**Official transcript and immunization record** may be emailed to [margaret.firth@usm.edu](mailto:margaret.firth@usm.edu) or mailed to the below address. Application fee must be mailed.

#### OFFICE OF STUDENT SERVICES

Division of Coastal Sciences  
Gulf Coast Research Laboratory, Attn: Margaret Firth  
703 East Beach Drive • Ocean Springs, MS 39564

### ADMISSION DEADLINE

All application materials **MUST** be submitted by  
**APRIL 29, 2022.**



The University of Southern Mississippi  
School of Ocean Science and Engineering  
Division of Coastal Sciences / Gulf Coast Research Laboratory  
703 East Beach Dr. • Ocean Springs, MS 39564



Check us out  
on YouTube.

EOE/F/M/VETS/DISABILITY



SCHOOL OF OCEAN SCIENCE AND ENGINEERING  
at the GULF COAST RESEARCH LABORATORY

# SUMMER FIELD PROGRAM 2022



Celebrating Our **75<sup>th</sup>** Anniversary



The University of Southern Mississippi's Gulf Coast Research Laboratory (GCRL) in

Ocean Springs, Mississippi, was established in 1947. The

Summer Field Program is held at GCRL and is designed to allow undergraduate and graduate students an unrivaled academic experience studying coastal environments in an intensive field and laboratory-based setting.

On-site amenities include research vessels, dormitory, dining hall, research labs, library and specimen museum. Submit your application today to attend the 2022 Summer Field Program and gain the experience of a lifetime!



GCRL Summer Field Program

# Session I *June Term*

## BARRIER ISLAND ECOLOGY

This field course will familiarize students with concepts of coastal ecology with emphasis on the diversity of plant and animal communities unique to the northern Gulf of Mexico barrier islands. Field excursions to barrier islands will be conducted during this course. Topics covered include: marsh, submerged, and barrier island vegetation, aquatic and terrestrial invertebrates, mammals, birds and reptiles, intertidal and shallow subtidal communities, and geologic processes of island dynamics. Prerequisites: background in biology, botany, or geology recommended. COA 448/448L: Barrier Island Ecology, 3 credit hours (2/1).

*This course will run approximately 11 consecutive class days during the first half of the June term. Students may enroll in this course and either Cetacean Behavior OR Environmental Photography in the same term.*

## CETACEAN BEHAVIOR

Students will learn tools and techniques used in the systematic observation and documentation of delphinid behavior in the wild. Course includes both classroom lecture and field studies focused primarily on dolphins of the Mississippi Sound. Prerequisites: none. COA 444: Cetacean Behavior, 3 credit hours.

*This course will run approximately 11 consecutive class days during the second half of the June term. Students may enroll in this course and either Barrier Island Ecology OR Coastal Restoration in the same term.*

## COASTAL RESTORATION

This course will provide an overview of coastal restoration along the Gulf Coast. Through lectures and field excursions to restoration sites in Mississippi, Alabama, and Florida, students will gain first-hand experience with different restoration techniques at both large and small scales and across a variety of habitats (e.g., marsh, oyster, mangrove, seagrass, dunes, springs). Students will also get an overview of how to identify needs, set goals, plan, design, implement, monitor, and evaluate restoration projects. Prerequisites: Two semesters of biology or permission of instructor. COA 490/590: Special Topics - Coastal Restoration, 3 credit hours.

*This course will run approximately 11 consecutive class days during the first half of the June term. Students may enroll in this course and either Cetacean Behavior OR Environmental Photography in the same term.*

## ELASMOBRANCH BIOLOGY (Shark Biology)

This specialized course will provide students with an overview of elasmobranch (sharks, skates and rays) biology, ecology and

### SESSION I ONLINE:

#### MARINE ANIMAL BEHAVIOR

This specialized course will provide an in-depth exploration of animal behavior in marine organisms, including the physiological and ecological aspects of behavior. The course will introduce students to techniques for observing animal behavior, designing and conducting behavioral experiments, and collecting and analyzing behavioral data. The course will consist of lectures and laboratory activities designed to provide students with experience in marine animal behavior. Prerequisites: 2 semesters of biology or permission of instructor. COA 442/542, 442L/542L – Marine Animal Behavior, 5 credit hours (3/2).

#### MARINE MAMMALS

This course is an overview of the biology of marine mammals (cetaceans, pinnipeds, sirenians, sea otters and the polar bear), including their classification, evolutionary history, anatomy, physiology, behavior, conservation and management. Prerequisites: 16 hours of biology or permission of instructor. COA 443/543, 443L/543L: Marine Mammals, 5 credit hours (3/2).

*Online courses will be 100% online and conducted through USM's online learning platform, Canvas. Students are expected to have access to a computer and reliable internet connection and should expect a combination of synchronous and asynchronous content.*

taxonomy. Lectures will cover such topics as evolution, anatomy and physiology, sensory systems, behavior and ecology. Students will be introduced to the diversity of elasmobranchs and will learn how to identify species. Special emphasis will be given to the species common to the Gulf of Mexico. Laboratory work will consist of several inshore and offshore collecting trips, as well as dissections. Prerequisites: Marine Biology and Marine Ichthyology or permission of instructor. COA 422/522, 422L/522L: Elasmobranch Biology, 6 credit hours (3/3).

## ENVIRONMENTAL PHOTOGRAPHY

This course will develop an awareness of our environment, and convey this understanding through the medium of photographic image. Students will gain a fuller understanding of inter-relationships in the environment. This class includes studies of the structure and function of ecosystems (emphasizing aquatic environments), and examines selected environmental concerns through field trips. Prerequisites: basic awareness of environmental issues. COA 490/590: Special Topics – Environmental Photography, 3 credit hours.

*This course will run approximately 11 consecutive class days during the second half of the June term. Students may enroll in this course and either Barrier Island Ecology OR Coastal Restoration in the same term.*

## MARINE SCIENCE I - OCEANOGRAPHY

This course provides a multidisciplinary foundation in oceanography, specifically the terminology, principles, processes, relationships and phenomena pertaining to three of its traditional sub-disciplines: physical, geological and chemical oceanography. The importance of the interaction of biotic and abiotic processes in the ocean will be addressed through exploration of timely issues in ocean science. Prerequisites: College algebra, 8 hours of chemistry, and 8 hours of biology or permission of instructor. COA 300, 300L: Marine Science I – Oceanography, 5 credit hours (3/2).

# Session II *July Term*

## EARLY LIFE HISTORY OF MARINE FISHES

This course will introduce students to the challenges “baby fish” experience as they try to survive from egg-to-juvenile stages. Lecture topics will include larval fish development and morphology, pelagic transport, ecology and related concepts. Lab and field exercises will highlight sampling methodologies, larval fish identification, and laboratory techniques. Prerequisites: Marine Biology and Ichthyology or permission of instructor. COA 490/590: Special Topics – Early Life History of Marine Fishes, 5 credit hours.

## MARINE ICHTHYOLOGY

Marine ichthyology is an intensive marine biological field course which engages students to collect and identify marine fishes in numerous habitats in the Gulf of Mexico. Students experience a variety of land-based and vessel-based collection techniques, such as seining, cast netting, hook and line fishing, trawling, trolling, dip



### SESSION II ONLINE:

#### MARINE CONSERVATION

This course will introduce students to conservation biology and ecology with a focus on marine and coastal ecosystems. Topics may include biodiversity, marine ecosystem processes and threats, conservation of habitat and species, and human impacts, solutions and policy. The course will consist of lectures and laboratory exercises designed to provide students with experience in marine conservation biology. Prerequisites: 2 semesters of biology or permission of instructor. COA 450/550, 450L/550L: Marine Conservation, 5 credit hours (3/2).

#### MARINE TOXICOLOGY

Marine toxicology is the study of how pollutants and toxins impact the marine environment. This includes everything from

## RESEARCH STUDY PROGRAM

Available in both **Session I** and **II**, this Research Study Program allows upper-level undergraduate students an opportunity to gain valuable experience in designing a research project, sampling, analyzing data and presenting research findings. Research options encompass a broad spectrum of disciplines in coastal sciences that include marine aquaculture, marine biodiversity, marine biomedicine, marine ecology, marine education, marine fisheries, marine pathology and marine toxicology. This course could easily form the basis of a senior or honors project. Prerequisites: 4 semesters of biology **or** permission of instructor. COA 492: Special Problems - Research. One to 6 hours of credit are available and assigned by the instructor. Contact Margaret Firth for further information at **228.818.8852** or [margaret.firth@usm.edu](mailto:margaret.firth@usm.edu).



netting and many others. Successful students gain an appreciation for taxonomic identities of fishes and the synergism between abiotic and biotic factors that drive marine fish distribution and faunal diversity in the northern Gulf of Mexico. Prerequisites: 16 hours of biology or permission of instructor. COA 421/521, 421L/521L: Marine Ichthyology, 6 credit hours (3/3).

## MARINE INVERTEBRATE ZOOLOGY

This course is a concentrated study of the marine and estuarine invertebrates from the Mississippi Sound and contiguous continental shelf of the northeastern Gulf of Mexico. Emphasis is on structure, classification, phylogenetic relationships, larval development and functional processes. Prerequisites: 16 hours of biology or permission of instructor. COA 428/528, 428L/528L: Marine Invertebrate Zoology, 6 credit hours (3/3).

## MARINE SCIENCES II - MARINE BIOLOGY

An ecological approach is taken to understand the biology of marine systems with emphasis on local organisms, their habitats, life cycles and survival strategies. Prerequisites: 8 hours of biology or permission of instructor. COA 301, 301L: Marine Sciences II – Marine Biology, 5 credit hours (3/2).

algae to whales. Students will be introduced to the fundamentals of toxicology, including dose, exposure, and metabolism. Students will also engage in lectures and open discussions relating to major xenobiotics, current topics in marine toxicology (oil spills, harmful algal blooms, microplastics, etc.), molecular and analytical techniques, and experiential design. Lab activities will focus on experiential design and basic data interpretation. Prerequisites: 2 semester of biology and 2 semesters of chemistry or permission of instructor. COA 490/590: Special Topics - Marine Toxicology, 5 credit hours.

*Online courses will be 100% online and conducted through USM's online learning platform, Canvas. Students are expected to have access to a computer and reliable internet connection and should expect a combination of synchronous and asynchronous content.*

# Course Fees

## UNDERGRADUATE Course Fees

*Please Note: A non-refundable application processing fee of \$45 is required to process application materials. Students may enroll in a maximum of 6 credit hours of in-person coursework OR 10 credit hours of online coursework each session. If you are applying for multiple sessions, only a single application fee is required. If taking multiple courses, add the total cost for EACH course.*

Term	Course	# of credit hours	Tuition (\$379/hour)	Capital Improvement Fee (\$2.97/hour; \$35 max per term)	Field Fee	Lab Fee	Total Cost per Course
Session II: June Term	Barrier Island Ecology	3	\$1,137	\$8.91	\$500	\$60	<b>\$1,705.91</b>
	Cetacean Behavior	3	\$1,137	\$8.91	\$500	---	<b>\$1,645.91</b>
	Coastal Restoration	3	\$1,137	\$8.91	\$500	---	<b>\$1,645.91</b>
	Elasmobranch Biology	6	\$2,274	\$17.82	\$500	\$60	<b>\$2,851.82</b>
	Environmental Photography	3	\$1,137	\$8.91	\$200	---	<b>\$1,345.91</b>
	Oceanography	5	\$1,895	\$14.85	\$500	\$60	<b>\$2,469.85</b>
	Marine Animal Behavior	5	\$1,895	\$14.85	---	---	<b>\$1,909.85</b>
Marine Mammals	5	\$1,895	\$14.85	---	---	<b>\$1,909.85</b>	
Research Study Program	1-6	\$379/hour	\$2.97/hour	---	---	<b>varies</b>	
Session II: July Term	Early Life Hist. of Marine Fishes	5	\$1,895	\$14.85	\$500	---	<b>\$2,409.85</b>
	Marine Biology	5	\$1,895	\$14.85	\$500	\$60	<b>\$2,469.85</b>
	Marine Ichthyology	6	\$2,274	\$17.82	\$800	\$60	<b>\$3,151.82</b>
	Marine Invertebrate Zoology	6	\$2,274	\$17.82	\$500	\$60	<b>\$2,851.82</b>
	Marine Conservation	5	\$1,895	\$14.85	---	---	<b>\$1,909.85</b>
	Marine Toxicology	5	\$1,895	\$14.85	---	---	<b>\$1,909.85</b>
Research Study Program	1-6	\$379/hour	\$2.79/hour	---	---	<b>varies</b>	

## GRADUATE Course Fees

*Please Note: A non-refundable application processing fee of \$60 is required to process application materials. Students may enroll in a maximum of 6 credit hours of in-person coursework OR 10 credit hours of online coursework. If you are applying for multiple sessions, only a single application fee is required. If taking multiple courses, add the total cost for EACH course.*

Term	Course	# of credit hours	Tuition (\$506/hour)	Capital Improvement Fee (\$3.89/hour; \$35 max per term)	Field Fee	Lab Fee	Total Cost per Course
Session I: June Term	Elasmobranch Biology	6	\$3,036	\$23.34	\$500	\$60	<b>\$3,619.34</b>
	Coastal Restoration	3	\$1,518	\$11.67	\$500	---	<b>\$2,029.67</b>
	Environmental Photography	3	\$1,518	\$11.67	\$200	---	<b>\$1,729.67</b>
	Marine Animal Behavior	5	\$2,530	\$19.45	---	---	<b>\$2,549.45</b>
	Marine Mammals	5	\$2,530	\$19.45	---	---	<b>\$2,549.45</b>
Research Study Program	1-6	\$506/hour	\$3.89/hour	---	---	<b>varies</b>	
Session II: July Term	Marine Ichthyology	6	\$3,036	\$23.34	\$800	\$60	<b>\$3,919.34</b>
	Marine Invertebrate Zoology	6	\$3,036	\$23.34	\$500	\$60	<b>\$3,619.34</b>
	Early Life Hist. of Marine Fishes	5	\$2,530	\$19.45	\$500	---	<b>\$3,049.45</b>
	Marine Conservation	5	\$2,530	\$19.45	---	---	<b>\$2,549.45</b>
	Marine Toxicology	5	\$2,530	\$19.45	---	---	<b>\$2,549.45</b>
Research Study Program	1-6	\$506/hour	\$3.89/hour	---	---	<b>varies</b>	

All fees are subject to change without notice. Fees do not include books, supplies, etc. (\$75-200, depending on course). For more information about GCRL Summer Field Program, visit: [usm.edu/sfp](http://usm.edu/sfp).

## ROOM AND BOARD FEES All fees are subject to change without notice.

Room and board is optional. The fee includes a shared room in a GCRL housing facility and meals in the GCRL dining hall during the course dates. Please indicate your interest in room and board on your application, and the GCRL Housing and Residence Life coordinator will contact you for more details. If you have specific questions about GCRL housing, contact Ben Weldon ([benjamin.weldon@usm.edu](mailto:benjamin.weldon@usm.edu); 228.818.8824).

### 2022 GCRL Summer Field Program: Room and Board Fees

Term and Session	SUMMER Session I	SUMMER Session II
Fee	\$1,550	\$1,550

## PARKING

All students must have a valid University of Southern Mississippi parking permit. Parking permits can be purchased online through the University of Southern Mississippi Parking and Transit Services website: <https://www.usm.edu/parking-transit-services/index.php>. USM students with a valid annual permit do not need to purchase a summer permit for GCRL.