Marine Science Summer 2021

Undergraduate and Graduate Courses at Dauphin Island Sea Lab

The Marine Environmental Science Consortium of Alabama

www.DISL.edu
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DISL Campus Contact Information

<table>
<thead>
<tr>
<th>Contact</th>
<th>Phone Ext.</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ms. Regina Kollegger, University Programs Registrar</td>
<td>7526</td>
<td><a href="mailto:rkollegger@disl.edu">rkollegger@disl.edu</a></td>
</tr>
<tr>
<td>Dr. Lee Smee, University Programs Chair</td>
<td>2284</td>
<td><a href="mailto:lsmee@disl.edu">lsmee@disl.edu</a></td>
</tr>
<tr>
<td>Dr. Jessica Lunt</td>
<td>7546</td>
<td><a href="mailto:jlunt@disl.edu">jlunt@disl.edu</a></td>
</tr>
<tr>
<td>Ms. Randi Cannon, University Programs T.A.</td>
<td>7521</td>
<td><a href="mailto:rcannon@disl.edu">rcannon@disl.edu</a></td>
</tr>
<tr>
<td>Ms. Daphne Wood, Bursar</td>
<td>7512</td>
<td><a href="mailto:dwood@disl.edu">dwood@disl.edu</a></td>
</tr>
<tr>
<td>Ms. Melissa Mills, Information Technology</td>
<td>7521</td>
<td><a href="mailto:mmills@disl.edu">mmills@disl.edu</a></td>
</tr>
<tr>
<td>Ms. Angela Levins, Public Relations</td>
<td>7509</td>
<td><a href="mailto:alevins@disl.edu">alevins@disl.edu</a></td>
</tr>
<tr>
<td>Dr. John Valentine, Executive Director</td>
<td>7505</td>
<td><a href="mailto:sstephens@disl.edu">sstephens@disl.edu</a></td>
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Message to Students from the UP Chair

University Programs faculty and staff are excited to present the course schedule for the 2021 UP Summer at the Dauphin Island Sea Lab.

We have faced many challenges in 2020 including the COVID-19 pandemic and Hurricane Sally.

I wanted to let you know that the facilities necessary for the summer program will be ready for in person learning to begin on the designated dates for each term.

However, we ask that you are patient with the possibility of continued construction on campus while you are taking classes. The construction will not impact your classes.

There is a chance that some courses will be offered completely online. These courses include, but are not limited to Biotic Response to Sea Level Rise, Environmental Applications of GIS, Hurricanes of the Gulf Coast.

We remain hopeful that the COVID-19 pandemic will subside, and normal operations can resume for the 2021 UP summer. Please take into consideration that changing conditions may alter class offerings.

These decisions will be finalized in early April 2021 and clearly communicated to you.

Dr. Lee Smee
University Programs Chair
Summer University Programs Course Schedule 2021

May Session: May 10 - May 22 - 2 weeks
one course only may be taken in this session; Lecture/Lab: M-F (9A - 4P)

**#Biology & Conservation of Marine Turtles
(2)UG/G Wibbels
**

**#Dolphins and Whales
(2)UG Lewis
**

**#Eco!ogy of the Florida Everglades
(2)UG Stanton
**

**#Shark and Ray Biology
(2)UG Dymon
**

**#Plankton Biology
(2)UG Moss
**

**#Shellfish Aquaculture of the GOM
(2)UG Pruente

Special May Session: March 1- May 22

**# Coral Reef Biology and Ecology
(4)UG/G Headley

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1st Session: May 24 - June 25 - 5 weeks

<table>
<thead>
<tr>
<th>A Courses</th>
<th>4-hour courses</th>
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<tbody>
<tr>
<td>Lecture: M/T/W (9A - 12P); Lab: M/T (1P - 4P)</td>
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<tr>
<td>Marine Behavioral Ecology</td>
<td>(4)UG/G Gier</td>
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<td>Marine Biology</td>
<td>(4)UG/G Layton</td>
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<td>Marine Botany</td>
<td>(4)UG/G Henning</td>
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<td>Marine Mammals</td>
<td>(4)UG/G Lewis</td>
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<td>Schedule A2: 2-hour courses: Lecture: TH/F (9A - 11:30A); Lab: TH (1P - 4P)</td>
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<tr>
<td>Coastal Birds</td>
<td>(4)UG/G Wodrey</td>
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<tr>
<td>Environmental Applications of GIS</td>
<td>(4)UG/G Fleming</td>
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<tr>
<td>Hurricanes of the Gulf Coast</td>
<td>(4)UG/G Terrey</td>
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<td>Schedule B4: 4-hour courses: Lecture: W (1P - 4P), TH/F (9A - 12P); Lab: TH/F (1P - 4P)</td>
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<tr>
<td>Coastal Wetlands</td>
<td>(4)UG/G Stanton</td>
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<tr>
<td>Intro to Oceanography</td>
<td>(4)UG/G Krause</td>
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<tr>
<td>Marine Geology</td>
<td>(4)UG/G Elliott</td>
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<tr>
<td>Marine Vertebrate Zoology</td>
<td>(4)UG/G Allens</td>
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<td>Schedule B5: 2-hour courses: Lecture: M/T (9A - 11:30A); Lab: M (1P - 4P)</td>
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<tr>
<td>Marine Restoration Ecology</td>
<td>(2)UG/G Stanton</td>
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<td>Marine Technical Methods</td>
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2nd Session: June 28 - July 30 - 5 weeks

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<th>C Courses</th>
<th>4-hour courses</th>
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<tr>
<td>Lecture: M/T/W (9A - 12P); Lab: M/T (1P - 4P)</td>
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<tr>
<td>Intro to Oceanography</td>
<td>(4)UG/G Krause</td>
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<td>Marine Biology</td>
<td>(4)UG/G Gannon</td>
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<td>Marine Conservation Biology</td>
<td>(4)UG/G Robertson</td>
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<tr>
<td>Marine Invertebrate Zoology</td>
<td>(4)UG/G Carmichael</td>
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<tr>
<td>Schedule C2: 2-hour courses: Lecture: TH/F (9A - 11:30A); Lab: TH (1P - 4P)</td>
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<tr>
<td>Marine Mammal Health</td>
<td>(2)UG/G Bloodgood</td>
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<td>Biotic Response to Sea Level Change</td>
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<tr>
<th>D Courses</th>
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<tr>
<td>Lecture: W (1P - 4P), TH/F (9A - 12P); Lab: TH/F (1P - 4P)</td>
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<tr>
<td>Marine Biology</td>
<td>(4)UG/G Gannon</td>
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<tr>
<td>Marine Ecology</td>
<td>(4)UG/G Dorgam</td>
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<tr>
<td>Marine Geology</td>
<td>(4)UG/G Elliot</td>
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<tr>
<td>Marine Vertebrate Zoology</td>
<td>(4)UG/G Baker</td>
</tr>
<tr>
<td>Schedule D2: 2-hour courses: Lecture: M/T (9A-11:30A); Lab: M (1P-4P)</td>
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<tr>
<td>Marine Aquaculture</td>
<td>(2)UG/G Steckel</td>
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<tr>
<td>Shark and Ray Biology</td>
<td>(2)UG/G Dymon</td>
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Special Session July 19 - August 6

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<tr>
<th>EX Course</th>
<th>Lecture: M-Sat, 9A-3P</th>
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<tr>
<td>Intro. To Neurobiology</td>
<td>(3)Adv. UG/G Strang et al.</td>
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**Only one course per session  
#Additional fees apply (fees nonrefundable unless course is cancelled)

All courses are subject to change. Listed schedule times are approximate and are left to the discretion of the instructor. All courses must be approved by your advisor. For sessions 1 & 2 you may enroll in (1)4-hr & (1)2-hr course; or (2) 2-hr courses. (2) 4-hr courses may be taken at the discretion of your advisor.

Dauphin Island Sea Lab  
Marine Science Summer 2021

Course Descriptions

** Directed Studies
(2cr UG/G) Dr. Wibbels

This introductory course will provide an overview of the biology and conservation of marine turtles. Topics to be covered include the identification, distribution, nesting behavior, migratory behavior, feeding ecology, population biology and genetics, developmental habitat, temperature-dependent sex determination, paleontology and conservation of marine turtles. Students will obtain a detailed knowledge of sea turtle biology; gain an understanding of why many sea turtle species have become endangered; and how proper management has allowed some populations to recover. The course will culminate with an overnight, multi-day field trip to sea turtle nesting beaches and foraging grounds in the southeastern U.S. The class will also visit sea turtle research and rehabilitation facilities. The overnight field trip will provide students with the opportunity to observe loggerhead, green, and leatherback turtles in their natural habitats.

*Special fees apply and will be determined based on enrollment (approximately $625.00). A trip deposit (1/2) will be due on March 06, 2021, with the remaining portion due on April 29, 2021. The fee is nonrefundable unless the class is canceled. **Prerequisites - introductory course in biology.

**Dolphins and Whales
(2cr UG) Dr. Lewis

This class will be an introduction to the biology of cetaceans (toothed and baleen whales). Topics covered will include evolution, taxonomy, anatomy, physiology, genetics, behavior, and conservation related to species within this Order. Lab exercises will introduce current methods used in cetacean research. **Prerequisites - general biology.

**Students may need to arrive at 7:30 am for field trips, and/or work evenings and weekends to meet course needs (working in the lab, on projects, or participating in field exercises and/or overnight field trips). Some courses may have snorkeling and other water activities.

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Register online
www.disl.edu/univ-prog/undergrad
May 10 - 21

**Ecology of the Everglades** (2cr UG/G)
Dr. Stanton

This course examines the natural history and ecology of the world’s rarest and most endangered wilderness area. The course will consist of a week of lectures and discussions focusing on the history, geology, hydrology, and biota of this system, and then a week of field exploration to examine the Everglades and associated systems. The field component will consist of excursions and tent camping in several Florida State Parks. As such, participants should bring appropriate gear and be prepared to actively and cheerfully participate.

*Special fees apply and will be determined by the number of participants in the course (approximately $450.00). A trip deposit (1/2) is due on March 08, 2021, with the remaining portion due on April 29, 2021. The fee is nonrefundable unless the class is canceled. Email questions to lstanton@uwa.edu.

**Prerequisites** - Undergraduate biology, zoology or botany.

**Shark and Ray Biology** (2cr UG/G)
Dr. Drymon

This course will provide an introduction to the biology of sharks and rays, with special emphasis on regional shark fauna and field techniques. Topics to be covered include chondrichthyan origin, systematics, sensory biology, locomotion, food consumption, osmoregulation, reproductive biology, life history, ecology, fisheries and conservation. Lectures will be supplemented with discussions of papers from the primary literature to familiarize students with current research. In addition, longline and gillnet sampling will provide students with firsthand knowledge of field techniques and local shark identification.

**Prerequisites** - One course in general/organismal biology (or equivalent).

**Shellfish Aquaculture of the Gulf of Mexico** (2cr UG/G)
Dr. Pruente

This course will provide students with an overview of the various types of shellfish aquaculture practiced in the Gulf of Mexico, both for public stock enhancement and private production. Students will gain a broader understanding of the scale and methods of oyster aquaculture, including cultching, on-bottom and off-bottom methods, as well as clam aquaculture, with field trips to operations in Louisiana, Mississippi, Alabama and Florida. Students will get an overview of shellfish hatchery production and techniques. This course is also designed to assist students with problem solving and communication skills.

*Special fees apply and will be determined based on student enrollment in the course (approximately $385.00). A trip deposit (1/2) is due on March 08, 2021 with the remaining portion due on April 29, 2021. The fee is nonrefundable unless the class is canceled. Email questions to khdaley@dls.edu.

**1st Session - A4 Courses**
May 24 - June 25

**Coral Reef Biology and Ecology** (4cr UG/G)
Dr. Hoadley

This course will explore the ecology and evolution of coral reef communities, with a view to understanding what is happening on reefs today. This 4-credit course will begin with online course lectures beginning on March 1st, followed by a two-week trip to the Florida Keys. The online portion of the course will be self-paced (with some online discussions) and cover energy flow across reefs, biogeochemical cycling important for continual reef development, microbial interactions that govern the flow of carbon and nitrogen through coral reefs, and current threats from climate change. The online portion must be completed by May 1st. Students will then spend May 7th - 22nd in the Florida Keys, carrying out short experimental projects and exploring various coral reef and mangrove systems.

There is no assigned textbook and most readings will be research articles and posted prior to the lecture.

**Prerequisites** - 2 semesters of general biology or equivalent required, general ecology course recommended.

*Special fees apply and will be determined by the number of participants in the course (approximately $1,000.00). A trip deposit (1/2) is due on March 08, 2021, with the remaining portion due on April 29, 2021. The fee is nonrefundable unless the class is canceled. Email questions to khdaley@dls.edu.
Course Descriptions

1st Session - A2 Courses
May 24 - June 25

Marine Mammals (4cr UG) Dr. Lewis
This course will cover the evolutionary history, taxonomy/classification, anatomy, physiology, behavior and conservation/management issues of marine mammals (cetaceans, pinnipeds, mustelids, sireniants and the polar bear). In addition, research methods used to study marine mammals will be taught (including field and lab techniques). Prerequisites - general biology.

Coastal Birds of Alabama (2cr UG) Dr. Woodrey
This course highlights the diverse coastal birdlife of northern Gulf of Mexico. With a focus on the study of avian ecology in the field, this class will include a significant emphasis on the use of both sight and sound as means of field identification. A variety of habitats will be explored, including barrier island nesting grounds, the Mobile-Tensaw River basin, local marshes and other unique coastal habitats. Students will also be introduced to a variety of field ornithology techniques including bird-banding, survey techniques, and monitoring methodologies. Email questions to Mark.Woodrey@msstate.edu. Prerequisites - undergraduate biology or zoology.

Environmental Applications of GIS Dr. Fleming
This course consists of learning applied mapping and analysis with GIS and will leverage other geospatial techniques including remote sensing, geovisualization, and spatial analysis with particular emphasis on environmental applications. Students will use knowledge acquired from readings, guided activities, and instructor demonstrations to apply GIS data including vector and raster spatial data, imagery, maps, and surface models in examinations of contemporary coastal and marine science issues. Students will be exposed to working with spatial information regarding human and natural hazards and disasters, land use and land cover, coastal monitoring, and other relevant data types. Some lecture is required, but this course will emphasize a “hands-on” approach to learning GIS through practical assignments and projects in a computer lab and in the field. Industry leading ArcGIS software will be used along with exposure to online and open-source technology. Prerequisites - statistics or equivalent course in mathematics. Offered online.

Hurricanes of the Gulf Coast (2cr UG/G) Dr. Terwey
This is an introductory survey course on hurricanes with emphasis on hurricanes in the Gulf of Mexico. Topics include: 1) the hurricane problem along the Gulf Coast and a review of some of the infamous Gulf Coast hurricanes of the last 150 years; 2) Atlantic/Caribbean/Gulf hurricane climatology; 3) the effects of El Niño and multi-decadal changes in the Atlantic circulation on hurricane frequency; 4) favorable/unfavorable environments for hurricane development and intensification; 5) hurricane features and structure; 6) hurricane movement and steering mechanisms; 7) coastal and inland effects from landfalling Gulf Coast hurricanes; and 8) Gulf hurricane forecasting (where will the storm go and how strong will it be at landfall). A half-day boat trip along much of the length of Dauphin Island is planned (weather permitting) during the last week of class to inspect the impact of recent hurricanes on this barrier island. Prerequisites - none. Offered online.

Coastal Wetlands Ecology (4cr UG/G) Dr. Stanton
This course will focus on coastal and nearshore wetland areas, with an emphasis on the biogeochemical processes that occur within, and issues that threaten and protect these important resources. Wetlands not only provide critical habitat for many aquatic and semi-aquatic species, they are also important for primary productivity, transformation of nutrients, pollutant removal, as well as providing protection from storm surges and floodwaters. Insight into wetland ecology requires understanding of the unique interactions between biology, chemistry and hydrology. Prerequisites - General biology and botany or ecology.

Intro to Oceanography (4cr UG/G) Dr. DeBose
This hands-on course provides students an opportunity to learn about the physics, chemistry, geology, and biology of the ocean. Students will apply this knowledge first hand by implementing sample collection strategies on board a research vessel during cruises on Mobile Bay and the Gulf of Mexico. Through class discussion of recent oceanographic discoveries and core concepts, and learning user-friendly ocean data visualization software, this course will enable students to then interpret oceanographic data collected during their cruises and to create clear and concise presentations. Typical data collected on board the research vessel will include hydrographic (temperature, pH, salinity, inorganic nutrients, light intensity) and biological (phytoplankton, zooplankton) variables that are collectively processed and visualized. Students should have a laptop equipped with word processing and spreadsheet software. Prerequisites - General biology and botany or ecology.

Marine Geology (4cr UG/G) Dr. Elliot
A study of the geology of the ocean basins, with special emphasis on the continental shelves, their sediments and the sedimentary processes at work there with emphasis on the northeast Gulf of Mexico. Field trips will be taken to study beach processes and sediments in Mobile Bay and offshore. Students will be introduced to the following: technical writing; conducting a research project; working as a team member; data management; concepts of marine geology; critical thinking; principles of science (hypothesis testing). Participation in overnight field trips is a part of this course. Prerequisites - introductory geology recommended.

Register online
www.disl.edu/univ-prog/undergrad
A survey of marine fishes, reptiles and mammals, with an in-depth comprehensive treatment of their systematics, zoogeography and ecology. Field and laboratory work will stress the vertebrate fauna of the northern Gulf of Mexico and most of the course will be devoted to fishes. Students completing this course will: 1) have a basic understanding of the biology, ecology, physiology and systematics of the various marine vertebrate taxa; 2) gain experience in field and lab identification of members of the various vertebrate taxa; and 3) gain experience in collecting various marine and island vertebrate taxa. Prerequisites - two semesters of general biology (or equivalent) and accompanying labs.

This course will provide an overview of the scientific and technical principles of marine habitat restoration. We will discuss the role of key ecological concepts in restoration, and the role of restoration in science and society. Students will identify structural and functional components of marine habitats and learn how to design restoration projects and monitoring plans that capture these key components of structure and function. Students will learn to recognize when adaptive management may be needed, and how to formulate strategies to correct or maintain the desired trajectory of restored habitats. Students will also be introduced to the interdisciplinary nature of restoration science, including social, ethical, political and economic aspects. Lectures will be supplemented with primary literature reading assignments. Field trips will allow students to see local restoration sites and learn monitoring techniques used in various habitats (e.g., salt marsh, seagrass, and dune habitats). This course is designed for undergraduate and graduate students. Prerequisites - One year of undergraduate introductory science (preferably including an ecology course) or consent of the instructor.

This course will provide an introduction to different methods of sensing the ocean, including building and testing simple sensors, e.g., temperature and light, using Arduino microcontrollers and software, use of instruments to collect high-resolution data, and some background on how technology has led to key advances in marine science. The course will be primarily project-based, with students working together to build instruments, learn basic programming skills to control sensors, and going in the field to test instruments and collect environmental data. Prerequisites - general biology, chemistry, physics or equivalent.

A general survey of marine plants, invertebrates and vertebrates, the communities they form and the physical and chemical factors that influence them. Field trips include marsh, seagrass, and dune habitats. Sampling from research vessels and laboratory exercises will serve to introduce students to the diversity of marine habitats and organisms. Organisms will be identified using dichotomous keys. There will be overnight field trips. Snorkeling gear will be needed. Prerequisites - general biology.

This course surveys the morphology, natural history and evolutionary relationships of the marine invertebrates. The course includes lectures, laboratory exercises and extended field trips. Participation in overnight field trips is a part of this course. Snorkeling gear will be needed. Prerequisites - introductory biology or zoology.

This hands-on course provides students an opportunity to learn about the physics, chemistry, geology, and biology of the ocean. Students will apply this knowledge first hand by implementing sample collection strategies on board a research vessel during cruises on Mobile Bay and the Gulf of Mexico. Through class discussion of recent oceanographic discoveries and core concepts, and learning user-friendly ocean data visualization software, this course will enable students to then interpret oceanographic data collected during their cruises and to create clear and concise presentations. Typical data collected on board the research vessel will include hydrographic (temperature, pH, salinity, inorganic nutrients, light intensity) and biological (phytoplankton, zooplankton) variables that are collectively processed and visualized. Students should have a laptop equipped with word processing and spreadsheet software. Prerequisites - basic science major.
Biotic Response to Sea Level Change (2cr UG/G) Dr. Wofford

This course is an overview of sea level change over geologic time with emphasis on mechanisms of change, evidence of past sea level changes, and the impact of expected sea level changes on the marine biosphere. Topics include: global climate change and eustasy, tectonically-forced sea level change, epeiric seas, transgression and regression sedimentology, coastal geomorphology, and marine and coastal habitat change. Field studies emphasize local evidence for sea level change, habitat shift and reorganization, and human response to changing sea level, such as community displacement, shoreline stabilization, and beach-fill nourishment. This course is designed for undergraduate and graduate students in the physical and biological marine sciences. Offered online.

Marine Mammal Health (4cr UG/G) Dr. Bloodgood

This course will provide an overview of marine mammal stranding response, health assessments, forensic pathology, and common diseases of marine mammals, with a focus on species found in the Gulf of Mexico. This course requires participation in marine mammal necropsies, which includes hands-on (or virtual, depending on COVID-19 requirements) dissection of carcasses and internal organs, blood, and can have foul smells. Due to potential risk of zoonotic disease, you may not want to participate in necropsies if you are pregnant or immunocompromised. Personal protective equipment will be available and is required. An optional fieldtrip to an aquarium will provide the opportunity to see marine mammal medical examinations, and participation in live and dead marine mammal stranding response will be available on a volunteer basis as opportunities present throughout the course. Prerequisites - 3rd or 4th year undergraduate- completion of Dolphins and Whales or Marine Mammals course; graduate student; or consent of the instructor.

Marine Biology (4cr UG) Dr. Sprinkle

A general survey of marine plants, invertebrates and vertebrates, the communities they form and the physical and chemical factors that influence them. Field trips include marsh, seagrass, and dune habitats. Sampling from research vessels and laboratory exercises will serve to introduce students to the diversity of marine habitats and organisms. Organisms will be identified using dichotomous keys. There will be overnight field trips. Snorkeling gear will be needed. Prerequisites - general biology.

Marine Ecology (4cr UG) Dr. Dorgan

This advanced course is open to juniors, seniors and graduate students. The class will study marine organisms as they interact with each other and their environment, and examine ecological theories and the experimental basis of our current knowledge. The laboratory will consist of field trips to a wide variety of marine habitats and field problems which will be examined by student teams in small groups. Habitats selected for emphasis include coral reefs, kelp forests, seagrass meadows, the rocky intertidal and deep-sea hydrothermal vents. Snorkeling gear will be needed. Prerequisites - general biology.

Marine Geology (4cr UG/G) Dr. Minzoni

A study of the geology of the ocean basins, with special emphasis on the continental shelves, their sediments and the sedimentary processes at work there with emphasis on the northeast Gulf of Mexico. Field trips will be taken to study beach processes and sediments in Mobile Bay and offshore. Students will be introduced to the following: technical writing; conducting a research project; working as a team member; data management; concepts of marine geology; critical thinking; principles of science (hypothesis testing). Participation in overnight field trips is a part of this course. Prerequisites - introductory geology recommended.

Marine Vertebrate Zoology (4cr UG/G) Dr. Baker

A survey of marine fishes, reptiles and mammals, with an in-depth comprehensive treatment of their systematics, zoogeography and ecology. Field and laboratory work will stress the vertebrate fauna of the northern Gulf of Mexico and most of the course will be devoted to fishes. Students completing this course will: 1) have a basic understanding of the biology, ecology, physiology and systematics of the various marine vertebrate taxa; 2) gain experience in field and lab identification of members of the various vertebrate taxa; and 3) gain experience in collecting various marine and island vertebrate taxa. Prerequisites - two semesters of general biology (or equivalent) and accompanying labs.

Marine Aquaculture (2cr UG/G) Dr. Stoeckel

This course will introduce students to techniques in live animal culture with an emphasis on basic principles that can be applied to the culture of any organism for research, display or commercial profit. Topics discussed will include: water chemistry, filtration, production techniques, reproduction and nutrition. The course is also designed to assist students with problem solving and communication skills. Prerequisites - general biology required; ichthyology, limnology, and invertebrate zoology suggested, but not required.

Shark and Ray Biology (2cr UG/G) Dr. Drymon

This course will provide an introduction to the biology of sharks and rays, with special emphasis on regional shark fauna and field techniques. Topics to be covered include chondrichthyan origin, systematics, sensory biology, locomotion, food consumption, osmoregulation, reproductive biology, life history, ecology, fisheries and conservation. Lectures will be supplemented with discussions of papers from the primary literature to familiarize students with current research. In addition, longline and gillnet sampling will provide students with firsthand knowledge of field techniques and local shark identification. Prerequisites - one course in general/organismal biology (or equivalent).

**Students may need to arrive at 7:30am for field trips, and/or work evenings and weekends to meet course needs (working in the lab, on projects, or participating in field exercises and/or overnight field trips). Some courses may have snorkeling and other water activities.
2nd Session - EX Special Courses
July 19 - August 6

Intro. to Neurobiology (3er Adv.UG/G) Drs. Strang et al

Students will be introduced to the neuroanatomy and neuropysiology of marine invertebrates and vertebrates. The following aspects of neurobiology will be covered in lectures and laboratory exercises: neurons and glia; passive properties of neurons; resting potentials; action potentials; synaptic transmission; neurotransmitters and receptors; sensory transduction; muscle innervation and contraction; sensorimotor integration; and neurophysiological bases of behavior. In addition, students will use computer simulations that allow a more in-depth exploration of cellular neurobiology than is possible in standard laboratory classes. Students will be introduced to aspects of molecular biology and its applications to neuroscience. This class will include evening and Saturday sessions. The following are recommended but not required: general chemistry and general physics; or permission of the instructor. **Prerequisites** - introductory biology.

**Students may need to arrive at 7:30am for field trips, and/or work evenings and weekends to meet course needs (working in the lab, on projects, or participating in field exercises and/or overnight field trips). Some courses may have snorkeling and other water activities.**

- **Albins, Mark A., Ph.D.** (Oregon State University, 2011). Research Associate, University of South Alabama. The ecology of reef-associated marine fishes, including effects of invasive species and fishing on populations and communities. malbins@disl.edu.
- **Baggett, Lesley P., Ph.D.** (Univ. of South AL, 2010). Assistant Professor, Univ. of Mobile. Benthic ecology and restoration of nearshore environments such as seagrass beds and oyster reefs. The effects of eutrophication on seagrass beds and their associated organisms. lbaggett@umobile.edu.
- **Baker, Ronald, Ph.D.** (James Cook Univ., 2006). Assistant Professor, University of South Alabama, and Senior Marine Scientist, Dauphin Island Sea Lab. Coastal and estuarine fisheries ecology; predator/prey regulation; marine animal behavior. rbaker@disl.edu.
- **Bloodgood, Jennifer, DVM, PhD** (Univ. of Georgia 2016). Veterinarian and Postdoctoral Researcher, DISL, Marine Mammal Research Center and Alabama Marine Mammal Stranding Network. Free-ranging wildlife health; One Health; infectious and zoonotic disease; forensic pathology; marine mammal stranding response and necropsy. jbloodgood@disl.org
- **Carmichael, Ruth, Ph.D.** (Boston Univ., 2004). Senior Marine Scientist III DISL, Professor, Dept. of Marine Sciences, Univ. of South AL. Marine ecosystem and organismal responses; understanding biological and physiological responses to environmental change such as nutrient enrichment, climate change and other perturbations. Application of methods in stable isotope and population ecology. rcarmichael@disl.edu.
- **DeBose, Jennifer, Ph.D.** (Univ. of California - Davis, 2008) Animal behaviour and marine chemical ecology; ecology of fish aggregations; coral reef ecology; and water quality monitoring. jenndebose@gmail.com
- **Dorgan, Kelly M., Ph.D.** (Univ. of Maine, 2007). Senior Marine Scientist I DISL, Assistant Professor, Dept. of Marine Sciences, Univ. of South AL. Sediment ecology, focused primarily on organism-environment interactions; biomechanics and energetics of burrowing; biological-physical interactions; functional morphology of invertebrates. kdorgan@disl.edu.
- **Drymon, J. Marcus, Ph.D.** (Univ. of South AL, 2010). Assistant Extension Professor, MSU Coastal Research and Extension Center. Research interests include marine fisheries ecology, specifically trophic interactions/foodweb dynamics of upper trophic-level predators and ecosystem based fishery management. marcus.drymon@msstate.edu.
- **Elliott, Emily A. (Timmons), Ph.D.** (Univ. of North Carolina at Chapel Hill, 2017). Postdoctoral Researcher/ Adjunct Faculty, Univ. of Alabama. Coastal geology and geomorphology, paleo- and geochronology, sedimentology and paleotempestology, focusing on understanding the climatic drivers of coastal change. emily.elliott@ua.edu.
DISL Summer Program Faculty/Research Interest

Fleming, Jonathan P., Ph.D. (Mississippi State University, 2012) Assistant Professor, Department of Geography and Sociology, Howard College of Arts and Sciences, Samford University. Current research topics include identifying mechanisms and patterns of species invasions, aquatic and wetland plants, and spatial ecology projects using applied GIS to understand contemporary environmental change. jfleming@samford.edu


Henning, Jeremiah A. Ph.D. (University of Tennessee, 2017). Assistant Professor, University of South Alabama. Coastal plant community ecology, biodiversity-ecosystem function linkages, mycorrhizal fungi, plant-microbe interactions, global change ecology. henning@southalabama.edu.

Hoadley, Kenneth, Ph.D. (University of Delaware, 2016) Senior Marine Scientist I DISL, Assist. Professor, Dept. of Biological Sciences, University of Alabama. Current research topics include coral reef biology and marine algal photobiology and primary production. khoadley@disl.edu

Keyser, Kent, Ph.D. (SUNY Stony Brook, 1980). Professor, Dept. of Vision Sciences, Assistant Vice President for Research, Univ. of AL B'ham. Communication between neurons: neurotransmitters, neurotransmitter receptors in the retina and brain. kkeyser@uab.edu.

Krause, Jeffrey, Ph.D. (Oregon St. Univ., 2008). Senior Marine Scientist I DISL, Assistant Professor, Dept. of Marine Sciences, Univ. of South AL. Marine diatom and cyanobacteria ecology and understanding the coupling between the marine biogeochemical cycle of silicon with those for carbon and nitrogen. jkrause@disl.edu.

Layton, Jenny E., Ph.D. (Univ of Alabama at Birmingham, 2011). Assistant Professor, Samford University. Biological sciences, marine biology, ecology, and conservation of terrestrial and aquatic vertebrates. Including emphasis on temperature-dependent sex determination in reptiles and its evolutionary, ecological, and conservation implications for marine turtles. jlayton@samford.edu

Lewis, Jennifer, Ph.D. (Fla. Int. Univ., 2010). Director, Tropical Dolphin Research Foundation. Animal movement and the benefits of group formation; foraging ecology; behavioral ecology of tropical dolphin species; marine ecological conservation with focus on non-lethal effects of vessel traffic on marine species. jlewis006@fiu.edu

Moss, Anthony G., Ph.D. (Boston Univ., 1986). Associate Professor of Biological Sciences, Marine Biology Program Coordinator, Auburn Univ. Ctenophores and jellyfish, salps, marine microbial biology, cilia & flagella. mossant@auburn.edu.

Pruente, Victoria, Ph.D. (Auburn University, 2020). Postdoctoral Research Scientist, Auburn Univ., School of Fisheries, Aquaculture and Aquatic Sciences. Seafood safety and oyster aquaculture. vp0006@auburn.edu.

*Smee, Lee, Ph.D. (Georgia Tech, 2006) Chair DISL University Programs, Senior Marine Scientist II DISL, Assoc.Professor, Dept. of Marine Sciences, Univ. of South AL. Current research topics include oyster reef ecology, mangrove encroachment, pesticide effects on blue crabs, and biogeography of seagrass communities in the Gulf of Mexico. lsmee@disl.edu

Stanton, Lee, Ph.D. (LA State Univ., 2005). Associate Professor, Univ. of West AL., Director of Black Belt Conservation and Research Institute. lstanton@uwpa.edu.

Stoeckel, Jim, Ph.D. (Miami University, 2007). Associate Professor, Auburn Univ., School of Fisheries, Aquaculture, and Aquatic Sciences. Crustacean and molluscan ecology and aquaculture; physiological ecology; ecotoxicology; special focus on burrowing crayfish and mussels. jas0008@auburn.edu.

Strang, Christianne, Ph.D. (Univ. of Ala. at B’ham., 2004). Assistant Professor, Dept. of Psychology, Univ.of AL B’ham. Visual processing in health and disease. estrang@uab.edu.

Terwey, Wesley, Ph.D. (Colo. St. Univ., 2007). Assistant Professor of Meteorology, Dept. of Earth Sciences, Univ. of South Ala. Hurricane intensity change and structure; severe weather; winter weather; technology and science. terwey@southalabama.edu.

*Valentine, John, Ph.D. (Univ. of Ala., 1989). Executive Director and Senior Marine Scientist III DISL, Professor, Dept. of Marine Sciences, Univ. of South AL. jvalentine@disl.edu

Wibbels, Thane, Ph.D. (Texas A&M Univ., 1988). Associate Professor of Biology, Univ. of AL B’ham. The biology of temperature-dependent sex determination in reptiles, including emphasis on its implications for the ecology, evolution and conservation of sea turtles. twibbels@uab.edu.

Wofford, Sarah, Ph.D. (Bowling Green State University, 2017) Assist. Professor, Dept. of Biology, Jacksonville State Univ. Current research topics include the aggressive behaviors of aquatic invertebrates, the chemical ecology of social interactions, and the effects of environmental change on resource acquisition and agonistic behaviors. swofford@jsu.edu

Woodrey, Mark, Ph.D. (Univ. of Southern Miss., 1995). Avian Ecologist/Coastal Ecologist at MS State Univ., Research Coordinator at Grand Bay National Estuarine Research Reserve. Marsh bird ecology and conservation; monitoring programs for biological resources; tidal marsh ecology; ecological effects of sea level rise on coastal ecosystems. mowr03@ra.msstate.edu.

*These faculty are not instructing undergraduate courses this year.
Course Registration

Submission deadline for priority registration: February 12, 2021

DISL will accept registrations until the first day of class; however, courses will fill early and students should try to submit their registrations online before the priority registration date.

Step #1 Complete the DISL Summer Online Registration Form:

ONLINE:

- Visit https://www.disl.edu/univ-prog/undergrad for instructions for logging into our student portal. www.disl.populiweb.com
- Once your student account is created on disl.populiweb.com, upload/submit a digital image, photo or scan of your signed advisor’s sheet (last page of this bulletin).
- Complete online registration with course choices.
- You will be billed the $75.00 pre-registration fee via your online student account disl.populiweb.com.

Step #2 Confirmation of DISL Enrollment

- DISL will email a confirmation of your course enrollment at DISL after the priority registration deadline of February 12, 2021. This email will include instructions to login to your DISL Student account via disl.populiweb.com, and a link to additional documents.
- Once you login to your student account on DISL.Populiweb.com, you will be able to view a listing of your courses and the status of your enrollment (registered or wait).
- Your DISL bill is payable online (amount due upon arrival at DISL for fees, room and board). DISL fees may be paid on a session-by-session basis if arranged beforehand with the DISL Bursar, Ms. Daphne Wood (dwood@disl.edu).

Step #3 Enrollment at Your Home Campus

- You MUST also register at your home campus and pay your home campus tuition.

NOTE: In cases where your home institution does not permit you to register for classes before DISL classes begin and you fail to register when campus registration begins, you will be obligated to pay DISL directly for the cost of registration and tuition.

Frequently Asked Questions

Do I have to enroll at both my home school and at the DISL for my summer course?
Yes, in order to receive academic credit for your courses you MUST register for your class at your home institution and at the DISL. Be sure to get your academic advisor’s approval for your course selections.

Will I receive two billing statements for my summer courses at DISL?
Yes, your home institution will invoice your tuition. The DISL will invoice academic and facility fees as well as your room and board if you decide to live on the DISL campus.

Can out-of-state students enroll in DISL Summer UP courses?
Yes, however, your home school will need to enter an agreement with the DISL for academic credits to transfer. Please contact the UP Registrar Regina Kollegger for more info.

Do I have to be enrolled in a college to take DISL Summer UP courses?
No, you do not need to be enrolled in college to take our courses. You may audit our courses for a fee, but will not receive academic credit for your enrollment.

Do you offer financial aid?
DISL does not offer a financial aid program. You will need to coordinate your financial aid through your home institution. The DISL does offer student work-study and scholarship opportunities, please see page 27 for more information.

Are there housing options on Dauphin Island other than DISL campus living?
Sometimes there are houses available for rent on Dauphin Island, however, you will need to search and coordinate these options on your own.
MESC Institutions and DISL Campus Liaison Officers

*Alabama & M University
Dr. Malinda Wilson Gilmore
Dept. of Chemistry, Physics, and Math
4900 Meridan Street/PO Box 322
Normal, AL 35762
Ph: (256) 372-4803/Fax: (256)372-8288
Malinda.gilmore@aamu.edu

*Alabama State University
Dr. B.K. Robertson
Dept. of Biological Sciences
915 S. Jackson Street
Montgomery, AL 36104
Ph: (334) 229-4423/Fax: (334)229-1007
brobertson@alasu.edu

Athens State University
Dr. Sara Cline
Dept. of Mathematical, Computer, & Natural Sciences
30534 Albertville Rd
Athens, AL 35611
Ph: (256) 233-6507
sara.cline@athens.edu

Auburn University
Dr. Anthony G. Moss
Dept. of Biological Sciences
331 Funchess Hall
 Auburn, AL 36849
Ph: (334) 844-9257/Fax: (334) 844-9234
mossant@auburn.edu

Auburn University at Montgomery
Dr. John Aho
Dept. of Biology/PO Box 244923
Montgomery, AL 36124
Ph: (334) 244-2787/Fax: (334)244-3826
jaho@auburn.edu

Birmingham Southern College
Dr. Andrew Gannon
Dept. of Biology
PO Box 549022
 Birmingham, AL 35254
Ph: (205) 226-4899/Fax: (205)226-3078
agannon@bsc.edu

Huntingdon College
Dr. Paul Gier
Dept. of Biology
1500 E. Fairview Ave.
 Montgomery, AL 36106
Ph: (334) 833-4510/Fax: (334)833-4486
pgier@huntingdon.edu

Jacksonville State University
Dr. George Cline
Dept. of Biology
700 Pelham Rd., N.
Jacksonville, AL 36265-1602
Ph: (256) 782-5798/Fax: (256)782-5587
gcline@jsu.edu

Judson College
Dr. Mary Anne Garner
Dept. of Chemistry
302 Bibb Street
 Marion, AL 36756
Ph: (334) 685-5179/Fax: (334)685-5282
mgarner@judson.edu

Samford University
Dr. Anthony S. Overton
Dept. of Biology & Environmental Sciences
Howard College of Arts and Sciences
800 Lakeshore Drive
 Birmingham, AL 35229
Ph: (205)726-2944/Fax: (205)726-2479
aoverton@samford.edu

Spring Hill College
Dr. Charles Chester
Dept. of Biology
 Mobile, AL 36508
Ph: (251) 380-3071/Fax: (251)460-2198
 cchester@shc.edu

Stillman College
Dr. Moses Darpolar
School of Arts & Sciences
3601 Stillman Blvd
 Tuscaloosa, AL 35401
Ph: (205) 366-8929
mdarpolar@stillman.edu

Talladega College
Dr. Andrew Coleman
Silsby Science Hall Rm B2
627 West Battle Street
Talladega, AL 35160
Ph: (256) 761-6307/Fax: (256)761-6437
acoalen@talladega.edu

*Troy
Dr. Stephen Landers
Dept. of Biological & Env. Sciences
Troy, AL 36082
Ph: (334) 670-3661/Fax: (334)670-3662
slanders@troy.edu

*Tuskegee University
Dr. Richard Whittington
Dept. of Biology
Tuskegee, AL 36088
Ph: (334) 724-4218/Fax: (334)724-3919
rwhittington@tuskegee.edu

*University of Alabama
Dr. Julie Olson
Dept. of Biological Sciences
PO Box 870344
 Tuscaloosa, AL 35487-0344
Ph: (205) 348-2633/Fax: (205)348-1786
jolson@bama.ua.edu

*University of Alabama at Birmingham
Dr. Ken Marion
Dept. of Biology/ Campbell Hall 464
1900 University Blvd.
 Birmingham, AL 35294
Ph: (205) 934-8309/Fax: (205)934-8220
kmarion@uab.edu

*University of South Alabama
Dr. Amy Sprinkle
Dept. of Biology
Mobile, AL 36688
Ph: (251) 460-7525/Fax: (251)460-7526
sprinkle@southalabama.edu

University of West Alabama
Dr. Lee Stanton
Dept. of Biology Livingston, AL 35470
Ph: (205) 652-3415/Fax: (205)652-3831
lstanton@uwa.edu

*Schools with Graduate Programs
**Course Combinations**

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<th>Compatible</th>
<th>Incompatible</th>
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<td>B2 and B4</td>
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**2nd Session: June 28–July 30 - 5 weeks**

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<th>Course</th>
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<th>2nd Choice</th>
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<td>Intro to Oceanography</td>
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<td>Marine Biology</td>
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<td>Marine Invert. Zoology</td>
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<td>Marine Mammal Health</td>
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<td>Biotic Response to Sea</td>
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<td>Level Change</td>
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**Schedule EX Special Courses**

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<th>Course</th>
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<tbody>
<tr>
<td>Intro. to Neurobiology</td>
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It is important to list both first and second choices for courses whenever possible. When applying online this advisor sheet must be signed and uploaded to your web application. All courses are subject to change.

**Total # credits (all terms)**

<table>
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<th>Priority Level</th>
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<th>III</th>
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From Delta to the Ocean Deep
Dauphin Island, AL
www.disl.edu

Fieldwork
Small Class Size
One-on-one instructor interaction