

School of

OCEAN SCIENCE AND ENGINEERING

MAJORS

- Marine Biology BS
- Marine Science (Hydrography) BS
- Marine Science BS
- Ocean Engineering BS





MINORS

- Marine Science Minor

CERTIFICATES

- Uncrewed Maritime Systems Certificate
- Uncrewed Maritime Systems Operator Certificate

CONTACT US

-  228.214.3299
-  sose@usm.edu
-  usm.edu/ocean-science-engineering
-  [@usmartsandsciences](https://www.instagram.com/usmartsandsciences)





Post-secondary students in the State of Mississippi often choose to attend a Mississippi community college (MS CC) and earn an associate degree before transferring to The University of Southern Mississippi to complete their bachelor's degree. To make this transition as smooth as possible and to ensure no credits are lost, we have created this transfer guide. In most, but not all, cases, students may complete a bachelor's degree in what we refer to as a '2+2' format:

2 years at a MS CC for an associate degree, which includes general education coursework
 +
 2 years at USM to complete the bachelor's degree

Please use the key below to determine which courses you must, should, or could take at a Mississippi community college before transferring to Southern Miss.

KEY



 MUST	Students who do not complete these requirements at a MS CC cannot complete their bachelor's degree in the 2+2 format.
 SHOULD	Students should complete these requirements at a MS CC in order to have the smoothest transition to Southern Miss. It may still be possible to complete a bachelor's degree in the 2+2 format without taking these courses, but it will be challenging.
 COULD	Students could complete these requirements at a MS CC if they desire. Not taking these courses prior to transferring will not affect a student's ability to complete their bachelor's degree in the 2+2 format.
 CALCULUS READINESS	Calculus is required on this degree plan. Students should arrive at Southern Miss ready to take Calculus I, which means they must have completed Trigonometry or have a Math ACT subscore ≥ 26 . Students may complete Calculus I prior to transferring if they desire.



NOTE: *This document is intended as a guide; it does not guarantee graduation in the 2+2 format. Degree requirements are subject to change. Please consult the school of your desired major for up-to-date requirements.*

Additional majors are available from the other Southern Miss colleges.

College of Education & Human Sciences

Hattiesburg 601.266.4568
 Gulf Park 228.214.3340

College of Nursing & Health Professions

Hattiesburg 601.266.5445
 AskCNHP@usm.edu

College of Business & Economic Development

Hattiesburg 601.266.4659
 Gulf Park 228.214.3447
 business@usm.edu



MARINE BIOLOGY



PROGRAM INFO

The marine biology curriculum builds a foundation in biological and physical sciences (chemistry, physics), then adds an understanding of the marine environment, the biodiversity of marine life, the functioning of marine ecosystems, and the societal impact of these patterns and processes. Program electives allow students to tailor their degree to their specific interests and career goals.

CAREER OUTLOOK

A marine biology degree leads to various career paths in academic and non-academic settings. Common areas include academic research, conservation, fisheries management, environmental consulting, education, and science or environmental journalism.

KNOWLEDGE & SKILLS

Marine biology studies provides students with a wide range of knowledge and skills related to the ocean and its inhabitants. Students learn biological and ecological principles, taxonomy and identification, knowledge of marine ecosystems, conservation and resource management, field research and data analysis, fieldwork and lab skills, and communication, collaboration and outreach skills.

RESEARCH AT USM

Our faculty conduct research on a variety of organisms including microbes, seagrass, oysters, crabs, fishes, whales and many other aspects of marine life. We strive to discover how deep-sea shipwrecks harbor life, how to restore coastal ecosystems, how to improve marine fisheries and aquaculture, and how to preserve endangered populations. Students explore their research interest by working with faculty or pursue internship opportunities with one of many regional, state, and federal partners.

SAMPLE COURSES



- General Zoology
- Cell Biology
- Introductory Environmental Microbiology
- Form & Function of Marine Organisms
- Marine Ecology
- Oceanography
- Management of Oceanographic Data
- Scientific Writing



- Aquaculture
- Marine Toxicology
- Coastal and Marine Botany
- Marine Invertebrate Zoology
- Marine Pollution
- Marine Mammals



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MARINE BIOLOGY BS 2+2

Complete all requirements for a MS community college associate degree, including general education coursework, and...



- * **MUST** Complete Biology I & II and Chemistry I & II.
- 👍 **SHOULD** Take 2 lab science courses each term at your community college.
- fx **CALCULUS READINESS** Pass MAT 1323 Trigonometry (MAT 103 at Southern Miss) or have a Math ACT subscore ≥ 26 .
- 💡 **COULD** Take Calculus I.

CHECKLIST

COURSES

Updated August 2023

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	Courses at Community College	Equivalent Courses at Southern Miss
*	BIO 1133 and BIO 1131 (or BIO 1134)	BSC 110/L Principles of Biological Science I Lecture and Lab
*	BIO 1143 and BIO 1141 (or BIO 1144)	BSC 111/L Principles of Biological Science II Lecture and Lab
*	CHE 1213 and CHE 1211 (or CHE 1214)	CHE 106/L General Chemistry I Lecture and Laboratory
*	CHE 1223 and CHE 1221 (or CHE 1224)	CHE 107/L General Chemistry II Lecture and Laboratory
👍	BIO 2433 and BIO 2431 (or BIO 2434)	BSC 201/L General Zoology Lecture and Laboratory
👍	BIO 1313 and BIO 1311 (or BIO 1314)	BSC 226/L General Botany Lecture and Laboratory
👍	CHE 2423 and CHE 2421 (or CHE 2424)	CHE 255/L Organic Chemistry I Lecture and Laboratory
👍	PHY 2413 and PHY 2411 (or PHY 2414)	PHY 111/L General Physics I Lecture and Laboratory
💡	MAT 1613 or MAT 1815	MAT 167 Calculus I



NOTE: This document is intended as a guide. Please contact the School of Ocean Science and Engineering at 228.214.3299 or sose@usm.edu to check on current degree requirements.

MARINE SCIENCE

MARINE SCIENCE, MARINE SCIENCE (HYDROGRAPHY)



PROGRAM INFO

Mississippi's only BS in marine science gives students a multidisciplinary education that integrates natural and computational sciences in the study of ocean dynamics. Students take courses in biological sciences, chemistry, geology, physics, math, and computer science to prepare broadly in marine science (oceanography).

The hydrography emphasis provides the knowledge and skills needed to collect, analyze, and manage oceanographic data and chart various dimensions of our oceans. Students take courses in many scientific and computational disciplines to prepare for being a hydrographer.

CAREER OUTLOOK

The U.S. Bureau of Labor Statistics projects that employment of environmental scientists, including marine scientists, will grow 8% from 2020 to 2030, faster than the average. Potential career paths for marine science majors include marine biology, oceanography, marine conservation, marine resource management, marine policy, marine engineering, and environmental consulting. These jobs exist in many areas, including government agencies, universities, research organizations, non-profit organizations, and private companies.

Students with a degree in marine science with a hydrography emphasis work in areas such as oil and gas exploration, navigational safety, natural disaster and sea level rise studies, habitat mapping, and ocean circulation modeling.

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KNOWLEDGE & SKILLS

This program fosters a range of knowledge and skills related to the study of oceans, coastal environments, and the life that inhabits them.

Examples include:

- Understanding of marine ecosystems: learn about the interactions between the physical, chemical, and biological components of the marine environment.
- Oceanography: study currents, waves, tides, and the movement of sediments in the ocean.
- Climate change and its impact on the ocean: learn how climate change affects the ocean, including rising sea levels, ocean acidification, and changes in ocean temperatures.
- Conservation and management of marine resources: learn how to manage and conserve marine resources, including fisheries, coastal zones, and protected areas.
- Research skills: learn about research methods, data collection and analysis, and how to design and conduct scientific experiments in the marine environment.
- Communication and teamwork: develop strong communication and teamwork skills, which are important in marine science as scientists work together and with government agencies and community groups to address environmental challenges and communicate scientific findings to the public.

RESEARCH AT USM




Students have access to USM's research vessels in the Gulf of Mexico. Students can pursue an Honors thesis which will involve doing research under the advisement of marine science faculty.

MARINE SCIENCE BS 2+2

MARINE SCIENCE (HYDROGRAPHY) BS

Complete all requirements for a MS community college associate degree, including general education coursework, and...











-  **SHOULD** Take Biology I & II, Chemistry I & II, and Physical Geology.
-  **CALCULUS READINESS** Pass MAT 1323 Trigonometry (MAT 103 at Southern Miss) or have a Math ACT subscore ≥ 26 .
-  **COULD** Complete a Physics I & II sequence either with or without calculus. Take Calculus I & II.

Updated August 2023

CHECKLIST

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COURSES

Courses at Community College	Equivalent Courses at Southern Miss
 BIO 1133 and BIO 1131 (or BIO 1134)	BSC 110/L Principles of Biological Science I Lecture and Lab
 BIO 1143 and BIO 1141 (or BIO 1144)	BSC 111/L Principles of Biological Science II Lecture and Lab
 CHE 1213 and CHE 1211 (or CHE 1214)	CHE 106/L General Chemistry I Lecture and Laboratory
 CHE 1223 and CHE 1221 (or CHE 1224)	CHE 107/L General Chemistry II Lecture and Laboratory
 GLY 1113 and GLY 1111 (or GLY 1114)	GLY 101/L Physical Geology Lecture and Laboratory
 MAT 1613 or MAT 1815	MAT 167 Calculus I
 MAT 1623 or MAT 1825	MAT 168 Calculus II
 PHYSICS I & II (Select 1 sequence) Algebra & Trigonometry-based PHY 2413 and PHY 2411 (or PHY 2414) and PHY 2423 and PHY 2421 (or PHY 2424) or Calculus-based PHY 2513 and PHY 2511 (or PHY 2514) and PHY 2523 and PHY 2521 (or PHY 2524)	PHY 111/L General Physics I Lecture and Laboratory PHY 112/L General Physics II Lecture and Laboratory PHY 201/L General Physics I w/ Calculus Lecture and Lab PHY 202/L General Physics II w/ Calculus Lecture and Lab



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OCEAN ENGINEERING



PROGRAM INFO

USM offers the only ocean engineering undergraduate program in Mississippi, and one of only 10 in the US. The program features coursework that integrates multiple engineering fields, which are relevant to the design of instrumentations and structures for the ocean environment (e.g., mechanical, civil, electrical, computer, environmental).

RESEARCH AT USM

USM is at the forefront of developing autonomous platforms to explore the ocean. Students have access to unique assets like an 18' Unmanned Surface Vehicle (USV) (C-Worker 5), a 100" explorer class Autonomous Underwater Vehicle (AUV) rated for 2000 m, among other autonomous systems. Students have the opportunity to participate in research cruises on board the various USM research vessels throughout their time at USM.

Senior students take project, design, and capstone courses to apply their knowledge and skills to an application-oriented research project. The program also provides Honors College students the chance to participate in innovative undergraduate research.

SCHOLARSHIPS

The Judith Bostwick Ocean Engineering Scholarship Endowment is to award scholarships to Ocean Engineering majors with financial need.

CAREER OUTLOOK

The BS in ocean engineering reflects the school's emphasis on the "blue economy" and the need for students who are ready for employment in areas such as shipbuilding, the maritime industry, offshore oil and gas exploration, environmental monitoring, port operations, coastal engineering, and more. The program in ocean engineering prepares students for the growing needs of this economic sector.



INTERNSHIPS

The Ocean Engineering program includes an internship in the curriculum. Internships provide students with valuable work experience and allow students to connect with regional employers at federal agencies and engineering firms.

KNOWLEDGE & SKILLS

Ocean engineering students study:

- Engineering design processes
- Computer programming
- Computer-aided design & manufacturing (CAD/CAM)
- Ocean Acoustics
- Data analysis
- Ocean instrumentation
- Fluid dynamics
- Coastal processes
- Underwater sensing and communication
- Marine infrastructure
- and more



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OCEAN ENGINEERING BS 2+2

usm.edu/admissions/apply

Complete all requirements for a MS community college associate degree, including general education coursework, and...



- * **MUST** Chemistry I, Physics I & II with Calculus, Calculus I, II, III, & IV, and Computer Programming I.
- 👍 **SHOULD** Take Statics, Computer Programming II, and Differential Equations.
- NOTE** Due to the number of advanced requirements, completing this degree in the 2+2 format is challenging even if the coursework below is completed at the community college.

Updated March 2024

CHECKLIST

COURSES

	Courses at Community College	Equivalent Courses at Southern Miss
<input type="checkbox"/>	* CHE 1213 and CHE 1211 (or CHE 1214)	CHE 106/L General Chemistry I Lecture and Laboratory
<input type="checkbox"/>	* PHY 2513 and PHY 2511 (or PHY 2514)	PHY 201/L General Physics I w/ Calculus Lecture and Lab
<input type="checkbox"/>	* PHY 2523 and PHY 2521 (or PHY 2524)	PHY 202/L General Physics II w/ Calculus Lecture and Lab
<input type="checkbox"/>	* MAT 1613 or MAT 1815	MAT 167 Calculus I
<input type="checkbox"/>	* MAT 1623 or MAT 1825	MAT 168 Calculus II
<input type="checkbox"/>	* MAT 2613	MAT 169 Calculus III
<input type="checkbox"/>	* MAT 2623	MAT 280 Calculus IV
<input type="checkbox"/>	COMPUTER PROGRAMMING I (Select 1)	
<input type="checkbox"/>	* CSC 1613 CSC 2134	CSC 101/L Computer Science I
<input type="checkbox"/>	COMPUTER PROGRAMMING II (Select 1)	
<input type="checkbox"/>	👍 CSC 2623 CSC 2144	CSC 102 Computer Science II
<input type="checkbox"/>	👍 DDT 2253, EGR 2413 or EGR 2453	AEC 270 Statics and Strengths of Materials
<input type="checkbox"/>	👍 MAT 2913 Differential Equations	MAT 285 Introduction to Differential Equations I



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