School of

OCEAN SCIENCE AND ENGINEERING

MAJORS

- Marine Biology BS
- Oceanography and Ocean Mapping 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

THE UNIVERSITY OF SOUTHERN MISSISSIPPI
College of Arts & Sciences

Need help? Contact CAS!
601.266.4315 CoAS@usm.edu

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 Business & Economic Development
Hattiesburg 601.266.4659
Gulf Park 228.214.3447
business@usm.edu

College of Nursing & Health Professions
Hattiesburg 601.266.5445
AskCNHP@usm.edu

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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.

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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.
- **CALCULUS READINESS** — Pass MAT 1323 Trigonometry (MAT 103 at Southern Miss) or have a Math ACT subscore ≥ 26.
- **COULD** — Take Calculus I.

Updated August 2025

CHECKLIST

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
☐	**BIO 2433** and **BIO 2431** (or **BIO 2434**)	**BSC 201/L** General Zoology Lecture and Laboratory
☐	**CHE 2423** and **CHE 2421** (or **CHE 2424**)	**CHE 255/L** Organic Chemistry I Lecture and Laboratory
☐	**BIO 1313** and **BIO 1311** (or **BIO 1314**)	**BSC 226/L** General Botany 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

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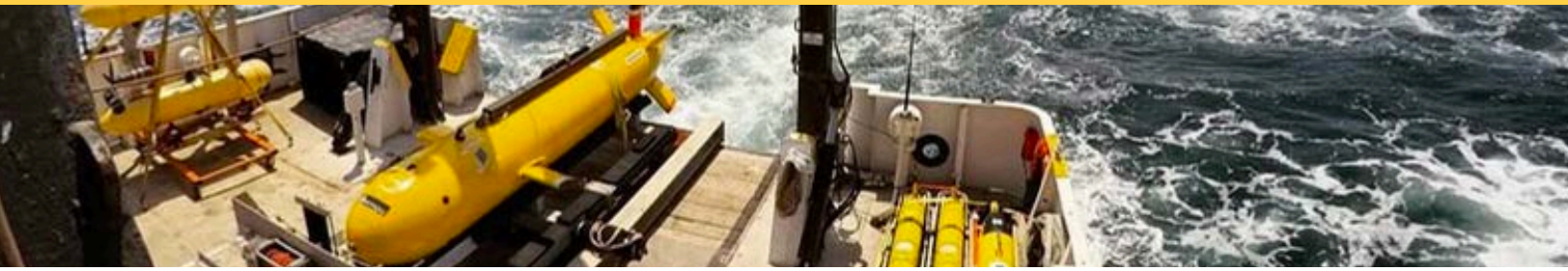
OCEANOGRAPHY AND OCEAN MAPPING



PROGRAM INFO

Dive into a hands-on education that merges ocean science with cutting-edge technology. The Oceanography and Ocean Mapping (OOM) program combines physical oceanography, marine science, and hydrography to prepare students for careers in ocean mapping, hydrographic surveying, data analysis, and geospatial science.

Through fieldwork, research cruises, and capstone projects, students build the skills to succeed in government, industry, or research. The program also leads to International Hydrographic Organization (IHO) Category B certification, qualifying graduates to produce hydrographic data to global standards.

Rooted in the School of Ocean Science and Engineering's leadership in the blue economy, the OOM degree emphasizes applied science, innovation, and the technology shaping today's ocean exploration.

CAREER OUTLOOK

Graduates are prepared for careers in:

- Hydrographic and geospatial services
- Governmental marine agencies (NOAA, Navy, USACE)
- Environmental consulting and marine resource management
- Offshore energy and maritime industries
- Oceanographic research and data analysis
- Graduate education in oceanography, hydrography, or marine science

KNOWLEDGE & SKILLS

Students gain training in:

- Hydrographic survey methods and positioning
- Marine and physical oceanography
- Ocean acoustics and oceanographic data management
- Bathymetry, remote sensing, and charting
- Marine geology, waves, and tides
- Scientific computing, geospatial analysis, and data interpretation
- Scientific writing and oral presentation
- Fieldwork, lab skills, and research cruises

RESEARCH AT USM

Students participate in applied research with access to advanced marine technologies, including Unmanned Surface Vehicles (USVs), Autonomous Underwater Vehicles (AUVs), and USM research vessels.

Opportunities include internships with federal agencies and industry partners, as well as hands-on experience during research cruises and summer fieldwork.

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Oceanography and Ocean Mapping

2+2

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* **MUST** Complete BSC I & II, CHE I & II, Calculus I & II, PHY I & II, and Physical Geology

CHECKLIST

COURSES

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	Courses at Community College	Equivalent Courses at Southern Miss
☐	* **GLY 1111 and 1113 (or 1114)**	**GLY 101/L** Physical Geology
☐	* **BIO 1131 and 1133 (or 1134)**	**BSC 110/L** Principles of Biological Science I Lecture and Lab
☐	* **BIO 1141 and 1143 (or 1144)**	**BSC 111/L** Principles of Biological Science II Lecture and Lab
☐	* **CHE 1211 and 1213 (or 1214)**	**CHE 106/L** General Chemistry I Lecture and Laboratory
☐	* **CHE 1221 and 1223 (or 1224)**	**CHE 107/L** General Chemistry II Lecture and Laboratory
☐	* **MAT 1613**	**MAT 167** Calculus I with Analytic Geometry
☐	* **MAT 1623**	**MAT 168** Calculus II with Analytic Geometry
☐	* **PHY 2411 and 2413 (or 2414)**	**PHY 111/L** General Physics I Lecture and Laboratory
☐	* **PHY 2421 and 2423 (or 2424)**	**PHY 112/L** General Physics II Lecture and Laboratory

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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.

228.688.3177 sose@usm.edu
usm.edu/ocean-science-engineering
@usmartsandsciences

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

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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, and Differential Equations.
SHOULD	Take Computer Programming II
COULD	Take Statics
NOTE	This degree is difficult to complete in a 2+2 format, even with the listed coursework.

Updated August 2025

CHECKLIST

COURSES

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

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