MARINE SCIENCES | CLAS

Oceans are an important facet of our global environment: covering more than 70 percent of the Earth’s surface, oceans provide us with food, transport, and resources and they play a significant role in controlling climate. However, the world’s oceans remain largely unexplored below the surface, making them one of the last great frontiers for scientific discovery. Marine environments are inherently dynamic and governed by a broad suite of interactive biological, chemical, and physical processes.

About this Program
- **College**: Liberal Arts and Sciences
- **Degree**: Bachelor of Science
- **Credits for Degree**: 120
- **Related Marine Sciences Programs**

To graduate with this major, students must complete all university, college, and major requirements.

Critical Tracking records each student’s progress in courses that are required for entry to each major. Please note the critical-tracking requirements below on a per-semester basis.

**For degree requirements outside of the major, refer to CLAS Degree Requirements: Structure of a CLAS Degree.**

For the purposes of critical-tracking, associated lecture and lab courses are considered one critical-tracking course (e.g., BSC 2010/BSC 2010L = 1 critical-tracking course).

Equivalent critical-tracking courses as determined by the State of Florida Common Course Prerequisites may be used for transfer students.

**Semester 1**
- Complete OCE 1001 and 1 critical-tracking course from BSC 2010/BSC 2010L, BSC 2011/BSC 2011L, CHM 2045/CHM 2045L, CHM 2046/CHM 2046L, MAC 2311, PHY 2053/PHY 2053L (or PHY 2048/PHY 2048L), PHY 2054/PHY 2054L (or PHY 2049/PHY 2049L)
  - 2.5 GPA required for all critical-tracking courses
  - 2.0 UF GPA required

**Semester 2**
- Complete 2 additional critical-tracking courses
  - 2.5 GPA required for all critical-tracking courses
  - 2.0 UF GPA required

**Semester 3**
- Complete 1 additional critical-tracking course
  - 2.5 GPA required for all critical-tracking courses
  - 2.0 UF GPA required

**Semester 4**
- Complete 2 additional critical-tracking courses
  - 2.5 GPA required for all critical-tracking courses
  - 2.0 UF GPA required

**Semester 5**
- Complete all 8 critical-tracking courses
  - 2.5 GPA required for all critical-tracking courses
  - 2.0 UF GPA required

Students are expected to complete the writing requirement while in the process of taking the courses below. Students are also expected to complete the general education international (GE-N) and diversity (GE-D) requirements concurrently with another general education requirement (typically, GE-C, H or S).

To remain on track, students must complete the appropriate critical-tracking courses, which appear in bold. These courses must be completed by the terms as listed above in the Critical Tracking criteria.

This semester plan represents an example progression through the major. Actual courses and course order may be different depending on the student’s academic record and scheduling availability of courses. Prerequisites still apply.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>CHM 2045</td>
<td>General Chemistry 1</td>
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<tr>
<td>&amp; 2045L</td>
<td>and General Chemistry 1 Laboratory (Critical Tracking: State Core Gen Ed Physical Sciences)</td>
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<tr>
<td>IUF 1000</td>
<td>What is the Good Life (Gen Ed Humanities)</td>
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<td>Select one:</td>
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<td>MAC 2311</td>
<td>Analytic Geometry and Calculus 1 (Critical Tracking)</td>
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<td>MAC 1147</td>
<td>Precalculus Algebra and Trigonometry (State Core Gen Ed Mathematics)</td>
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<td>OCE 1001</td>
<td>Introduction to Oceanography (Critical Tracking: Gen Ed Physical Sciences)</td>
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<td><strong>Credits</strong></td>
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<td><strong>Semester Two</strong></td>
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<td>CHM 2046</td>
<td>General Chemistry 2</td>
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<td>MAC 2311</td>
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<td>State Core Gen Ed Humanities</td>
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<tr>
<td>State Core Gen Ed Social and Behavioral Sciences</td>
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<td><strong>Credits</strong></td>
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<tr>
<td>BSC 2010</td>
<td>Integrated Principles of Biology 1</td>
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<td>&amp; 2010L</td>
<td>and Integrated Principles of Biology Laboratory 1 (Critical Tracking: Gen Ed Biological Sciences)</td>
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<td>GLY 3083C</td>
<td>Fundamentals of Marine Sciences (Gen Ed Physical Sciences)</td>
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<tr>
<td>Select one:</td>
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<td>3-4</td>
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<td>MAC 2312</td>
<td>Analytic Geometry and Calculus 2</td>
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<td>STA 2023</td>
<td>Introduction to Statistics 1 (Gen Ed Mathematics)</td>
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<td>Elective (3000 level or above, not in major)</td>
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<tr>
<td>Gen Ed Humanities</td>
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</table>

Credits **16-17**
Semester Four
BSC 2011 & 2011L Integrated Principles of Biology 2 and Integrated Principles of Biology Laboratory 2 (Critical Tracking; Gen Ed Biological Sciences) 4-5
Select one:
PHY 2053 Physics 1 and Laboratory for Physics 1 (Critical Tracking; Gen Ed Physical Sciences) 4-5
PHY 2048 Physics with Calculus 1 and Laboratory for Physics with Calculus 1 (Critical Tracking) 3
Elective (3000 level or above, not in major) 3
Gen Ed Social and Behavioral Sciences 3
Credits 14-15

Semester Five
Select one:
PHY 2054 Physics 2 and Laboratory for Physics 2 (Critical Tracking; Gen Ed Physical Sciences) 4-5
PHY 2049 Physics with Calculus 2 and Laboratory for Physics with Calculus 2 (Critical Tracking) 3
ZOO 4926 Special Topics in Zoology (Marine Ecology) 3
or FAS 4270 or Marine Ecological Processes 3
Elective 3
Foreign language 5
Credits 15-16

Semester Six
GLY 4726 Geochemical Oceanography 3
ZOO 4403C Marine Biology 4
Gen Ed Composition; Writing Requirement 3
Foreign language 5
Credits 15

Semester Seven
Approved elective 3
Electives (3000 level or above, not in major) 6
Marine sciences core elective 3-4
Gen Ed Social and Behavioral Sciences 3
Credits 15-16

Semester Eight
Approved electives 9
Elective 3
Elective (3000 level or above, not in major) 3
Credits 15
Total Credits 120

Select one of the following:
GLY 2010C Physical Geology (Gen Ed Physical Sciences) 3-4
GLY 2100C Historical Geology (Gen Ed Physical Sciences) 3
GLY 3074 Oceans and Global Climate Change (Gen Ed Physical Sciences) 3
GLY 3105C Evolution of Earth and Life (Gen Ed Physical Sciences) 3
GLY 3202C Earth Materials 1
EGN 4932 Special Topics (Physical Oceanography) 1

Approved Marine Sciences Electives
Select a minimum of 12 credits from the following:
EGN 4932 Special Topics (Physical Oceanography) 1
FAS 4202C Biology of Fishes 2
FAS 4305C Introduction to Fishery Science 3
FAS 4405 Aquarums, Water and Aquaculture 3
FAS 4932 Topics in Fisheries and Aquatic Sciences (Marine Adaptations) 3
GLY 3074 Oceans and Global Climate Change (Gen Ed Physical Sciences) 1
GLY 3105C Evolution of Earth and Life (Gen Ed Physical Sciences) 1
GLY 3202C Earth Materials 1
GLY 3603C Paleontology 1
GLY 4450 Geophysics 1
GLY 4552C Sedimentary Geology 1
GLY 4734 Coastal Morphology and Processes 1
OCE 3016 Introduction to Coastal and Oceanographic Engineering 1
ZOO 4205C Invertebrate Biodiversity 1

Additional Electives
Instructor permission required

Code Title Credits
EOC 6196 Littoral Processes 3
EOC 6934 Adv Topics Coast and Oc 3
FAS 5276C Fl. Ecol Aquat Organ 4
GLY 5255 Org. Geochem/Geobio 3
GLY 558C Sedimentology 3
GLY 5736 Marine Geology 3
GLY 5786L Topics Field Geol (Bahamas) 2
GLY 6075 Glob Climate Change 3
GLY 6425 Tectonics 3
OCP 6050 Physical Oceanography 3
OCP 6168 Data Analysis Techniq 3
OCP 6295 Estuar/Shelf Hydro 1 3
ZOO 4926 Special Topics in Zoology (Marine Adaptations) 1-4
ZOO 6456C Ichthyology 4

1 These courses cannot count as marine sciences core electives and approved electives.

Marine Sciences Core Elective
Select one of the following:
GLY 2010C Physical Geology (Gen Ed Physical Sciences) 3-4
GLY 2100C Historical Geology (Gen Ed Physical Sciences) 3
GLY 3074 Oceans and Global Climate Change (Gen Ed Physical Sciences) 3
GLY 3105C Evolution of Earth and Life (Gen Ed Physical Sciences) 3
GLY 3202C Earth Materials 1
EGN 4932 Special Topics (Physical Oceanography) 1

This interdisciplinary studies major provides integrative understanding of the basic concepts, theories and observational findings related to marine materials and processes, geologic time, the diversity of marine life, the structure and function of marine organisms and ecosystems and marine resource management.

The marine sciences major is administered jointly by the College of Agricultural and Life Sciences and the College of Liberal Arts and Sciences and utilizes faculty, courses and resources of the Fisheries and Aquatic Sciences Program (CALS), the Department of Geological Sciences (CLAS), the Department of Biology (CLAS), and the Department of Civil and Coastal Engineering (Herbert Wertheim College of Engineering).
Before Graduating Students Must

- Achieve a passing score on the subject test. The content of the examination has been reviewed and approved by the Marine Sciences Committee.
- Achieve a passing score on the analytical skills test. The content of the examination has been reviewed and approved by the Marine Sciences Committee.
- Achieve a passing score on the bioethics quiz. The content of the examination has been reviewed and approved by the Marine Sciences Committee.
- Achieve a passing score on the scientific literacy paper. This paper is assessed using a rubric that has been reviewed and approved by the Marine Sciences Committee.
- Complete requirements for the baccalaureate degree, as determined by faculty.

Students in the Major Will Learn to

Student Learning Outcomes (SLOs)

Content
1. Demonstrate competence in the basic terminology, concepts, methodologies and theories used within the marine sciences.

Critical Thinking
2. Analyze information in the marine sciences and develop reasoned solutions to problems using the processes and applications of scientific inquiry.
3. Discriminate ethical behavior from unethical behavior in scientific research.

Communication
4. Communicate knowledge, ideas and reasoning clearly, effectively and objectively in written or oral forms appropriate to the marine sciences.

Curriculum Map

<table>
<thead>
<tr>
<th>Courses</th>
<th>SLO 1</th>
<th>SLO 2</th>
<th>SLO 3</th>
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<tr>
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(Marine Ecology) or FAS 4932 (Marine Ecological Processes)

Assessment Types

- Marine sciences subject and analytical skills tests
- Bioethics quiz
- Scientific paper