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.

The university promotes an interdisciplinary approach to marine science education and research to prepare students for rewarding academic and professional careers. This interdisciplinary studies major, offered cooperatively with the College of Agricultural and Life Sciences, lets students tailor a curriculum that suits their interests and career goals.

The curriculum provides the core scientific and quantitative skills necessary for success. Lower-division courses build a strong foundation in basic sciences and math while upper-division courses provide opportunity for specialization. Students in the College of Liberal Arts and Sciences (CLAS) complete an upper-division core that integrates the physical and biological sciences, mathematics, and engineering. They work closely with a faculty advisor to create an individualized curriculum of at least 12 credits of approved electives; this plan must be approved by the program's undergraduate coordinator before the student has earned 70 credits.

Coursework for the Major

The major requires 63-67 credits of coursework completed with minimum grades of C. At least 30 credits of coursework in the major must be completed at UF.

Required Coursework

Code	Title	Credits
BSC 2010 & 2010L	Integrated Principles of Biology 1 and Integrated Principles of Biology Laboratory 1	4
BSC 2011 & 2011L	Integrated Principles of Biology 2 and Integrated Principles of Biology Laboratory 2	4
CHM 2045 & 2045L	General Chemistry 1 and General Chemistry 1 Laboratory	4
CHM 2046 & 2046L	General Chemistry 2 and General Chemistry 2 Laboratory	4
GLY 3083C	Fundamentals of Marine Sciences	3
GLY 4726	Geochemical Oceanography	3
MAC 2311	Analytic Geometry and Calculus 1	4
MAC 2312	Analytic Geometry and Calculus 2	3-4
or STA 2023	Introduction to Statistics 1	
OCE 1001	Introduction to Oceanography	3
Select one of the following:		8-10
Option One		
PHY 2053 & 2053L	Physics 1 and Laboratory for Physics 1	
PHY 2054 & 2054L	Physics 2 and Laboratory for Physics 2	
Option Two		
PHY 2048 & 2048L	Physics with Calculus 1 and Laboratory for Physics with Calculus 1	
PHY 2049 & 2049L	Physics with Calculus 2 and Laboratory for Physics with Calculus 2	
ZOO 4403C	Marine Biology	4
ZOO 4926	Special Topics in Zoology (Marine Ecology)	3
or FAS 4270	Marine Ecological Processes	
Select one marine sciences core elective (see approved list)		3-4
Select 12 credits of approved marine sciences electives [1]		12
Total Credits		62-66

[1] 12 credits of approved marine sciences electives, approved by the undergraduate coordinator before the student has earned 70 credits. Electives may be chosen from the Approved Electives tab.

Related Marine Sciences Programs

- Bachelor of Science in Marine Sciences: Interdisciplinary Studies, CALS
- Fisheries and Aquatic Sciences minor

Critical Tracking

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

Model Semester Plan

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.

Course	Title	Credits
Semester One		
CHM 2045 & 2045L	General Chemistry 1 and General Chemistry 1 Laboratory (**Critical Tracking**; State Core Gen Ed Physical Sciences)	4
IUF 1000	What is the Good Life (Gen Ed Humanities)	3
Select one:		4
MAC 2311	Analytic Geometry and Calculus 1 (**Critical Tracking**)	
MAC 1147	Precalculus Algebra and Trigonometry (State Core Gen Ed Mathematics) [1]	
OCE 1001	Introduction to Oceanography (**Critical Tracking**; Gen Ed Physical Sciences)	3
	Credits	14
Semester Two		
CHM 2046 & 2046L	General Chemistry 2 and General Chemistry 2 Laboratory (**Critical Tracking**; Gen Ed Physical Sciences)	4
Select one:		3-4
Elective		
MAC 2311	Analytic Geometry and Calculus 1 (if needed)	
State Core Gen Ed Composition; Writing Requirement		3
State Core Gen Ed Humanities		3
State Core Gen Ed Social and Behavioral Sciences		3
	Credits	16-17
Semester Three		
BSC 2010 & 2010L	Integrated Principles of Biology 1 and Integrated Principles of Biology Laboratory 1 (**Critical Tracking**; Gen Ed Biological Sciences)	4
GLY 3083C	Fundamentals of Marine Sciences (Gen Ed Physical Sciences)	3
Select one:		3-4
MAC 2312	Analytic Geometry and Calculus 2	
STA 2023	Introduction to Statistics 1 (Gen Ed Mathematics)	
Elective (3000 level or above, not in major)		3
Gen Ed Humanities		3
	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
Select one:		4-5
PHY 2053 & 2053L	Physics 1 and Laboratory for Physics 1 (**Critical Tracking**; Gen Ed Physical Sciences)	
PHY 2048 & 2048L	Physics with Calculus 1 and Laboratory for Physics with Calculus 1 (**Critical Tracking**)	
Elective (3000 level or above, not in major)		3
Gen Ed Social and Behavioral Sciences		3
	Credits	14-15
Semester Five		
Select one:		4-5
PHY 2054 & 2054L	Physics 2 and Laboratory for Physics 2 (**Critical Tracking**; Gen Ed Physical Sciences)	
PHY 2049 & 2049L	Physics with Calculus 2 and Laboratory for Physics with Calculus 2 (**Critical Tracking**)	
ZOO 4926 or FAS 4270	Special Topics in Zoology (Marine Ecology) 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

[1] Select MAC 1147 if needed.

Approved Electives

Marine Sciences Core Elective

Code	Title	Credits
Select one of the following:		3-4
GLY 2010C	Physical Geology (Gen Ed Physical Sciences)	
GLY 2100C	Historical Geology (Gen Ed Physical Sciences)	
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]	
EGN 4932	Special Topics (Physical Oceanography) [1]	

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

Approved Marine Sciences Electives

Code	Title	Credits
Select a minimum of 12 credits from the following:		12
EGN 4932	Special Topics (Physical Oceanography) [1]	
FAS 4202C	Biology of Fishes	
FAS 4305C	Introduction to Fishery Science	
FAS 4405	Aquariums, Water and Aquaculture	
FAS 4932	Topics in Fisheries and Aquatic Sciences (Marine Adaptations)	
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	
GLY 4450	Geophysics	
GLY 4552C	Sedimentary Geology	
GLY 4734	Coastal Morphology and Processes	
OCE 3016	Introduction to Coastal and Oceanographic Engineering	
ZOO 4205C	Invertebrate Biodiversity	

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

Additional Electives

Instructor permission required

Code	Title	Credits
EOC 6196	Littoral Processes	3
EOC 6934	Adv Topics Coast and Oc	3
FAS 5276C	Fld Ecol Aquat Organ	4
GLY 5255	Organc Geochem/Geobio	3
FAS 6171	Applied Phycology	3
GLY 5558C	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 (Biology of Sea Turtles)	1-4
ZOO 6456C	Ichthyology	4

Academic Learning Compact

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

I = Introduced; R = Reinforced; A = Assessed

Courses	SLO 1	SLO 2	SLO 3	SLO 4
GLY 3083C	I	I	I	I
GLY 4930	R	R	R	R

OCE 1001	I		I	I
ZOO 4403C	R	R	R	R
ZOO 4926 (Marine Ecology) or FAS 4932 (Marine Ecological Processes)	A	A	A	A

Assessment Types

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