

COLLEGE OF MARINE SCIENCE



Changes to Note

College of Marine Science

There were no curricular changes to the College of Marine Science programs for the 2011-2012 Graduate Catalog.

University of South Florida
College of Marine Science
140 7th Avenue S, MSL119
St. Petersburg, FL 33701

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Phone: 727-553-1130
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Interim College Dean: [Jacqueline E. Dixon](#) ~~William T. Hogarth~~
Associate Dean: n/a
Graduate Coordinator: Ted Van Vleet

Accreditation:

The Commission on Colleges of the Southern Association of College and Schools

Mission Statement **College Structure and Location:**

The College of Marine Science (CMS) was formed during 2000 from the previous Department of Marine Science, initiated in 1967 with three founding faculty members. The Florida Board of Regents declared it a University Center of Excellence in 1978 and approved the Marine Science Ph.D. program in 1982. ~~Staff and faculty serve students on the St. Petersburg campus, Tampa, and the other regional campuses together with their surrounding communities, espousing goals of both diversity and equal opportunity.~~ The CMS at the University of South Florida is constituted as a graduate-level research program that forms the basis for educational opportunities at the Ph.D. and M.S. degree levels and for public service to the State of Florida. ~~The College administratively reports to the Provost of USF.~~

[Located on the beautiful waterfront of Tampa Bay adjacent to the USF St. Petersburg campus, CMS is administratively part of the USF Tampa campus and reports to the Provost of USF. The College is focused on interdisciplinary research in marine science. Our 30 ranked faculty, 112 support personnel and roughly 100 graduate students work together toward a vision of understanding the unified global ocean system. The College seeks to build new interdisciplinary research teams in collaboration with our local marine science research partners, including the Florida Fish and Wildlife Research Institute, the U.S. Geological Survey, NOAA, SRI St. Petersburg, and Mote Marine Lab.](#)

Mission Statement

The primary mission of the College is to conduct basic and applied research in ocean science. Here, ocean science is defined by application of the traditional fields of science to both the biology, chemistry, geology, and physics of the marine environment and to the interactions between the marine environment and the adjoining atmosphere and land systems – presently and throughout earth's history. Included in the primary ocean science mission is the development of new technologies and tools for exploring the coupled ocean-atmosphere-land systems. The College expects its faculty to develop research programs of outstanding caliber and to fully engage the national and international scientific communities, through the reporting of research results in the most respected oral and written venues, and by professional service.

Integral to the ocean science research mission is the education of graduate students.

The College recruits, trains, and graduates productive, creative scientists at the Ph.D. and M.S. levels that are prepared to make independent contributions to ocean science. The faculty are expected to develop outstanding graduate education programs that will afford students the opportunity to participate in all aspects of research. The College recognizes that graduate education requires strong mentoring along with traditional classroom instruction.

An ancillary but important mission of the College is education outreach for students at all levels and for the public at large. Our outreach programs have significantly expanded our educational responsibilities, and they are intended to motivate all generations to become scientifically literate citizens and to understand the environment in which they live. The College pursues innovative avenues for educational outreach. Efforts are made to attract more junior and senior level undergraduates into both the ocean science core courses and into advanced courses for which they have pre-requisites. Historically, this is a way in which students have made career decisions to engage in ocean science. In this manner the College maintains close ties with the student body in other University of South Florida Colleges and campuses.

Research Facilities

The college facilities include specialized laboratories equipped for studies in: Scanning and transmission electron microscopy; Trace metal analysis; Water quality; Organic and isotope geochemistry, Physical chemistry, Optical oceanography, Satellite imagery; Sedimentology; Geophysics; Physical oceanography; Micropaleontology; Physiology; Benthic ecology; Microbiology; Planktology and Ichthyology. Additionally, the complex includes the Center for Ocean Technology, which provides manufacturing and prototyping support to the faculty, students and engineers.

The College's students and faculty have conducted research in the Antarctic, Arctic, Atlantic, Indian, and Pacific Oceans, as well as the Norwegian, Bering, Mediterranean and Caribbean Seas. The college has access to 5 research vessels in conjunction with the Florida Institute of Oceanography (FIO) and the U.S. Geological Survey: the RV Weatherbird II (115 ft), the RV Bellows (71ft), the RV Gilbert (42ft), and the RV Fish Hawk (38ft), and the RV Price (24ft). Ship time on other vessels in the U.S. fleet of oceanographic vessels, as well as foreign research vessels, is generally obtained through federal funding.

~~The College of Marine Science's specialized laboratories include those for trace metal analysis, water quality, organic and isotope geochemistry, physical chemistry, optical oceanography, satellite imagery, sedimentology, geophysics, physical oceanography, micropaleontology, physiology, benthic ecology, microbiology, planktology, and ichthyology. The College has a large flume facility and laser Doppler velocimeter for interdisciplinary boundary layer studies. It is often the case that a student's research is primarily conducted at sea.~~

~~Bayboro Harbor can accommodate any ship in the fleet of the U.S. oceanographic vessels, and is home port to the principal vessels operated by the Florida Institute of Oceanography for the entire State University System. Marine science students frequently participate in Gulf of Mexico cruises on either of two FIO vessels, the R/V Suncoaster (110ft) and the R/V Bellows (71ft). Ship time on other vessels in the U.S. fleet of oceanographic vessels, as well as foreign research vessels, is generally obtained through federal funding. Over the past decade, the College's students and faculty have conducted research in the Antarctic, Atlantic, Indian, and Pacific Oceans, as well as the Norwegian, Bering, Mediterranean and Caribbean Seas.~~

Major Research Areas: ~~Refer to College Information above.~~

~~Faculty major research areas are listed at: <http://www.marine.usf.edu/faculty/index.shtml>~~

Types of Degrees Offered:

Master of Science (M.S.)
Doctor of Philosophy (Ph.D.)

Name of Programs Offered:

Master of Science M.S.

Marine Science

Doctor of Philosophy Ph.D.

Marine Science

Concentrations:

Biological Oceanography (M.S., Ph.D.)
Chemical Oceanography (M.S., Ph.D.)
Geological Oceanography (M.S., Ph.D.)
Interdisciplinary (M.S., Ph.D.)
Marine Resource Assessment (M.S., Ph.D.)
Physical Oceanography (M.S., Ph.D.)

Graduate Certificates Offered: n/a

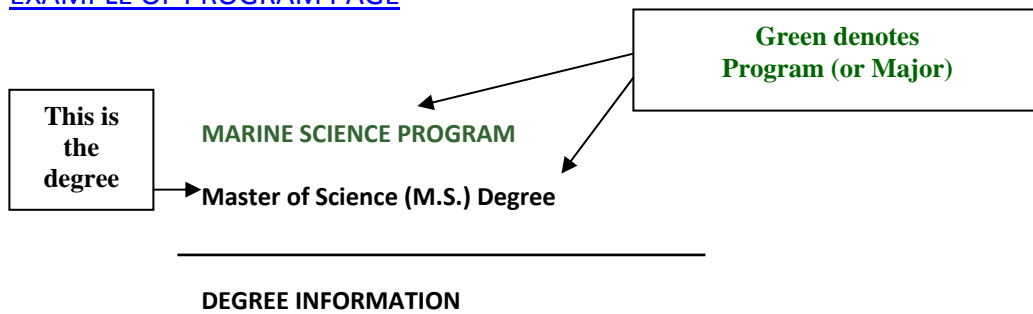
COLLEGE REQUIREMENTS

Refer to [the following Marine Science Program pages for information](#). ~~College website for information.~~

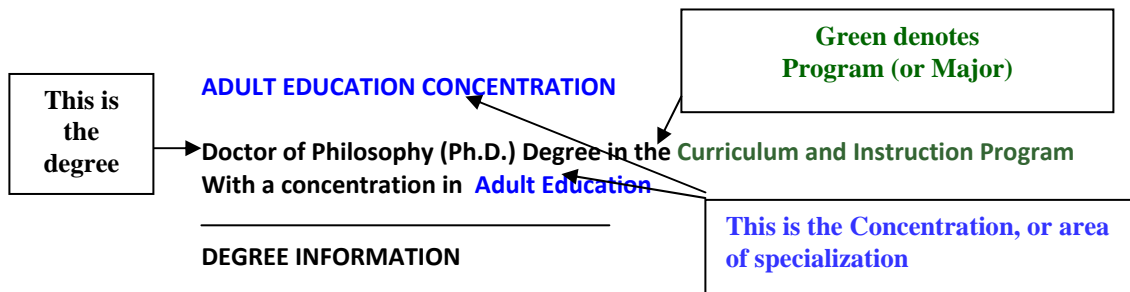
About the Catalog

The University of South Florida Graduate Catalog is organized with the degree programs offered listed in the section of the college that offers them. For example, the Master of Science degree with a “program” (also known as major) in Biology is listed in the College of Arts and Sciences section. Some colleges offer areas of specialization, or “concentrations” within a degree program.

EXAMPLE OF PROGRAM PAGE



EXAMPLE OF CONCENTRATION PAGE



The name of the program and/or concentration does not appear on the diploma – only the name of the degree (i.e., Master of Arts) is listed. The program and concentration information is listed on the official transcript. Other areas, such as application track, are not listed on the transcript.

MARINE SCIENCE PROGRAM

Master of Science (M.S.) Degree

DEGREE INFORMATION

Program Admission Deadlines:

U.S. Citizens

Fall:	January 15
Spring:	October 1

International Students

(not currently residing in U.S.):

Fall:	January 2
Spring:	June 1

International Students

(currently residing in U.S.):

Refer to U.S. Citizens deadlines

Minimum Total Hours:	32
Program Level:	Masters
CIP Code:	40.0607
Dept Code:	MSC
Program (Major/College):	MSC MS

Concentrations:

- Biological Oceanography (BOC)
- Chemical Oceanography (COB)
- Geological Oceanography (GOG)
- Interdisciplinary (IDY)
- Marine Resource Assessment (MRA)
- Physical Oceanography (POG)

CONTACT INFORMATION

College: Marine Science

Contact Information: www.marine.usf.edu/DII
www.grad.usf.edu

Other Resources: www.usf4you

PROGRAM INFORMATION

The College of Marine Science (CMS) offers M.S. and Ph.D. degrees in Marine Science. [This research based program has a low student-to-faculty ratio, with an average of 100 graduate students under the direction of 30 full-time faculty. The Students in the Master's program student may emphasize-elect a concentration in biological, chemical, geological, or physical oceanography, or develop an interdisciplinary Marine Resource Assessment program in oceanography through course work and thesis or dissertation research. CMS graduates are well prepared for positions in academe, industry, government agencies, and non-governmental organizations at local to international levels.](#)

[Biological Oceanography](#)

[Biological oceanography seeks to understand the life histories and population dynamics of marine organisms and how they interact with their environment over space and time. Scientists in the College of Marine Science study the full breadth of biological oceanography including microbiology, phytoplankton, zooplankton, benthos, coral reefs, fishes, and marine mammals. Our biological oceanographers utilize a variety of techniques including SCUBA, shipboard samplers, acoustics, molecular biology, and mathematical modeling to understand the oceans and their inhabitants. Scientists in our college also use the latest in remote sensing technology to study vast regions of the Earth's oceans, and have also developed new technology, such as genosensor capable for identifying and quantifying harmful algal blooms and related processes on unprecedented scales.](#)

[Chemical Oceanography](#)

Chemical oceanographers seek to understand the ways in which various elements are cycled within the oceans, and the reactions that these elements undergo. Ocean chemists improve our understanding of the basic conditions under which ocean life thrives in seawater, and help predict the effects of anthropogenic and natural climate change on ocean composition. Research programs in the College of Marine Science include such wide ranging topics as the role and variability of nutrients in seawater, the distribution and cycling of rare earth elements and other trace metals, examination of the oceans' CO₂ system, the study of dissolved organic matter, molecular organic compounds, radionuclides and stable isotopes in the oceans, and the distribution of chemical pollutants and their toxicity on marine organisms and ecosystems. Faculty and students utilize a wide variety of state-of-the art instrumentation and technology for investigating these research problems.

Geological Oceanography

Geological oceanographers in the College of Marine Science conduct research from the continental margins to the deep-ocean seafloor extending in time from modern environments to millions of years back in Earth's history to understand and predict Earth surface and interior processes. Primary research themes include: (1) paleoceanography and paleoclimatology; (2) coastline and continental shelf development and processes including effects of storms and sea-level fluctuations; (3) the health of modern and recent geologic history of coral reefs and carbonate depositional environments; (4) anthropogenic influences on estuaries; (5) mathematical explanations of geologic phenomena; and (6) plate tectonics. Our geological oceanography group has a variety of modern well-equipped laboratories and field equipment, including one of the best seafloor mapping capabilities in the US. Fully integrated with these field instruments is the computational capability to generate state-of-the art data depictions and imagery. Our group also works closely with scientists from the US Geological Survey's Center for Coastal and Marine Science Center, a major federal laboratory located nearby.

Physical Oceanography

Physical oceanography involves the study of water movement in the ocean. Energy is introduced to the ocean through wind and solar heating, and these combine with the rotation of the Earth and gravitational effects to drive ocean circulation, tides, and waves. Our physical oceanographers also investigate how the Earth's oceans are directly coupled with the atmosphere, from local weather patterns to the global climate system. Physical oceanographers in the CMS carry out research on a variety of topics using the latest technology. Computer models, real time data, satellite remote sensing, and in situ data from moored arrays, coastal and island tide gauges, and research cruises are used to study a wide range of research problems. Topics include tide and current prediction in Tampa Bay, circulation on the West Florida Shelf and in the Gulf of Mexico, El Niño, and the potential for global climate change.

Marine Resource Assessment

The College of Marine Science offers an interdisciplinary concentration in Marine Resource Assessment (MRA) as part of its M.S. and Ph.D. programs. This concentration provides training in the emerging field of ecosystem-based management. Its mission is to train a new generation of scientists that can effectively address issues concerning the sustainability of the world's living natural resources. At the College of Marine Science, the MRA concentration addresses the national shortage of graduates possessing the skills required for managing living marine resources by requiring a quantitative approach to ecosystem analysis and living resource assessment. The MRA concentration is designed to produce resource assessment scientists who can introduce relevant ecosystem-level variables into the traditional, single-species assessment process, complementing and enhancing the development of the science-based management policies that protect living marine resources.

~~More than 100 students are currently pursuing degrees under the direction of 30 full-time faculty. Study areas range from estuarine and near-shore systems to remote areas of the Pacific, Atlantic and Indian Oceans, as well as the Arctic and Antarctic. Additional information on faculty research and college facilities is available from the College upon request.~~

~~The College's location on St. Petersburg's Bayboro Campus allows immediate access to Tampa Bay and the Gulf of Mexico. Bayboro Harbor is home port to the R/V Bellows (71 ft.) and the R/V Suncoaster (110 ft.) operated by the Florida Institute of Oceanography (FIO) for the State University System. The College's principal building is shared with FIO and is adjacent to the Fish and Wildlife Research Institute (FWRI), the research arm of the Florida Fish and Wildlife Conservation Commission (FWCC). A recently completed research building shared by CMS and FWCC houses a remote sensing, satellite data-acquisition center. With the Center for Coastal Geology and Regional Studies of the U.S. Geological Survey and the office of the Tampa Bay National Estuary Program also at Bayboro, our campus has one of the largest concentrations of marine scientists in the southeastern United States. Many of these scientists serve on advisory committees of CMS graduate students.~~

Accreditation:

Accredited by the Commission on Colleges of the Southern Association of College and Schools.

ADMISSION INFORMATION

Must meet University requirements (see Graduate Admissions) as well as requirements listed below.

Program Admission Requirements

Meeting these criteria per se shall not be the only basis for admission. Complete application instructions can be found on the college website (<http://www.marine.usf.edu/graduate-programs/applications.shtml>)

- Bachelor's degree or equivalent from a regionally accredited university (Preferable majors include biology, chemistry, geology, physics or math)
- ~~Have earned a "B" (3.0 on a 4.0 scale) average or better in all work attempted while registered as an upper division student working for a baccalaureate degree~~ Have earned a 3.00 (on a 4.0 scale) average GPA or higher on upper division undergraduate coursework
- Have completed all of the coursework listed on our website (<http://www.marine.usf.edu>) under "Undergraduate Preparation"
- Have taken the Graduate Record Examination (GRE) within 5 years preceding application. The minimum scores generally considered acceptable by the College are as follows: Verbal = 500, Quantitative = 600. Preferred minimum scores for Marine Resource Assessment concentration are: -Verbal = 550, Quantitative = 700. Once the minimum scores for the new GRE format are determined, it will be posted to the college website.
- Have the commitment of a Marine Science faculty member to serve as advisor during the student's graduate studies.

Required Application Materials

- research interest statement (use template from Marine Science website)
- a resume or curriculum vitae
- three letters of recommendation
- official transcripts of grades
- GRE exam scores

Additional Requirements for International Applicants

- Minimum TOEFL exam score of 79
- Financial Support Requirements Form (available on the Graduate School website (<http://www.grad.usf.edu/graduate-admissions-international.asp>))
- Official transcripts of grades: all international transcripts must be in English; it is the applicant's responsibility to have foreign transcripts translated and evaluated before submitting them as part of their graduate application packet. Please visit the Foreign Transcript Evaluations Services Listing of acceptable evaluators. (<http://www.grad.usf.edu/graduate-admissions-Foreign-Transcript-Evaluation.asp>)

~~Contact Program for additional information and requirements (e.g., Research Interest Statement, Letters of Recommendation, etc.). (<http://www.marine.usf.edu/graduate-programs/applications.shtml>)~~

DEGREE PROGRAM REQUIREMENTS

A committee, consisting of a major advisor and at least 2 other members of the graduate faculty, will be appointed to supervise and guide the program of each student.

Total Minimum Hours:

32 hours

Students must complete a minimum of 32 credits [hours](#) under the following areas:

1. CORE REQUIREMENTS (12 hours)

Core courses completed with a grade of "B" or better:

- | | | | |
|----------------------------------|--------------------------|-------------------------|-----|
| a. a. | OCB 6050 | Biological Oceanography | (3) |
| b. b. | OCC 6050 | Chemical Oceanography | (3) |
| c. c. | OCG 6051 | Geological Oceanography | (3) |
| d. d. | OCP 6050 | Physical Oceanography | (3) |

2. CONCENTRATION REQUIREMENTS (14 ~~credit~~ hours)

Students select one of the following concentrations and complete 14 hours of electives within the concentration subject area (or other courses as approved by the Graduate Program Director). Note: [At least](#) 8 of these credit hours must be in formal courses to satisfy the USF requirement of 20 hours of formal coursework.

Biological Oceanography (BOC)
 Chemical Oceanography (COB)
 Geological Oceanography (GOG)
 Interdisciplinary (IDY)
 Marine Resource Assessment (MRA)*
 Physical Oceanography (POG)

*Students in Marine Resource Assessment Concentration area are required to take 3 courses from the following list (totaling 9 credit hours) [as part fo their concentration requirements](#):

- | | | |
|----------------------------------|---|-----|
| a. a. | Population Dynamics | (3) |
| b. b. | Fish Biology | (3) |
| c. c. | Dynamics of Marine Ecosystems | (3) |
| d. d. | Applied Multivariate Statistics | (3) |

3. ELECTIVE REQUIREMENTS (5 hours)

Electives are taken within each concentration area (see above)

~~4. COMPREHENSIVE EXAM REQUIREMENTS~~

~~Students must pass a final oral examination conducted by members of the student's advisory committee.~~

~~5.4. THESIS REQUIREMENTS (6 hours)~~

~~Six (6) credits of OCE 6971~~

- ~~• [A minimum of 6 credits of OCE 6971 \(Thesis credit hours\)](#)~~
- ~~• [A written thesis](#)~~
- ~~• [A successful thesis defense examination](#)~~

~~Students must complete a thesis conducted by members of the student's advisory committee.~~

~~6.5. OTHER REQUIREMENTS~~

~~Other coursework as required by thesis advisory committee~~

COURSES

See <http://www.marine.usf.edu/graduate-programs/courses-offered.shtml> [D12]
<http://www.ugs.usf.edu/sab/sabs.cfm>

MARINE SCIENCE PROGRAM

Doctor of Philosophy (Ph.D.) Degree

DEGREE INFORMATION

U.S. Citizens:
Fall: January 15
Spring: October 1

International Students
 (not currently residing in U.S.):
Fall: January 2
Spring: June 1

International Students
 (currently residing in U.S.):
 Refer to U.S. Citizens deadlines

Minimum Total Hours: 90
Program Level: Doctoral
CIP Code: 40.0607
Dept Code: MSC
Program (Major/College): MSC MS

Concentrations:
 Biological Oceanography (BOC)
 Chemical Oceanography (COB)
 Geological Oceanography (GOG)
 Interdisciplinary (IDY)
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CONTACT INFORMATION

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~~The College of Marine Science (CMS) offers M.S. and Ph.D. degrees in Marine Science. The student may emphasize biological, chemical, geological, or physical oceanography, or develop an interdisciplinary program in oceanography through course work and thesis or dissertation research. More than 100 students are currently pursuing degrees under the direction of 28 full-time faculty. Study areas range from estuarine and near-shore systems to remote areas of the Pacific, Atlantic and Indian Oceans, as well as the Arctic and Antarctic. Additional information on faculty research and college facilities is available from the College upon request.~~

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- Bachelor's degree or equivalent from a regionally accredited university (Preferable majors include biology, chemistry, geology, physics or math)
- Have earned a 3.00 (on a 4.0 scale) average GPA or higher on upper division undergraduate coursework
- Have completed all of the coursework listed on our website (<http://www.marine.usf.edu>) under "Undergraduate Preparation"
- Have taken the Graduate Record Examination (GRE) within 5 years preceding application. The minimum scores generally considered acceptable by the College are as follows: Verbal = 500, Quantitative = 600. Preferred minimum scores for Marine Resource Assessment concentration are: Verbal = 550, Quantitative = 700. Once the minimum scores for the new GRE format are determined, it will be posted to the college website.
- Have the commitment of a Marine Science faculty member to serve as advisor during the student's graduate studies.

Required Application Materials

- research interest statement (use template from Marine Science website)
- a resume or curriculum vitae
- three letters of recommendation
- official transcripts of grades
- GRE exam scores

Additional Requirements for International Applicants

- Minimum TOEFL exam score of 79
- Financial Support Requirements Form (available on the Graduate School website (<http://www.grad.usf.edu/graduate-admissions-international.asp>))
- Official transcripts of grades: all international transcripts must be in English; it is the applicant's responsibility to have foreign transcripts translated and evaluated before submitting them as part of their graduate application packet. Please visit the Foreign Transcript Evaluations Services Listing of acceptable evaluators. (<http://www.grad.usf.edu/graduate-admissions-Foreign-Transcript-Evaluation.asp>)

~~Program Admission Requirements~~

- ~~Bachelor's degree or equivalent from a regionally accredited university (preferable majors include biology, chemistry, geology, physics or math). Master's degree in one of the above sciences highly preferable.~~

- ~~• Have earned a "B" (3.0 on a 4.0 scale) average or better in all work attempted while registered as an upper division student working for a baccalaureate degree.~~
- ~~• Have completed all of the coursework listed on our website (<http://www.marine.usf.edu>) under "Undergraduate Preparation"~~
- ~~• Have taken the Graduate Record Examination (GRE) within 5 years preceding application. The scores generally considered acceptable by the college are as follows: Verbal = 500, Quantitative = 600~~
- ~~• Have the commitment of a Marine Science faculty member to serve as advisor during the student's graduate studies.~~

~~Contact Program for additional information and requirements (e.g., Research Interest Statement, Letters of Recommendation, etc.). (http://www.marine.usf.edu/graduate_programs/applications.shtml)~~

DEGREE PROGRAM REQUIREMENTS

A committee, consisting of a major advisor and at least 4 other members of the graduate faculty, is appointed to supervise and guide the program of the candidate. One member shall be from a science department outside Marine Science.

Total Minimum Hours Required: 90 [hours](#) beyond the Bachelor's

Students must complete a minimum of 90 credit [hours](#) beyond the Bachelor's degree, (12 hours of core requirements, 16 hours of dissertation, and 62 hours split between coursework and research as determined by the committee) and must complete the following:

1. CORE REQUIREMENTS (12 hours)

Core courses completed with a grade of "B" or better

a. OCB 6050	Biological Oceanography	(3)
b. OCC 6050	Chemical Oceanography	(3)
c. OCG 6051	Geological Oceanography	(3)
d. OCP 6050	Physical Oceanography	(3)

2. CONCENTRATION REQUIREMENTS

Students select one of the following concentrations. There is no minimum credit requirement except for the Marine Resource Assessment Concentration:

Biological Oceanography (BOC)
 Chemical Oceanography (COB)
 Geological Oceanography (GOG)
 Interdisciplinary (IDY)
[Marine Resource Assessment \(MRA\)*](#)
 Physical Oceanography (POG)
~~Marine Resource Assessment (MRA)~~

*Students in Marine Resource Assessment Concentration area are required to take 3 courses from the following list (totaling 9 credit hours) [as part fo their concentration requirements](#):

a. Population Dynamics	(3)
b. Fish Biology	(3)
c. Dynamics of Marine Ecosystems	(3)
d. Applied Multivariate Statistics	(3)

3. ELECTIVE REQUIREMENTS

Electives are taken within each concentration area (see above)

4. COMPREHENSIVE QUALIFYING EXAM REQUIREMENTS

A comprehensive qualifying exam consisting of a written and oral portion. ~~---~~A student must receive a passing vote on the qualifying exam from at least 4 committee members before admission to Ph.D. candidacy.

5. DISSERTATION REQUIREMENTS (16 hours)

- ~~---~~ A minimum of 16 credits of OCE 7980 (Dissertation credit hours). Following admission to candidacy, the student must enroll in OCE 7980 when engaged in research, data collection, or writing activities relevant to the dissertation. The student is required to accumulate a minimum of 6 credits during each previous 12 month period (previous 3 terms, e.g., Fall, Spring, Summer) until the degree is granted.

- ~~---~~ A written dissertation

- ~~---~~ and a successful dissertation defense examination.

6. OTHER REQUIREMENTS

Other coursework as required by dissertation advisory committee

COURSES

See <http://www.marine.usf.edu/graduate-programs/courses-offered.shtml> | D13 |
<http://www.ugs.usf.edu/sab/sabs.cfm>