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## SEOE STRUCTURE AND STAFF

The School of the Earth, Ocean and Environment (SEOE) is a division of the College of Arts and Sciences. It encompasses three academic units – the Environment and Sustainability Program (E&SP), the Department of Earth and Ocean Sciences (EOS), and the Marine Science Program (MSCI) – and two research units – the Belle W. Baruch Institute for Marine and Coastal Sciences (Baruch Institute) and the Earth Sciences and Resources Institute (ESRI) – under the direction of Dr. Carol Boggs.

The SEOE includes a wide variety of faculty, staff, and researchers from across the University! But, as a Marine Science major, you will likely interact the most with the following:

<p><b>Dr. Gwen Geidel</b> Jones 108; 777-7171 geidel@sc.edu</p>	<p><b>Undergraduate Director</b> and Director of the E&amp;SP <i>Responsibilities include:</i> Approving petitions and independent study contracts; clarifying degree requirements; advisement issues; study abroad course approval; any and all other concerns, academic or personal. One of your two go-to contacts.</p>
<p><b>Shelley Schlenk</b> Jones 108; 777-6163 schlenk@mailbox.sc.edu</p>	<p><b>Undergraduate Student Services Coordinator</b> <i>Responsibilities include:</i> Answering all questions; providing forms and information; clarifying degree requirements; advisement issues; any and all other concerns, academic or personal. The other of your two go-to contacts.</p>
<p><b>Jacqueline McClary</b> EWS 603; 777-9823 mcclaryj@mailbox.sc.edu</p>	<p><b>Student Services Coordinator</b> <i>Responsibilities include:</i> Scholarships and awards; internships; placement in research labs; course syllabi, textbooks, and evaluations.</p>
<p><b>Kelly Hamilton</b> EWS 617; 777-4536 khamilton@geol.sc.edu</p>	<p><b>Assistant to the Director of the MSCI Program</b> <i>Responsibilities include:</i> EWS building issues, including keys; facilitating contact with MSCI Director and faculty; maintaining faculty and graduate student mailboxes.</p>
<p><b>Emily Goldman</b> EWS 605; 777-3923 goldmaea@mailbox.sc.edu</p>	<p><b>MSCI Lab Manager</b> <i>Responsibilities include:</i> Ordering lab supplies and overseeing all aspects of the MSCI teaching labs (EWS 111, Sumwalt 339 &amp; 241)</p>
<p><b>Charlene Wilson-Profit</b> EWS 617; 777-3959 cwprofit@geol.sc.edu</p>	<p><b>Assistant Business Manager</b> <i>Responsibilities include:</i> Undergraduate student hire paperwork; student travel and petty cash reimbursements.</p>
<p><b>Teresa Donelan</b> EWS 607; 777-3919 donelan@sc.edu</p>	<p><b>Baruch Lab Manager</b> <i>Responsibilities include:</i> Overseeing all aspects of the Baruch Wet Lab (EWS 113); travel arrangements between the Columbia campus and the Baruch Marine Field Lab; teaching SCUBA.</p>

## AN OVERVIEW OF THE MARINE SCIENCE UNDERGRADUATE PROGRAM

The Marine Science Program at the University of South Carolina, Columbia, SC (USC-Columbia) is an interdisciplinary educational program offering curricula which lead to the Bachelor of Science, Master of Science and Doctor of Philosophy degrees. It is one of the premier marine science programs in the nation, with prominent research affiliations, competitively awarded research grants and an interdisciplinary academic curriculum. Named “one of the spires of excellence at the University of South Carolina” by a 2009 External Review Committee, the Program boasts more than 250 undergraduate majors.

The Marine Science Program is designed to be interdisciplinary; that is, to draw upon subject matter in many different fields of scientific endeavor. By being flexible, the Marine Science Program allows students, under the direction of a faculty advisor, to select courses from many areas in order to fulfill specific educational goals. Only in a program such as this can courses from Geology, Biology, Chemistry, Mathematics, Environmental, Physics, Engineering, Environmental Health and Social Sciences be combined into an individually-tailored curriculum. Students in Marine Science may choose to specialize in biological, chemical, geological or physical oceanography or coastal resource management/marine affairs and have specific *Areas of Emphasis* listed on their transcripts upon graduation.

- Geological Oceanographers study coastal features such as beaches and inlets, the nature and economic value of seafloor materials, and the history of the global ocean basins.
- Biological Oceanographers investigate all life forms in the seas and coastal areas.
- Physical Oceanographers examine the movement of air and water in the marine environment using physical principles.
- Chemical Oceanographers study the chemical composition of marine waters and sediments and how these chemicals enter, cycle, and are removed from the ocean.
- Coastal Resource Managers examine the many factors related to human development of, and human interaction with, the natural settings of coastlines.

## CAREERS FOR MARINE SCIENTISTS

Marine Science includes many areas of study, all concerned with increasing our knowledge of marine systems. Marine Scientists are working on current problems and future needs in the preservation, use and development of the marine environment. As our concern increases for the protection and intelligent use of our natural resources, the importance of Marine Science as a discipline vital to these endeavors increases dramatically. A solid academic background in Marine Science will prepare the student for numerous career opportunities, including the following:

- Government agencies at the federal, state and local levels employ Marine Scientists to regulate the use of marine resources, solve problems and conduct research.
- Private industry provides jobs for Marine Science graduates in the fields of aquaculture, exploratory geology, satellite imagery and computer ecological modeling, depending upon the extent of an individual's training. Private consulting firms hire Marine Science graduates to work on environmental impact projects.
- Fisheries managers are tasked with maintaining fisheries at levels that will support sustainable fisheries, their related ecosystems and the communities that depend on them
- Marine technology careers, i.e., related to the construction of buildings or transportation systems in marine or coastal areas, are available to Marine Science graduates.
- Teaching and research positions in colleges and universities offer another area of career opportunities. Middle- and high school teachers are in great demand, particularly in the STEM fields. Environmental education and zoos and aquariums offer another outlet for those interested in education.
- The military (particularly the Navy), in conjunction with ROTC programs, offers careers for Marine Science majors. Many previous graduates are now serving in the Navy as pilots, oceanographers and ships' officers as well as in other positions.
- The Peace Corps recruits Marine Science graduates to teach courses, such as aquaculture, in less developed nations.
- A number of Marine Science graduates have joined the NOAA Corps and are serving as Commissioned Officers onboard NOAA research vessels.

Although a B.S. in Marine Science qualifies an individual for careers in these areas, graduate study is often advantageous and is required for some positions. Nearly 70% of our graduates in Marine Science pursue further studies in schools throughout the U.S. In addition to M.S. and Ph.D. programs in Marine Science, Biology, Geology, Chemistry, Environmental Science, Physics, Mathematics, Statistics, Computer Science, Environmental/Public Health, and Geography, many of our students go on to pursue degrees in Education, Medicine, Veterinary Medicine, Law and Business Administration.

## RESEARCH OPPORTUNITIES FOR UNDERGRADUATES

Undergraduates routinely participate in faculty and graduate student research, along with numerous undergraduate field education projects at a variety of sites in coastal South Carolina and bordering states. Many of our undergraduate researchers have their work published in scientific journals and are listed as co-authors. Our students also have the opportunity to present their research at national meetings as well as at Discovery Day (<http://www.sc.edu/our/discovery.shtml>), an annual event for undergraduates at USC in any discipline to present their research and scholarship through poster presentations, and online in MARSci, an inter-institutional venue for publishing undergraduate research manuscripts pertaining to the marine and aquatic sciences (<http://www.marsci.org/>).

A number of our faculty conduct research on UNOLS- and NOAA-supported research vessels, providing students opportunities for “at-sea” research experience. The University also supports the 19,000 square-foot Belle W. Baruch Marine Field Laboratory at Hobcaw Barony, adjacent to Winyah Bay, SC. This National Estuarine Research Reserve includes a state of the art laboratory with a full-time staff of research associates and technicians, as well as living quarters and a conference center.

The Marine Science Program encourages undergraduate student involvement in research. Opportunities to do field and laboratory studies include the following programs:

Undergraduate Student Assistants. Marine Science faculty welcome undergraduate students to assist with their research. Students typically begin as volunteers and then progress to positions paid from research grants. The undergraduates receive hands-on laboratory experience which can lead to independent research and even co-authorship on peer-reviewed publications.

Independent Study Projects (MSCI 399). Under the direction of a faculty instructor, a student plans, proposes and executes a research project, receiving one to six credit hours (usually major credit) toward the B.S. degree. Such projects may be funded through the University’s Magellan Program (<http://www.sc.edu/our/magellan.shtml>).

Field and Laboratory Investigations in Marine Science (MSCI 460). Available on a competitive basis, this four-credit course involves three weeks of intensive fieldwork and research at the Baruch Marine Field Laboratory at Hobcaw Barony.

Honors Thesis Projects. Marine Science seniors who are in the South Carolina Honors College do research projects under the direction of faculty instructors. At the completion of the projects, students write and defend a thesis of their research.

Additional Opportunities. Our students often participate in summer Research Experience for Undergraduates (REU) programs at universities that do not offer undergraduate degrees in Marine Science, such as the Woods Hole Oceanographic Institution, SCRIPPS Institution of Oceanography and the University of Hawaii. In addition, our students find part- or full-time jobs on or off campus in private companies or government agencies, such as the U.S. Fish and Wildlife Service. Year-round internships (volunteer) are available at the Riverbanks Zoo Aquarium and Reptile Complex in Columbia and at nearby Congaree National Park. The Marine Science Program Student Services Office circulates information about these opportunities.

## **SCHOLARSHIPS, AWARDS & THE ACADEMIC COMMON MARKET**

The Marine Science Program and the School of the Earth, Ocean and Environment award annual scholarships for Marine Science undergraduates with outstanding academic achievement. Applications are available in Jones 108, EWS 603, on the department website, and at the end of this handbook; the submission deadline each year is April 1. Out-of-state scholarship recipients may also qualify for a tuition benefit that reduces full tuition by approximately 50%. Scholarships are awarded for only one year at a time, but recipients are encouraged to reapply in the spring for the following academic year.

Marine Science majors from certain southeastern states may qualify for the Academic Common Market, a tuition-reduction program for college students. Through this program, Marine Science majors from Arkansas, Kentucky, Maryland, Mississippi, Oklahoma, Tennessee, Virginia and West Virginia may qualify for in-state tuition at the University of South Carolina (see <http://www.sreb.org/> and <http://www.sc.edu/provost/acadprog/acm/index.shtml> for more information). This program is dependent only on major and full-time academic status, and not on GPA.

The Marine Science Program also presents three major awards at Undergraduate Awards Day each April: the Outstanding Undergraduate in Marine Science Award, the Richard C. Morris Scholarship, and the Traci Heincelman Memorial Scholarship in Marine Science (for rising juniors). These awards are all awarded to Marine Science students who have outstanding academic performance and research participation, as well as support the Marine Science Program through volunteer and outreach efforts. Nominations are solicited in the spring, and recipients chosen by the Undergraduate Committee.

The SEOE Student Services Office also tracks scholarships and fellowships offered by agencies external to USC that are specifically geared towards students studying Marine Science and related areas; a list is available in Jones 108 or via email. In particular, outstanding sophomores are encouraged to apply for the Ernest F. Hollings NOAA Fellowship; but all students with a 3.5 GPA or higher are encouraged to contact the office of Fellowships and Scholarships (<http://www.sc.edu/ofsp/>) to apply for competitive national awards, such as the Barry M. Goldwater and Udall Foundation Scholarships.

## ADVISEMENT PROCESS AND ASSIGNING OF ADVISORS

Students are advised through the Student Services Office when they first enter the Marine Science Program, and then assigned a faculty advisor for the next major advisement period. Assignments are made randomly at first, but all majors have the right to request a different advisor at any time by contacting the Student Services Office. Students are encouraged to seek an advisor with whom they feel comfortable, who knows their goals, and who is knowledgeable about the area of their specific interests.

Although students may contact their advisor at any time, MSCI majors are required to meet with their faculty advisors each semester during an officially scheduled advisement period to choose their courses for the following semester. Advisement for Spring courses starts after Fall Break and continues through the Friday before Registration (typically three weeks). Advisement for Summer and Fall courses begins after Spring Break and continues through the Friday before Registration. This is necessary to avoid delays in graduation, **even for students who receive supplementary advice from other sources** (such as athletes advised by athletic counselors, Honors College students advised by Honors College advisors or ROTC members advised by ROTC advisors).

Appointments during the scheduled advisement period are one-on-one and last approximately 30 minutes. Student and advisor discuss courses for the upcoming semester, research opportunities, study abroad, academic progress and success, as well as many other topics related to the student's education. In addition, faculty are always willing to meet with students throughout the year, and the staff in the Student Services Office are available at any time to provide information and guidance.

## SENIOR RECORDS CHECK

Students who have **completed 90 hours** or are **within two semesters of graduation** should complete a Major Program Card in conjunction with their advisor. This helps define a student's program of study and ensure that the degree requirements will be completed by the time the student plans to graduate. Major Program Cards are available in the Student Services Office in Jones 108.

After meeting with their advisor, students must contact the Dean's office (110 Flinn Hall) to make an appointment for a Senior Records Check: <http://www.sc.edu/advising/artsandsciences/> and click on 'Other Student Services'. The Dean's staff will go over both the Major Program Card and all other degree requirements to make sure a student is on track for graduation.

*Students who wait until their final semester for a senior records check may find themselves short a class and therefore unable to graduate!*

## GRADUATION WITH LEADERSHIP DISTINCTION

Students who study abroad, work in a research lab, serve as a peer leader or club officer, or perform extensive community service can qualify for Graduation with Leadership Distinction (<http://www.sc.edu/usconnect/leadership/>). This honor appears on your diploma, earns you the right to wear special cords at graduation, and lets potential employers know that you have demonstrated exceptional leadership abilities.



## CURRICULUM FOR THE B.S. IN MARINE SCIENCE

The following pages briefly describe the general requirements for a Marine Science major and give several examples of the types of curricula students interested in different branches of Marine Science design to achieve their own specialized career goals. Except for the basic degree requirements, the examples shown are general guidelines to a plan of courses; students will design personal programs of study with their advisors. (See also the online Undergraduate Bulletin, <http://bulletin.sc.edu>.)

Note that a Bachelor of Science degree in the College of Arts and Science requires a minimum of 128 credit hours for graduation.

### **Carolina Core Requirements:**

**I. Effective, Engaged and Persuasive Communication (CMW)** [grade of C or better required]  
ENGL 101 & 102 (6 hrs)

**II. Analytical Reasoning & Problem Solving (ARP)** [grade of C or better required for MSCI]  
CALCULUS: MATH 141 & 142 (8 hrs);  
STATISTICS: STAT 515 or MSCI 599 Data Collection and Analysis with petition (3 hrs)  
COMPUTER SCIENCE: CSCE 102 or higher or MSCI 305 with petition (3 hrs)

### **III. Global Citizenship & Multicultural Understanding (GFL)**

FOREIGN LANGUAGE: Demonstration of proficiency in one foreign language equivalent to the minimal passing grade on the exit examination in the 122 course level (0-9 hours);

HISTORICAL THINKING: Two courses at the 100 level, one US history and one non-US history (6 hours)

SOCIAL SCIENCE: Two courses selected from the social sciences, including anthropology, economics, criminal justice, environment, geography, political science, psychology, sociology, southern studies, and women and gender studies (6 hours) *Note: one course must be approved for the Carolina Core, while the second may be any social science course approved by the College of Arts & Sciences.*

### **IV. Aesthetic and Interpretive Understanding (AIU)**

(Humanities, Fine Arts, Literature) Courses selected from: African American studies, classical studies, English, European studies, fine arts, foreign language (201 and higher), history, philosophy, religion, and women and gender studies (6 hours). *Note: one course must be approved for the Carolina Core, while the second may be any fine art, humanity or literature course approved by the College of Arts & Sciences.*

### **V. Scientific Literacy (SCI)**

(Laboratory Science) Courses (both with laboratory) selected from: astronomy, biology, chemistry, geological sciences, marine science, and physics (8 hours) *Note: Marine Science majors fulfill this requirement with MSCI 101 and 102, which are also required for the major.*

### **VI. Overlay**

Two of three overlay courses can also fulfill Carolina Core requirements; overlay courses cannot be counted for major or minor credit:

A. PERSUASIVE COMMUNICATION (CMS)

B. INFORMATION LITERACY (INF)

C. VALUES, ETHICS & SOCIAL RESPONSIBILITY (VSR)

## **Marine Science Program Requirements**

In addition to the College Carolina Core requirements, the Marine Science Program has a set of program requirements that are **not major credit hours and must be passed with a grade of C or better**. These are:

MSCI 101, 102, with laboratories  
CHEM 111, 112, with laboratories  
PHYS 201 or 211, with laboratories  
PHYS 202 or 212, with laboratories.

**Note:** PHYS 212 can count to fulfill the Program requirement **and** as major course credit.  
CSCE 102 or higher (MSCI 305 w/permission)  
MATH 141, 142  
STAT 515 or higher (MSCI 599 Data Analysis and Collection w/permission)

### **Progression Requirement**

Marine Science majors may enroll in the following courses a maximum of twice to earn the required grade of C or higher: MATH 141 and 142, CHEM 111, CHEM 112, PHYS 201/201L or PHYS 211/211L, PHYS 202/202L or PHYS 212/212L. For the purposes of this standard of progression, withdrawal with a W does not constitute enrollment. These courses must be completed before the beginning of the student's third academic year (fifth major semester) as a marine science major. Failure to do so may result in a student's being required to switch out of the Marine Science major.

### **Field Experience Requirement**

All MSCI majors are required to undertake a minimum of three weeks of field effort. Possibilities include MSCI 460, semester or summer internship, Research Experience for Undergraduates (REU), semester at sea, or faculty-sponsored field research or cruise. Students wishing to substitute another field experience for MSCI 460 must apply for pre-approval before the experience, and submit short (2-3 page) paper afterward (see the end of this handbook for more information.) The Undergraduate Director will review and notify the Dean's office of the approval. Students will not normally receive course credit hours for their field experience but may combine this requirement with independent study credit as appropriate (see below).

### **Transfer Requirement**

Any student applying for transfer to the marine science major from other programs within the University, or from other accredited colleges and universities, is required to have a minimum overall grade point average of 2.50 on a 4.00 scale.

With certain limitations, students are eligible to graduate from the University of South Carolina under the requirements of any (one) University Bulletin in force during their undergraduate years. Students must remember that all requirements for graduation must be fulfilled from a single year's bulletin. Because of possible curricular changes, students are advised to access the USC Bulletins for Undergraduate Studies online at <http://bulletin.sc.edu/> and to discuss their graduation plans with their academic advisor.

## **Major Program of Study**

All Marine Science undergraduate students, in consultation with their advisors, plan individualized major programs of study according to their special interests in marine science. The major program of study consists of 36 hours of interdisciplinary, major credit courses, which must include MSCI 311, MSCI 313, MSCI 314, and MSCI 505. A maximum of 10 semester hours of a combination of independent study (e.g., MSCI 399, SCHC 499), seminar (e.g. SCHC 390-398, BIOL 599, BIOL 645) and undergraduate research (e.g. MSCI 496, 497, 498, 499) courses may count in the 36 hours of major credit required for the Marine Science major. **Senior Seminar (MSCI 505) is included in these 10 hours.** All courses for major credit must be passed with a grade of C or better. STAT 515 does not count towards Major Credit.

### **Independent Study**

MSCI 399, 496, 497, 498, 499 are all counted as independent study. *Only 9 semester hours of such courses can be used to count toward major credit.* An additional 3 hrs (up to 12 hrs total) may be used to count toward the 128 hour graduation requirement.

In order for a field or research experience to qualify for independent study credit, the experience must demonstrate that the student completed clearly definable, independent research. While it is anticipated that independent study credit will be undertaken while the student is engaged in an unpaid position (and thus demonstrating independent research), there may be unique situations when a competitive internship, REU, or some other paid position results in such clearly defined, independent research that credit may be sought for these experiences on a case by case basis.

Students pursuing independent study credit must complete an Independent Study Contract, available on the Registrar's website or in Jones 108.

## **MINOR IN MARINE SCIENCE**

Students wishing to complete a Minor in Marine Science must complete MSCI 101, MSCI 102, MSCI 311, MSCI 313 and MSCI 314. An additional six credit hours of Marine Science courses, numbered 301 or above, must also be completed for a total of 18 Minor credit hours.

Courses applied toward general education requirements cannot be counted toward the minor. No course may satisfy both major and minor requirements. All minor courses must be passed with a grade of C or better.

## **AREAS OF EMPHASIS**

While not required, students may elect to have an Area of Emphasis (AOE) specified directly on their academic transcript upon graduation from the Marine Science Program. Courses which count for an AOE may also be included in the 36 major credit hours required for graduation.

### **AOE in Biological Oceanography**

BIOL 301 (3) Ecology and Evolution  
BIOL 302 (3) Cell and Molecular Biology  
BIOL 303 (3) Fundamental Genetics  
BIOL 301L (1) OR BIOL 302L (1)

Plus 1 more course at the 400 level or above (total 13-14 credit hours)

### **AOE in Chemical Oceanography**

CHEM 321/L (3, 1) Quantitative Analysis and Lab  
CHEM 333 (3) Organic Chemistry I  
CHEM 334 (3) Organic Chemistry II

Plus 1 more course at the 400 level or above (total 13-14 credit hours)

### **AOE in Physical Oceanography**

PHYS 212 (3) Essentials of Physics II  
(Note: PHYS 211 prereq. for PHYS 212; PHYS 212 can count as major credit)  
PHYS 212L (1)  
MATH 241 (3) Vector Calculus

Plus any two of the following courses: (total 13 credit hours)

\*MSCI 557 (3) Coastal Processes  
\*MSCI 579 (3) Air-Sea Interactions  
\*MSCI 581 (3) Estuarine Oceanography  
\*MSCI 582 (3) Marine Hydrodynamics  
\*MSCI 590 (3) Beach-Dune Interactions

### **AOE in Geological Oceanography**

GEOL 202 (4) Rocks and Minerals  
GEOL 335 (4) Global & Environmental Change **OR**  
GEOL 305 (4) Earth Systems Through Time  
GEOL 315 (4) Surface and Near Surface Processes **OR**  
GEOL 325 (4) Stratigraphy and Sedimentary Basins

Plus one more course at the 300 level or above (total of 15-16 credit hours)

### **AOE in Coastal Resource Management & Marine Policy**

MSCI 390 (3) Policy and Marine Science  
GEOG 516 (3) Coastal Zone Management  
ENVR 548 (3) Environmental Economics\*

Plus one more course at the 400 level or above (total of 12-13 credit hours)

\*Students should consider taking ECON 224 (not required) prior to enrollment. Note that ECON 224 will count for general social science (Group IV) distribution requirements.

### **Fisheries\*\***

MSCI 536 (4) Ichthyology  
MSCI 576 (3) Marine Fisheries Ecology

Plus one of the following:

MSCI 535 (3) Fishery Management  
MSCI 574 (3) Marine Conservation Biology

Plus one more course at the 400 level or above. Students are also expected to complete the fisheries-intensive section of MSCI 460.

\*\*NOTE: This is not a defined AOE and will not appear on a student's transcript or diploma, but a focus in this area may be listed on a resume or C.V.



## COURSES ACCEPTABLE FOR MAJOR CREDIT

A *representative* list of courses acceptable for major credit is presented below. Any course that is eligible for cognate credit in the College of Arts and Sciences can potentially be a major course in Marine Science. Courses above 300 in other colleges may also count as major credits. The determination of the major courses in this interdisciplinary program is the result of consultation between the student and a faculty advisor.

<b>MARINE SCIENCE (MSCI) (see course descriptions at end of handbook)</b>			
<b>COURSE #</b>	<b>COURSE TITLE</b>	<b>CROSSLISTED</b>	<b>CREDITS</b>
†305	Ocean Data Analysis		3
311	Biology of Marine Organisms		4
313	Chemistry of the Sea		4
314	Physical Oceanography		4
335	Processes of Global Environmental Change	=GEOL 335	4
390	Policy and Marine Science		3
399	Independent Study		1-6
450	Principles of Biological Oceanography	=BIOL 450	3
460	Field and Laboratory Investigations in MSCI		4
496-499	Undergraduate Research		3
501	Principles of Geomorphology	=GEOL 501	3
502	Principles of Coastal Geomorphology	=GEOL 502	4
503	Environmental Microbiology	=BIOL 502	3
505	Senior Seminar		1
509	MATLAB-Based Data Analysis in Ocean Sciences		3
510	Invertebrate Zoology	=BIOL 510	4
521	Introduction to Geochemistry	=GEOL 521	3
524	Environmental Radioisotope Geochemistry	=GEOL 524	3
535	Fishery Management	=BIOL 535	3
536	Ichthyology	=BIOL 536	4
538	Behavior of Marine Organisms	=BIOL 538	4
545	Geological Oceanography	=GEOL 545	3
552	Population Genetics	=BIOL 552	3
557	Coastal Processes	=GEOL 557	3
574	Marine Conservation Biology	=BIOL 574	3
575	Marine Ecology	=BIOL 575	3
576	Marine Fisheries Ecology	=BIOL 576	3
579	Air-Sea Interaction	=GEOL 579	3
580	Satellite Oceanography	=GEOL 580	3
581	Estuarine Oceanography	=GEOL 581	3
582	Marine Hydrodynamics	=GEOL 582	3
590	Beach-Dune Interactions	=GEOG 590	3
599	Topics in Marine Science		1-3
624	Aquatic Chemistry	=CHEM 624	3

627	Marine Phytoplankton	=BIOL 627	3
† Course may be used for credit toward the ARP Carolina Core requirement by petitioning the College of Arts and Sciences; cannot count for both the Core and major credit			
<b>BIOLOGICAL SCIENCES (BIOL)</b>			
<b>COURSE #</b>	<b>COURSE TITLE</b>	<b>CROSSLISTED</b>	<b>CREDITS</b>
301, 301L	Ecology and Evolution		3, 1
302, 302L	Cell and Molecular Biology		3, 1
303	Fundamental Genetics		3
450	Principles of Biological Oceanography	=MSCI 450	3
460, 460L	General Physiology		3, 1
502	Environmental Microbiology	=MSCI 503	3
505, 505L	Developmental Biology I		3, 1
510	Invertebrate Zoology	=MSCI 510	4
534	Animal Behavior		3
535	Fishery Management	=MSCI 535	3
536	Ichthyology	=MSCI 536	4
538	Behavior of Marine Organisms	=MSCI 538	4
541, 541L	Principles of Biochemistry	=CHEM 550	3, 1
543, 543L	Comparative Physiology		3, 1
549	Plant Physiology		4
550, 550L	Bacteriology		3, 1
552	Population Genetics	=MSCI 552	3
570, 570L	Principles of Ecology		3, 1
574	Marine Conservation Biology	=MSCI 574	3
575	Marine Ecology	=MSCI 575	3
576	Marine Fisheries Ecology	=MSCI 576	3
627	Marine Phytoplankton	=MSCI 627	3
640	Microbial Ecology		3
643	Advanced Microbiology		3
652	Evolutionary Biology		4
654	Speciation		3
670	Plant Ecology		4
690	Electron Microscopy		3
<b>CHEMISTRY (CHEM)</b>			
<b>COURSE #</b>	<b>COURSE TITLE</b>	<b>CROSSLISTED</b>	<b>CREDITS</b>
321, 321L	Quantitative Analysis		3, 1
333, 331L	Organic Chemistry I		3, 1
334, 332L	Organic Chemistry II		3, 1
511	Inorganic Chemistry		3
541, 541L	Physical Chemistry		3, 1
542, 542L	Physical Chemistry		3, 1
621	Instrumental Analysis		3
624	Aquatic Chemistry	=MSCI 624	3



<b>COMPUTER SCIENCE (CSCE)</b>			
<b>COURSE #</b>	<b>COURSE TITLE</b>	<b>CROSSLISTED</b>	<b>CREDITS</b>
561	Numerical Analysis	=MATH 527	4
<b>ENVIRONMENT &amp; SUSTAINABILITY (ENVR)</b>			
<b>COURSE #</b>	<b>COURSE TITLE</b>	<b>CROSSLISTED</b>	<b>CREDITS</b>
548	Environmental Economics	=ECON 548	
<b>GEOGRAPHY (GEOG)</b>			
<b>COURSE #</b>	<b>COURSE TITLE</b>	<b>CROSSLISTED</b>	<b>CREDITS</b>
341	Cartography		3
345	Interpretation of Aerial Photographs		3
363	Geographic Information Systems		3
510	Special Topics in Geography		3
516	Coastal Zone Management		3
541	Advanced Cartography		3
545	Synoptic Meteorology		4
546	Applied Climatology		4
551	Principles of Remote Sensing		3
554	Spatial Programming		3
563	Advanced Geographic Information Systems		3
564	GIS Based Modeling		3
590	Beach-Dune Interactions	=MSCI 590	3
<b>GEOLOGICAL SCIENCES (GEOL)</b>			
<b>COURSE #</b>	<b>COURSE TITLE</b>	<b>CROSSLISTED</b>	<b>CREDITS</b>
305	Earth Systems Through Time		4
315	Surface and Near-Surface Processes		4
325	Stratigraphy & Sedimentary Basins		4
335	Global & Environmental Change	=MSCI 335	4
345	Internal Earth		4
371	A View of the River		3
500	Field Geology		6
520	Isotope Geology and Geochronology		3
521	Introduction to Geochemistry	=MSCI 521	3
524	Environmental Radioisotope Geochemistry	=MSCI 524	3
531	Plate Tectonics		3
545	Geological Oceanography	=MSCI 545	3
546	Marine Geophysics		3
555	Elementary Seismology		3
557	Coastal Processes	=MSCI 557	3
570	Environmental Hydrogeology		3
579	Air-Sea Interaction	=MSCI 579	3
580	Satellite Oceanography	=MSCI 580	3
581	Estuarine Oceanography	=MSCI 581	3
582	Marine Hydrodynamics	=MSCI 582	3

<b>JOURNALISM (JOUR)</b>			
<b>COURSE #</b>	<b>COURSE TITLE</b>	<b>CROSSLISTED</b>	<b>CREDITS</b>
562	Communicating Science, Health and the Environment		3
<b>MATHEMATICS (MATH)</b>			
<b>COURSE #</b>	<b>COURSE TITLE</b>	<b>CROSSLISTED</b>	<b>CREDITS</b>
241	Vector Calculus		3
242	Elementary Differential Equations		3
521	Boundary Value Probs. & Partial Differ. Equations		3
526	Numerical Linear Algebra		4
527	Numerical Analysis	=CSCE 561	4
544	Linear Algebra		3
<b>NAVAL SCIENCE (NAVY)</b>			
<b>COURSE #</b>	<b>COURSE TITLE</b>	<b>CROSSLISTED</b>	<b>CREDITS</b>
301, 301L	Navigation/Naval Operations I		3,1
302, 302L	Navigation/Naval Operations II		3,1
<b>PHYSICS (PHYS)</b>			
<b>COURSE #</b>	<b>COURSE TITLE</b>	<b>CROSSLISTED</b>	<b>CREDITS</b>
††212, 212L	Essentials of Physics II		3,1
†† Physics 212 may be used for Program requirement and major courses			
<b>POLITICAL SCIENCE (POLI)</b>			
<b>COURSE #</b>	<b>COURSE TITLE</b>	<b>CROSSLISTED</b>	<b>CREDITS</b>
370	Introduction to Public Administration		3
420	International Law		3
431	Science, Technology and Public Policy		3
477	Green Politics		3
478	Environmental Policy		3
<b>SOCIOLOGY (SOCY)</b>			
<b>COURSE #</b>	<b>COURSE TITLE</b>	<b>CROSSLISTED</b>	<b>CREDITS</b>
310	Social Demography		3
315	World Population: Problems and Policies		3
<b>STATISTICS (STAT)</b>			
<b>COURSE #</b>	<b>COURSE TITLE</b>	<b>CROSSLISTED</b>	<b>CREDITS</b>
506	Introduction to Experimental Design		3
511	Probability	=MATH 511	3
512	Mathematical Statistics		3
513	Theory of Statistical Inference		3
516	Statistical Methods II		3
518	Nonparametric Statistical Methods		3

## MARINE SCIENCE UNDERGRADUATE COURSE OFFERINGS

### **MSCI 101 - The Ocean Environment** (4 credits)

Origin and evolution of the oceans, plate tectonics, ocean circulation, waves and tides, seawater and sediment composition, and influences on biology. Three lecture and three laboratory hours per week. Scheduled field trips required.

Prerequisites: science, engineering, or education major or consent of instructor

### **MSCI 102 - The Living Ocean** (4 credits)

Origin, evolution, and diversity of marine life, biological production, trophic dynamics, nutrient cycles, marine resources, and environmental concerns. Three lecture and three laboratory hours per week. Scheduled field trips required.

Prerequisites: science, engineering, or education major or consent of instructor

### **MSCI 210 - Oceans and Society** (3 credits)

A nontechnical introduction to human interactions with the marine environment: marine organisms, marine systems, and the physical and chemical characteristics of oceans and estuaries. *Not available for marine science major credit.*

### **MSCI 210L - Oceans and Society Laboratory** (1 credit)

Experiments and exercises which illustrate how specific components of marine environments are structured, function, and can be measured. Two laboratory hours per week. *Not available for marine science major credit.*

Attendance on designated field trips may be required.

Prerequisites or corequisites: MSCI 210

### **MSCI 215 - Coastal Environments of the Southeastern U.S.** (3 credits)

Coastal zones of South Carolina and neighboring states, including geologic history, geomorphology, stratigraphy, hydrogeology, shoreline processes, environmental issues, and effect of man. Three lecture hours each week plus optional field trips. *Not available for marine science major credit.*

Cross-listed Course: GEOL 215

### **MSCI 215L - Coastal Environments of the Southeastern U.S. (Laboratory)** (1 credit)

Exercises examining coastal ecology, geomorphology, hydrogeology, shoreline processes, environmental issues, and human impact. Two laboratory hours per week. Scheduled field trips required. *Not available for marine science major credit.*

Cross-listed Course: GEOL 215L

### **MSCI 305 - Ocean Data Analysis** (3 credits)

Instrumentation, oceanographic time series, spatial and directional data sets, and basic parametric modeling.

Prerequisites: MSCI 101 and MATH 141, or consent of instructor

### **MSCI 311 - Biology of Marine Organisms** (4 credits)

Biological concepts emphasizing adaptation to marine environments. Laboratory experiments emphasize principles and techniques of marine biological study. Three lecture and three laboratory hours per week. Scheduled field trips are required.

Prerequisites: MSCI 102 or BIOL 101

### **MSCI 313 - The Chemistry of the Sea** (4 credits)

Biogeochemical cycling, carbonate chemistry, climate change, hydrothermal vents, stable isotopes, trace metals, radioactive tracers, mass balance, and properties of sea water. There are three lecture and three laboratory hours per week.

Prerequisites: MSCI 101, CHEM 112, MATH 142

### **MSCI 314 - Physical Oceanography** (4 credits)

Properties of seawater, mass and momentum balances, circulation, mixing, waves and other processes in the marine environment.

Prerequisites: MSCI 101, MATH 142, PHYS 201 or 211

### **MSCI 390 – Policy and Marine Science** (3 credits)

Analysis of past and current issues in global and national marine policy. Relationship between science and policymakers.

**MSCI 399 - Independent Study** (1-6 credits)

Contract approved by instructor, advisor, and department chair is required for undergraduate students.

**MSCI 450 - Principles of Biological Oceanography** (3 credits)

Principles and methods of measuring production in the sea. Emphasis on the ocean's role in the global carbon budget. Three lecture hours per week. Scheduled field trips are required.

Cross-listed Course: BIOL 450

Prerequisites: MSCI 311, BIOL 301, or consent of instructor

**MSCI 460 - Field and Laboratory Investigations in Marine Science** (4 credits)

Intensive inquiry-based investigations combining oceanographic field sampling with laboratory measurements of collected samples using modern analytical instrumentation, and with analysis and integration of data into a final research report. Course conducted in residence at a marine field site.

Prerequisites: MSCI 311, 313 and 314

**MSCI 496, 497, 498, 499 – Undergraduate Research** (3 credits)

Student research on problems of fundamental significance in collaboration with faculty mentors. Emphasis on critical thinking, problem solving, proposal development, scientific writing, and professional presentation. Nine hours of laboratory, field, or library work per week.

Prerequisites: consent of instructor; contract required

**MSCI 501 - Principles of Geomorphology** (3 credits)

The process of earth denudation with emphasis on chemistry of weathering, stream and erosion hydraulics, quantitative analysis of land form evolution.

Cross-listed Course: GEOL 501

Prerequisites: GEOL 101 and 102

**MSCI 502 - Principles of Coastal Geomorphology** (4 credits)

Geological and physical controls on the morphology, development, and stability of coastlines. Analysis of waves and erosional processes, and coastal zone morphodynamics. Note: Several required field trips.

Prerequisites or corequisites: MATH 122 or 141

Cross-listed Course: GEOL 502

**MSCI 503 - Environmental Microbiology** (3 credits)

An overview of the microbial world including a survey of the distribution, functioning, and diversity of microorganisms in natural systems. Discusses the crucial roles that microorganisms play in ecosystem function, biogeochemical cycles, and environmental quality.

Cross-listed Course: BIOL 502

Prerequisites: MSCI 102 or BIOL 102, CHEM 112

**MSCI 505 - Senior Seminar** (1 credit)

Prerequisites: restricted to undergraduate Marine Science majors

**MSCI 509 – MATLAB-Based Data Analysis in Ocean Sciences** (3 credits)

MATLAB-based course in processing, analysis, and visualization of large oceanographic data sets. Includes scalar and vector time series measured at fixed locations as well as shipboard surveys of oceanographic characteristics varying both in 3-D and in time.

Prerequisites: MATH 141 or consent of instructor

**MSCI 510 - Invertebrate Zoology** (4 credits)

Phylogenetic and comparative aspects of anatomy, physiology, reproduction, and embryology of the invertebrates.

Note: Three lecture and one three-hour laboratory periods per week.

Cross-listed Course: BIOL 510

Prerequisites: BIOL 301 or MSCI 311

**MSCI 511 - Advanced Paleontology** (3 credits)

Systematic, ecologic, biogeographic, and evolutionary aspects of paleontology. Lectures, practical exercises, occasional field trips.

Cross-listed Course: GEOL 511

**MSCI 515 - Marine Micropaleontology** (4 credits)

Marine microfossils: distribution, ecology, paleoecology, and biostratigraphy; use of microfossils in marine sediments to study oceanographic history. Three lectures and 2 laboratory hours per week.

Cross-listed Course: GEOL 515

Prerequisites: consent of instructor

**MSCI 521 - Introduction to Geochemistry** (3 credits)

Investigation of low temperature chemical reactions controlling the geochemistry of the earth's surface. Emphasis on CO<sub>2</sub>, carbonates, oxidation reduction, thermodynamics, isotopes, biogeochemistry.

Cross-listed Course: GEOL 521

**MSCI 524 - Environmental Radioisotope Geochemistry** (3 credits)

Introduction to radioactivity and the use of radionuclides to study environmental processes, including age-dating and biogeochemical cycling in aquatic systems. Two lectures per week.

Cross-listed Course: GEOL 524

Prerequisites: CHEM 111, CHEM 112, MATH 141

**MSCI 525 - Marine Plants** (4 credits)

Diversity, distribution, physiology, ecology, evolution, and economic importance of marine algal, seagrass, and mangrove communities. Three lectures and 3 laboratory hours per week. Scheduled field trips are required.

Cross-listed Course: BIOL 525

Prerequisites: BIOL 301 or MSCI 311

**MSCI 535 – Fishery Management** (3 credits)

Management and conservation of aquatic and marine resources, with emphasis on fisheries. Data procurement and analysis; commercial and recreational fisheries; sociological, political, legal, and environmental factors that affect fishery management; and fish biodiversity.

Cross-listed Course: BIOL 535

Prerequisites: BIOL 301

**MSCI 536 – Ichthyology** (4 credits)

Phylogeny, morphology, behavior, and ecology of fishes. Three lecture and 3 laboratory hours plus three field trips to be arranged.

Cross-listed Course: BIOL 536

Prerequisites: BIOL 301 or MSCI 311 or consent of instructor

**MSCI 537 – Aquaculture** (3 credits)

Introduction to the practical and scientific aspects of the commercial culture of freshwater and marine organisms. Three lecture hours per week. One all-day field trip required.

Cross-listed Course: BIOL 537

Prerequisites: BIOL 301 or MSCI 311

**MSCI 538 - Behavior of Marine Organisms** (4 credits)

The identification of behavioral adaptations of estuarine and marine organisms: their ecology, physiology, development, and evolutionary history; field observations.

Cross-listed Course: BIOL 538

Prerequisites: BIOL 101 and 102 or MSCI 311 or consent of instructor

**MSCI 545 - Geological Oceanography** (3 credits)

A comprehensive study of the origin and development of the major structural features of the ocean basins and the continental margins. Discussion of the techniques used in obtaining geologic data and the interpretation of sedimentary processes, vulcanism, and the stratigraphy of the ocean basins.

Cross-listed Course: GEOL 545

Prerequisites: consent of instructor required for undergraduates only

**MSCI 550 - Sedimentary Simulations and Sequence Stratigraphy** (4 credits)

Problems of sequence stratigraphy resolved with graphic computer simulations. Sedimentary fill of basins by carbonates and/or clastics tracked as a function of rate of sediment accumulation, tectonic behavior and sea level. Includes laboratory.

Cross-listed Course: GEOL 550

Prerequisites: GEOL 301 or consent of instructor

**MSCI 552 - Population Genetics** (3 credits)

An introduction to the principles of population genetics, with emphasis on the origin, maintenance, and significance of genetic variation in natural populations.

Cross-listed Course: BIOL 552

Prerequisites: BIOL 301, MSCI 311, and BIOL 303

**MSCI 553 - Marine Sediments** (3 credits)

Marine sedimentary environments; physical/biological factors which control the formation and distribution of modern marine sediments.

Cross-listed Course: GEOL 553

Prerequisites: GEOL 516 or consent of instructor

**MSCI 555 - Conservation and Health in Marine Systems** (3 credits)

Introduces the field of conservation and explores the intersection between conservation and environmental health with a particular focus on coastal and marine case studies.

Cross-listed Course: ENHS 555

**MSCI 557 - Coastal Processes** (3 credits)

Physical and geological processes controlling the formation and evolution of beach, barrier, and nearshore environments, including discussion of coastal management issues. Note: Field trip(s) to coastal environments.

Cross-listed Course: GEOL 557

**MSCI 566 - Ecosystem Analysis** (3 credits)

The formulation and simulation of compartment models of marine and terrestrial ecosystems with complex nutrient cycling, food chains, and energy flow. Analog and digital simulation techniques. Ecosystem stability and sensitivity. Organization, structure, and diversity of an ecosystem.

**MSCI 568 - Introduction to Micrometeorology** (3 credits)

Small-scale processes in the atmospheric boundary layers, including energy budget, radiation, soil heat transfer, humidity, viscous flows, turbulence, momentum and heat exchanges, evaporation, and marine atmospheric boundary layer.

Cross-listed Course: GEOL 568

Prerequisites: PHYS 201 and MATH 141, or consent of instructor

**MSCI 574 - Marine Conservation Biology** (3 credits)

Exploration of how human activities affect marine natural populations, species, communities and ecosystems, including threats to biodiversity; approaches to marine conservation; and ecological and evolutionary responses to anthropogenic disturbance.

Cross-listed Course: BIOL 574

Prerequisites: BIOL 301

**MSCI 575 - Marine Ecology** (3 credits)

Structure, dynamics, and interactions between populations and communities in marine ecosystems. Three lecture hours per week. Attendance at designated departmental seminars is required.

Cross-listed Course: BIOL 575

Prerequisites: CHEM 111 and BIOL 301 or MSCI 311

**MSCI 575L - Marine Ecology Laboratory** (1 credit)

Laboratory and field exercises in coastal environments. Three hours per week plus field trips.

Prerequisites or corequisites: MSCI 575

Cross-listed Course: BIOL 575L

**MSCI 576 – Marine Fisheries Ecology** (3 credits)

Interdisciplinary examination of the distribution, reproduction, survival, and historical variation of the principal commercial marine fisheries.

Cross-listed Course: BIOL 576

Prerequisites: BIOL 301

**MSCI 577 - Ecology of Coral Reefs** (4 credits)

Structure, productivity, and biodiversity of coral reefs, emphasizing their sensitivity, stability, and sustainability. Taught as an extended field experience with daily lectures and guided research activities.

Cross-listed Course: BIOL 577

Prerequisites: BIOL 301 or MSCI 311 or consent of instructor

**MSCI 578 - Physiological and Pollution Ecology of Marine Organisms** (3 credits)

Functional adaptation of marine plants and animals to ecological stresses including pollution. Three lecture hours per week.

Prerequisites: MSCI 311 or equivalent

**MSCI 579 - Air-Sea Interaction** (3 credits)

The physical mechanism responsible for interaction between the ocean and the atmosphere and the influence of air-sea interaction on atmospheric and oceanic dynamics and thermodynamics on a wide variety of spatial/temporal scales.

Cross-listed Course: GEOL 579

**MSCI 580 - Satellite Oceanography** (3 credits)

This course provides knowledge of various techniques used in satellite remote sensing of the oceans. Key skills will be developed in satellite data processing, image analysis, and hands-on research.

Cross-listed Course: GEOL 580

**MSCI 581 - Estuarine Oceanography** (3 credits)

Estuarine kinematics and dynamics; classification of estuaries; estuarine circulation and mixing.

Cross-listed Course: GEOL 581

Prerequisites: MSCI 314 or consent of instructor

**MSCI 582 - Marine Hydrodynamics** (3 credits)

Basic principles of fluid statics and dynamics. Conservation of mass, momentum, and energy; viscosity, vorticity, and boundary layers with examples from the marine environment. Applications to and analysis of ocean currents and waves.

Cross-listed Course: GEOL 582

Prerequisites: differential equations, PHYS 201 or 211, or consent of instructor

**MSCI 583 - Geology and Geochemistry of Salt Marshes** (3 credits)

Geological and geochemical processes in salt marshes. Methods of geological research in marshes including instrumental techniques, sampling design, and data analysis. Two lectures per week plus four weekends of project oriented fieldwork and/or equivalent lab work.

Cross-listed Course: GEOL 583

Prerequisites: consent of instructor

**MSCI 585 - Coastal Tropical Oceanography** (4 credits)

Descriptive oceanography of mangrove and coral reef coasts with emphasis on physical processes. Taught as an extended field experience with daily lectures and guided research activities.

Prerequisites: MSCI 312 or consent of instructor

**MSCI 590 - Beach-Dune Interactions** (3 credits)

Influence of wind on coastal systems, with emphasis on nearshore currents, sediment transport and bedforms, aeolian transport, and dunes.

Cross-listed Course: GEOG 590

Prerequisites: Minimum Junior standing required

**MSCI 599 - Topics in Marine Science** (1-3 credits)

Current developments in marine science selected to meet faculty and student interests. Course content varies and will be announced by suffix and title in schedule of courses.

**MSCI 624 - Aquatic Chemistry** (3 credits)

Study of the chemical reactions and processes affecting the distribution of chemical species in natural systems. Three lecture hours per week.

Prerequisites or corequisites: CHEM 321, MATH 142, or consent of instructor

Cross-listed Course: CHEM 624

**MSCI 627 - Marine Phytoplankton** (3 credits)

Examines the physiology and ecology of phytoplankton, including environmental controls on community composition, primary productivity, and detection and characterization of water quality (eutrophication) and harmful algal blooms.

Cross-listed Course: BIOL 627





## ACCELERATED BACHELOR'S/GRADUATE STUDY PLAN

The University of South Carolina's School of the Earth, Ocean and Environment (SEOE) offers exceptional (GPA>3.5) undergraduate students the opportunity to spend an extra year at USC and earn a Master's degree in addition to their Bachelor's degree! Qualifying students take a combination of undergraduate and graduate courses in their fourth year of undergraduate study and concentrate on graduate work in their fifth year, earning their Bachelor's degree in the fourth year and the opportunity to earn the Master's degree in the following year. The accelerated plan allows students to count 12 credit hours of graduate course work (500 level and above) towards *both* the undergraduate and graduate degree.

As research experience is essential for a Master's Degree, candidates for this program must arrange to participate in a research project in a faculty member's research program prior to applying for the Accelerated Bachelor's/Graduate Study Plan. This program is ideal for students already conducting independent research in a faculty laboratory, and/or for students who started with sufficient AP or IB credits that they could graduate a semester or more early if not for this plan.



Note that application to the accelerated master's study plan does not guarantee you admission to a specific graduate program or financial support. Nor does acceptance to the accelerated MS degree plan obligate you to stay at USC for your graduate work! Instead, it merely confirms your interest in pursuing a Master's degree and allows you to start taking graduate courses during your senior year of undergraduate study.

See the Application for Admission to a Combined Bachelor's/Graduate Degree Plan form (<http://gradschool.sc.edu/forms/G-BGPA.pdf>) on the Graduate School's website for more information about this program.

Students should apply for this plan during the spring of their junior year or in the semester in which they reach 90 undergraduate credit hours. Note that approval for this program does not guarantee admission to the University of South Carolina's Graduate School. **Please discuss financial support with your faculty advisor before applying to this program, as the accelerated Master's Degree does not guarantee support either through Instructional Assistantships or other funding sources.**

Once approved for the Accelerated Bachelor's/Graduate Study Plan, students must complete a Course Work Authorization (G-BGCA form, available on the Graduate School website, <http://gradschool.sc.edu/forms/G-BGCA.pdf>) for every graduate course (5xx-8xx) they wish to take while enrolled as an undergraduate, even if the course is open to both undergraduate and graduate students. Note that undergraduate students participating in Senior Privilege or the Accelerated Bachelor's/Graduate Degree Plan may opt for **only one** program; if a student has been approved to participate in one of these programs, that student is prohibited from applying for, or taking courses under, the other.

Follow the Accelerated Bachelor's/Graduate Degree Plan Checklist below to apply to the Accelerated Bachelor's/Graduate Degree Plan! The recommended deadline is February 1 of your junior year.

Name		VIP ID	
Anticipated B.S. Date		Anticipated M.S. Date	
<b>ACCELERATED BACHELOR'S/GRADUATE STUDY PLAN APPLICATION CHECKLIST</b>			
Talk with prospective faculty advisors to find a faculty member willing to mentor you as a Master's student			
Complete the Application for Admission to a Combined Bachelor's/Graduate Degree Plan form: <a href="http://gradschool.sc.edu/forms/G-BGPA.pdf">http://gradschool.sc.edu/forms/G-BGPA.pdf</a>			
Write a Statement of Purpose <i>~2 paragraphs explaining why you want to enter the program</i>			
Compile an overview of your research plan and details of available research support <i>2-3 pages maximum, including both current and proposed research; be specific; does your intended faculty advisor have grant money to support you as a Research Assistant?</i>			
<b>→ At this point, make an appointment for you and your intended faculty advisor to meet with Dr. Gwen Geidel, Undergraduate Director: <a href="mailto:geidel@sc.edu">geidel@sc.edu</a></b>			
Letter of support from faculty advisor <i>Ask your intended faculty advisor to put in writing how he/she will financially support you, if at all – and document other important details so everyone is in agreement</i>			
Update your Resume or CV			
<b>→ At this point, put everything together into a packet, using this checklist as a cover sheet, and submit to Shelley Schlenk, Undergraduate Coordinator, in Jones 108</b>			

# School of the Earth, Ocean and Environment Scholarship Application

**Applications must be received and complete by April 1st.**

Electronic submission is preferred: please email to [mcclaryj@mailbox.sc.edu](mailto:mcclaryj@mailbox.sc.edu)  
or fax to (803) 777-3922. If mailed, please send to:

Jacqueline M. McClary  
SEOE Student Services Program Coordinator  
EWS 603, 712 Main Street  
University of South Carolina  
Columbia, SC 29208

## Eligibility Requirements:

1. Must have minimum cumulative GPA of 3.0 (4.0 scale) in work done at other institutions; or
2. Must have a minimum cumulative USC GPA of 3.0 (4.0 scale) if appropriate.

**Major:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Name:** \_\_\_\_\_

**Local Address** \_\_\_\_\_

**Permanent/Home Address** \_\_\_\_\_

**Email** \_\_\_\_\_

## Educational Background

### *High School Seniors:*

High School \_\_\_\_\_

Class Rank \_\_\_\_\_ GPA \_\_\_\_\_

### *Current Undergraduates:*

GPA \_\_\_\_\_ Hours completed at the end of  
current semester \_\_\_\_\_

### **Previous Awards or Honors:**

## **Other Scholarships Applicable at the University of Carolina:**

### **Please include the following (may be sent under separate cover):**

\_\_\_ A typed statement of how a departmental scholarship would be relevant to your educational and career goals

\_\_\_ One letter of recommendation from a teacher or mentor

\_\_\_ Current transcript of your grades (incoming students only; unofficial transcripts are acceptable; please send one even if you have already provided one to the Admissions Office)



## Marine Science Degree Requirements: Carolina Core

(Credits)

- CMW Written Communication (Grade of C or higher required)**
- ENGL-101 (3)
  - ENGL-102 (also fills INF Overlay when taken here) (3)
- ARP Analytical Reasoning & Problem Solving (grade of C or Higher required)**
- MATH-141 (4)
  - MATH-142 (4)
  - STAT 515 (3)
  - CSCE 102 (or higher) (3)
- SCI Scientific Literacy (8 credits; satisfied by Program Requirements)**
- Global Citizenship & Multicultural Understanding**
- GFL Communicating Effectively In More Than One Language**  
Foreign Language thru 122 level (0-9 credits)  
(may include language 109, 110 (or 121) and 122)
- GHS Historical Thinking**
- History: 100-level US (3)
  - History: 100-level non US or FILM 300, GERM 280, or HIST 214 (3)
- GSS Social Sciences**  
Select 2 courses (6 credits); at least one must be from:  
AFAM 201; ANTH 101, 102, 204, 205, 210, 211; COLA 298; CRJU 101; GEOG 103, 121, 210, 221, 223-226, 228; LASP 331; LING 101; POLI 101, 201; PSYC 101; SOCY 101; WGST 112, 113, 210 (3, 3)
- AIU Aesthetic & Interpretive Understanding**  
Select 2 courses (6 credits) from Fine Arts, Literature, or Humanities; at least one must be from:  
ARTE 101, 260; ARTH 105, 106; ARTS 103, 104; CLAS 220; CPLT 150, 270; DANC 101; ENGL 270, 282-288; FILM 110, 180, 240; FREN 290; GERM 290; MART 110, 210; MUSC 110, 113-115, 140; RUSS 280; SOST 101; SPAN 220; THEA 170, 181, 200 (3, 3)
- Overlay**
- A. CMS Persuasive Communication  
PHIL 325; SAEL 200; SPCH 140
  - B. INF Information Literacy  
ENGL 102 (recommended); or LIBR 101, SLIS 202, STAT 112
  - C. VSR Values, Ethics & Social Responsibility  
BIOL 208; CPLT 150; CSCE 390; HIST 108; LING 240; PHIL 103, 211, 320-322, 325; POLI 201, 302-304; RELG 205; SAEL 200; WGST 112

(over)

## Marine Science Degree Requirements: Major Requirements

(Credits)

### Program Requirements (Pass with C or higher) (24 credits)

- |                          |   |       |
|--------------------------|---|-------|
| <input type="checkbox"/> | MSCI 101 - The Ocean Environment  | (4)   |
| <input type="checkbox"/> | MSCI 102 - The Living Ocean   | (4)   |
| <input type="checkbox"/> | PHYS 201/201L- General Physics I or 211/211L: Essentials of Physics I   | (3/1) |
| <input type="checkbox"/> | PHYS 202/202L- General Physics II or 212/212L: Essentials of Physics II | (3/1) |
| <input type="checkbox"/> | CHEM 111/111L - General Chemistry I                                     | (3/1) |
| <input type="checkbox"/> | CHEM 112/112L - General Chemistry II                                    | (3/1) |

### Major Courses (Pass with C or higher) (36 credits)

- |                          |   |       |
|--------------------------|---|-------|
| <input type="checkbox"/> | MSCI 311 - Biology of Marine Organisms (prereqs: MSCI 102 or BIOL 101)        | (4)   |
| <input type="checkbox"/> | MSCI 313- Chemistry of the Sea (prereqs: MSCI 102, MATH 141, CHEM 112)        | (4)   |
| <input type="checkbox"/> | MSCI 314-Physical Oceanography (prereqs: MSCI 102, MATH 142, PHYS 201 OR 211) | (4)   |
| <input type="checkbox"/> | MSCI 505 - Senior Seminar   | (1)   |
| <input type="checkbox"/> | MSCI 460 or other preapproved three week field experience                     | (0-4) |

*Plus 23 additional credits; see handbook for complete listing of courses that count for major credit (if completing an emphasis area, select courses accordingly)*

<input type="checkbox"/>	_____
<input type="checkbox"/>	_____
<input type="checkbox"/>	_____
<input type="checkbox"/>	_____
<input type="checkbox"/>	_____
<input type="checkbox"/>	_____
<input type="checkbox"/>	_____
<input type="checkbox"/>	_____
<input type="checkbox"/>	_____

**128 Credits needed for graduation (includes electives; does not include PEDU, Band and other one-credit performance courses)**

_____
_____
_____
_____
_____

## Marine Science Field Experiences as a substitute for MSCI 460

*This process does NOT need to be completed for those students completing MSCI 460.*

Process:

- 1) Complete a Request for Approval form PRIOR to your experience and submit it to Shelley Schlenk in PSC 108 for approval by the Undergraduate Director. To qualify for approval, the experience must:
  - a. Include research that integrates biological, chemical and physical oceanography as the primary component of the experience.
  - b. Must be a minimum of 3 weeks IN THE FIELD; experiences that are exclusively laboratory based or non-field internships do not qualify.
  - c. Must be sponsored by a credible and approved organization.
  - d. If the experience does not occur within the US, then the USC Study Abroad office must be notified.
  
- 2) Upon Completion of the Experience, each student must submit a written typed report (2-3 pages). The report will be in a research report format and will include:
  - a) Introduction and Background  
(why you selected this program, what you anticipated learning, what were your goals, etc.)
  - b) Objectives of project(s) that you were engaged in.
  - c) Methods of study and data collection
    - a. Observations
    - b. Type of data collected
    - c. If you evaluated the data: what, how, when
  - d) Discussion of Results
  - e) Summary &/or Conclusions.

Comments:

Be sure to include your name and VIP #;

References are not required, but may be included (if so, list of references is a separate page and not included in page count);

Abstract is not required and is not to be included as part of 2 pages (but can always be added as a cover page);

Pictures may be sent as a separate file to Shelley (not required- but we love to get them!)

- 3) Upon Approval of your written report, the Undergraduate Coordinator will prepare a petition form for the Dean and will request that you come in and sign the form so that it can be submitted to the Dean's office for approval. You may either hand deliver the form to Flinn Hall or we can mail it for you.





Name: \_\_\_\_\_

Approved:

Student notified:

### Field Experience Worksheet

All MSCI majors are required to engage in a minimum of a three week, full-time field research experience. Many students choose to fulfill this requirement by taking MSCI 460, offered every spring – but many other possibilities exist! Alternatives may include semester or summer internships, Research Experiences for Undergraduates (REUs), faculty-sponsored field research or cruises, or some study abroad opportunities.

Please complete the following questions to help us determine whether a particular alternative might satisfy the field experience requirement, and return the completed form to the Undergraduate Student Services Office in PSC 108. The Undergraduate Director will review your request; however, final credit is based on completion of the research and approval by the Dean's office.

*Note: students electing not to take MSCI 460 must write a 2-3 page summary after their experience, detailing research methods, hypotheses and conclusions, and data analysis techniques. This paper must be submitted to the Undergraduate Director before the fieldwork requirement will be considered fulfilled.*

1. What is the name, location, and sponsoring organization of alternative program or course? Attach course information if possible. (Note: if you are traveling outside the US, you will need to register with the Study Abroad Office, even if you're not receiving academic credit for the experience.)
  
2. What is the duration of the experience? How many total hours or days will be spent conducting research or fieldwork?
  
3. Please provide a 1-2 sentence summary of the experience. Will you be outside? Will you be getting wet and dirty? Will you be directly taking samples and/or doing research?
  
4. How does this experience relate to your career goals?

