

SUPPLEMENTARY MATERIALS FOR

Creating Pathways for Nontraditional Graduate Students

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This supplement details our informal survey of US ocean science graduate programs and internships.

GRADUATE PROGRAMS

To assess the scale of potential barriers across ocean science graduate programs in the United States, we surveyed graduate programs at the 54 colleges and universities listed in Figure 2 of Cook et al. (2016). We contacted all programs returned when Googling the following combinations:

School + 'Graduate Program' + each of the following individually:

'marine biology,' 'biological oceanography,' 'marine sciences,' 'oceanography,' 'physical oceanography,' 'chemical oceanography.'

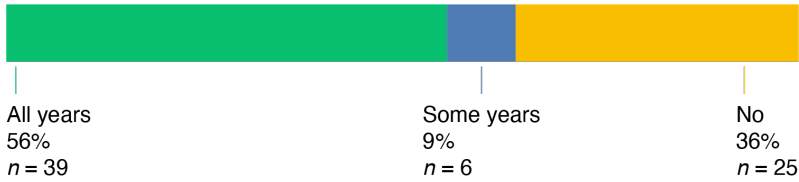
This resulted in 74 graduate programs surveyed. Surveys were sent via SurveyMonkey to program contact emails listed on the websites returned from the Google search. Survey questions and responses are detailed below. Some responses have been edited to remove identifying details.

COLLEGES AND UNIVERSITIES SURVEYED

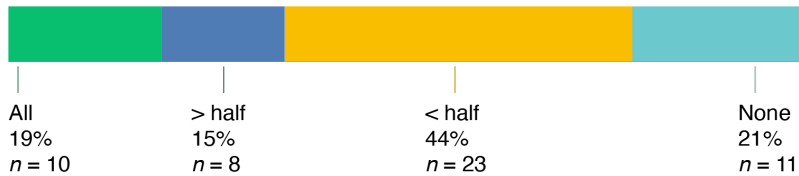
California State Monterey	University of Georgia
Coastal Carolina University	University of Hawaii Manoa
College of Charleston	University of Maine
Florida Institute of Technology	University of Maryland Baltimore
Florida State University	University of Maryland Baltimore County
Hawaii Pacific University	University of Maryland College Park
Louisiana State University	University of Maryland Eastern Shore
Naval Postgraduate School	University of Massachusetts at Boston
Nicholls State University	University of Massachusetts Dartmouth
Northeastern University	University of Miami
NOVA Southeastern University	University of Michigan
Old Dominion University	University of New England
Oregon State University	University of North Carolina Chapel Hill
Rutgers University	University of North Carolina Wilmington
San Francisco State University	University of Puerto Rico Mayaguez
San Jose State University	University of Rhode Island
Savannah State University	University of San Diego
Stony Brook University	University of South Carolina
Texas A&M College Station	University of South Florida
Texas State University	University of Southern California
University of Alabama Montgomery	University of Southern Mississippi
University of Alaska Fairbanks	University of Texas Austin
University of California San Diego (Scripps)	University of Washington
University of California Santa Barbara	University of Wisconsin Madison
University of California Santa Cruz	Western Connecticut State
University of Connecticut	William & Mary
University of Delaware	Woods Hole Oceanographic/MIT Joint Program

SURVEY QUESTIONS AND RESPONSES

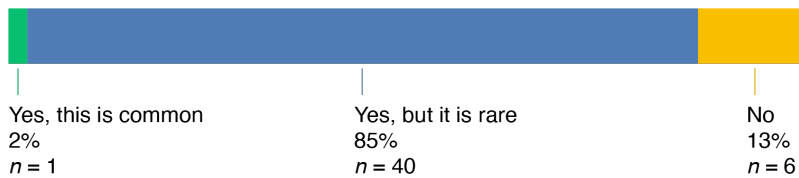
1. Is part-time status available to students in your graduate program?
(70 responses)



2. What proportion of core coursework do you allow students to transfer from other institutions? (52 responses)



3. Do you accept students into your graduate program that have undergraduate degrees in subjects outside of STEM? (47 responses)



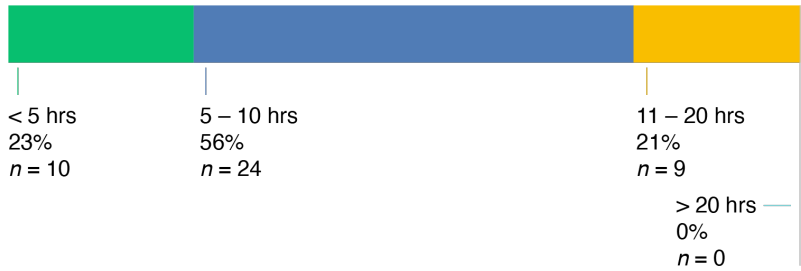
4. Are the classes required to graduate from your program offered in the evenings (after 5pm)? (46 responses)



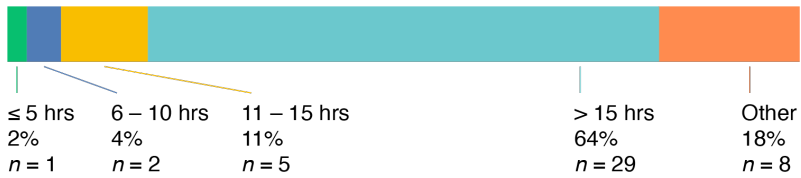
5. Are the classes required to graduate from your program offered on the weekends? (46 responses)



6. On average, how many hours per week do students in your program spend in class? (43 responses)



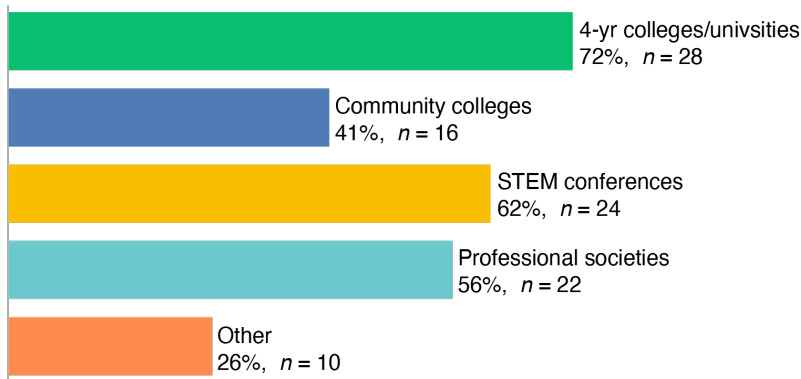
7. On average, how many hours per week do students in your program spend on research/working in a lab? (45 responses)



Other responses:

- More than 6 hours in the first 2 years
- Not sure, likely on the higher range (10+ or 15+)
- Not all students work in the lab; some are TAs. Students on a TA/RA are expected to work 20 hours per week. This varies.
- It depends on the individual student's thesis work.
- Variable depending on type of project and season, some research is boom or bust, most probably around 15 hours per week.
- It depends on the student, so all 4 apply and would be hard to say on average.
- Students per the rules bargained by the union aren't supposed to spend more than 20 hours. Exceptions can be made for longer, but that shouldn't become the norm for a student.

8. Where do you advertise your graduate program to prospective students? Please check all that apply. (39 responses)



Other responses, with similar answers consolidated:

- National Name Exchange, McNair Scholars, etc.
- Our school's job board.
- Word of mouth, personal contacts
- Generally do not advertise.
- We do not advertise.
- Unable to answer this question.

9. What information and resources do you make available to prospective and current nontraditional students? We consider nontraditional marine graduate students to be any of the following: mid-career professionals pursuing graduate degrees for career advancement, embarking on a second career, holding an undergraduate degree outside of STEM, in their thirties or older, balancing school with work and/or family responsibilities. (32 responses, roughly ordered by similarity below)

- We have information on the website and have a full-time staff person who fields questions from applicants.
- Career panels, workshops on work-life balance and other issues to consider.
- Working remotely is an option offered at the discretion of the advisor, but within the program there are those whose work is primarily done remotely to allow for them to be there for their family and/or in consideration of commuting times. Beyond that, the university has programs designed for parents. The oceanography department as a whole does not offer any specific child-care services. Additionally, the program does have the option to allow students to be 'on-leave' to deal with family, medical, or other personal issues impacting a student.
- Remote and hybrid classes.

- Websites and handbooks.
- Website.
- General program information is available on our program's website.
- All prospective student info is online. Part-time students and non-traditional students have access to the same resources as the general undergrad and grad population access.
- None directly through school but often resources distributed via email from broader university level graduate program.
- Same information as the traditional students, this program is made up of mostly traditional students.
- They are provided the same information and resources as traditional students.
- Same resources as for traditional students, not sure what you are asking here.
- Same recruiting materials for all.
- The same info is given to all prospective grad students.
- Same as to all students on our website.

- I don't believe we offer information/resources at the program level, but this is something that would be done across graduate programs by the Graduate School.
- Nothing specific though some resources at the main campus (counseling available, career center).
- A variety of information and resources.
- Website materials, AGU Bridge Program, information webinar.
- General program information; Graduate Assistantship and student worker opportunities; Current research.

- No general info; case-by-case.
- Individual mentoring. We currently have students from our state agency who are working and completing their PhD.
- The school offers programs for these students but not much help is available.
- They are able to access requirements to graduate, a FAQ addressing application and program questions, faculty lists and websites, class schedules, and there is a mentorship program specifically designed for applying students to help encourage diversity in applicants.

- This is underdeveloped in our program.
- Not sure I understand the question. They can be full-time or part-time, but there's no special set of information or resources.
- None. TA's are not guaranteed, funding is dependent on professor's grants.
- Nothing in particular.
- N/A
- N/A
- ?
- No idea.

INTERNSHIPS

After multiple Google searches, using a variety of different wordings encompassing the term “marine science internships,” four websites consistently appeared as the first page results: [The Oceanography Society](#), [NOAA](#), [Pathways to Science](#), and [Marine Careers](#). The terms used to filter the lists provided by these websites were “undergrad & internships.” The first 12 internships provided by the lists on the NOAA, Pathways to Science, and Marine Careers websites were included in the review. Twenty internships were randomly chosen from The Oceanography Society website to be reviewed. If an internship from a list had already been reviewed, did not involve marine science, or did not provide adequate information, it was skipped. If a listed internship led to a site with multiple programs, all programs were included in the review if their offerings widely varied.

Internship/ Website	Level of Education Required	Able to Fulfill Remotely?	Housing Provided?	Meals Covered?	Time Commitment	Pay (weekly)	Travel Cost to Location Covered?
THE OCEANOGRAPHY SOCIETY							
<u>Aquatic Chemical Ecology at Georgia Tech</u>	Undergraduate		On site	No	10 weeks	\$700	No
<u>Bermuda Institute of Ocean Sciences</u>	Undergraduate		On site	Yes	12 weeks	\$500	No
<u>Bigelow Laboratory for Ocean Sciences</u>	Undergraduate biology experience		On site	No	10 weeks	\$700	Possibly
<u>Biological Discovery in Woods Hole (MBL)</u>	Undergraduate with biology experience		On site	Yes	10 weeks	\$600	Unspecified travel allowance given
<u>Center for Coastal and Ocean Mapping/Joint Hydrographic Center</u>	Undergraduate		On site	Yes	10 weeks	\$600	Unspecified travel allowance given
<u>Chincoteague Bay Field Station</u>	1 year of biology or consent from instructor		No	No	3 weeks	-\$500	No
<u>Climate Science at Colorado State University</u>	Undergraduate		On site	No	10 weeks	\$600	Roundtrip airfare provided
<u>Coastal Ocean Processes, USC Wrigley Institute</u>	Undergraduate with biology experience		On site	Yes	10 weeks	\$600	\$500 travel reimbursement
<u>Lamont Summer Intern Program</u>	Undergraduate		On site	No	10 weeks	\$600	
<u>University of Delaware Marine Science Summer Program</u>	Undergraduate		On site	No	10 weeks	\$670	Unspecified travel allowance given
<u>Maryland Sea Grant</u>	Undergraduate		On site	No	12 weeks	\$600	Round trip travel expenses paid for
<u>Ocean Exploration Trust Science and Engineering Internship Program</u>	Undergraduate and graduate		No	No	3–5 weeks	Not Specified	Travel to and from funded
<u>Pacific Internship Programs for Exploring Science (PIPES)</u>	Undergraduate		Possibly	No	10 weeks	Not Specified	No
<u>Research Internships in Ocean Sciences (RIOS)</u>	Undergraduate		On site	No	6 weeks	\$1,000	Unspecified travel allowance given
<u>Shannon Point Marine Center</u>	Undergraduate		On site	No	9 weeks	\$600	\$650 travel allowance
<u>STEMSEAS: Student Experiences Aboard Ships</u>	Undergraduate		On site	Yes	6–10 days	\$0	No / to and from port
<u>University of Rhode Island, Summer Undergraduate Research Fellowship (SURFO)</u>	Undergraduate		On site	No	10 weeks	\$600	Partial to full reimbursement for travel available

Internship/ Website	Level of Education Required	Able to Fulfill Remotely?	Housing Provided?	Meals Covered?	Time Commitment	Pay (weekly)	Travel Cost to Location Covered?
THE OCEANOGRAPHY SOCIETY CONT.							
UMES REU	Undergrad and graduate		On site	Yes	10 weeks	\$575	Unspecified travel allowance given
Summer Intern (REU) Virginia Institute of Marine Science	Undergraduate		On site	No	10 weeks	\$650	Partial to full travel cost covered
Woods Hole Partnership Program to Promote Diversity	Undergraduate		On site	Yes	10 weeks	\$500	Yes
NOAA							
Chesapeake Student Recruitment, Early Advisement, and Mentoring (C-StREAM) program	Undergraduate		No	No	12 weeks	\$500	\$1,000 Transportation allowance
CICOES Undergraduate Internship Program	Undergraduate		On site	No	9 weeks	\$650	Travel covered
Cooperative Institute for Modeling the Earth System	Undergraduate and graduate		Yes, at location/ Housing allowance if not living on campus	No	8–10 weeks	\$700	Travel covered
Community Engaged Internship for Undergraduate Students	Undergraduate		Possibly	No	8–10 weeks	\$600 – \$625	Possibly
Ernest F. Hollings Undergraduate Scholarship	Undergraduate		Housing subsidy	No	10 weeks	\$9,500/yr for 2 years of study, \$700/ wk during internship	No
Great Lakes Summer Fellows Program	Undergraduate and Graduate	Fully remote, hybrid, or fully in-person fellowships offered	No	No	12 weeks	\$833	Unspecified travel allowance given
Inclusive NOAA Fisheries Internship Program	Undergraduate		No	No	10 weeks	\$500	No
PYSO Young Scientist Opportunity	Undergraduate		No	No	8–12 weeks	Not specified	No
Colorado State, Atmospheric Science Internship	Undergraduate		On site	Food Stipend (\$600)	10 weeks	\$600	Roundtrip travel covered
University of Maryland, Research Experiences in Marine and Estuarine Science	Undergraduate		On site	Yes	10 weeks	\$575	No
NOAA Fisheries' Shark Population Assessment Group Internship	Undergraduate		No	No	4–5 months/ with flexibility	\$0	No
NOAA Fisheries' Reef Fish Survey Team	Undergraduate		No	No	5 Months/ with flexibility	\$0	No

Internship/ Website	Level of Education Required	Able to Fulfill Remotely?	Housing Provided?	Meals Covered?	Time Commitment	Pay (weekly)	Travel Cost to Location Covered?
MARINE CAREERS							
Monterey Bay Aquarium Research Institute	Undergraduate and Graduate		No	No	10 weeks	\$680	No
Dolphin Research Center (Florida)	Not specified		No	No	16–18 weeks	\$0	No
Dolphin Plus (Florida)	Must have completed 1 semester of college		No	No	12 weeks	\$0	No
The Florida Museum in Tampa	College students and recent graduates		No	No	12–14 weeks	\$0	No
Loggerhead Marine Life Center	College undergraduate or higher	1 out of 4 projects has remote possibility	No	No	16 weeks/ with flexibility	\$0	No
Mote Marine Laboratory/ College Program	College students and recent graduates		No	No	10 weeks	\$0	No
Mote Marine Laboratory/NSF REU	Enrolled in a degree program		On site	Food Stipend (\$1,000)	11 weeks	\$546	No
Mote Marine Laboratory/REU	Undergraduate		Yes, at location or housing stipend	No	10 weeks	\$600	No
Mote Marine Laboratory/REGS	Graduate student		No	No	Not specified	Not specified	No
Reef Environmental Education Foundation	At least 2 years of college coursework		On site	No	16–20 weeks and must be available for weekend and evening activities	\$200	No
University of Georgia's Marine Education Center	Bachelor's degree within the last 5 years		No	No	50 Weeks	Pay not discussed until interview process	No
Shoals Marine Laboratory	Enrolled in Bachelors program		On site	Yes	3–10 weeks	\$210	No
Smithsonian Environmental Research Center	Undergraduate and beginning graduate	Some opportunities/ Not specified	No	No	4 months/40 hours per week	\$625	No
New England Aquarium	College students/ recent graduates		No	No	12 weeks, 2–3 days per week	\$0	No
Bimini Shark Lab (The Bahamas)	Must be 18 or older		No	No	2 months	-\$2,500	No

Internship/ Website	Level of Education Required	Able to Fulfill Remotely?	Housing Provided?	Meals Covered?	Time Commitment	Pay (weekly)	Travel Cost to Location Covered?
PATHWAYS TO SCIENCE							
<u>Acoustical Society of America</u>	Enrolled in 2–4-year institution		No	No	12 weeks	\$625	No
<u>Blue Ocean Society for Marine Conservation/ Full-time</u>	Must be 18 or older		No	No	10 weeks	\$300	No
<u>Blue Ocean Society for Marine Conservation/ Part-time</u>	Must be 18 or older		No	No	10 weeks, part time	\$300	No
<u>Clarkson University, Aquatic Sciences, Engineering, and Technology (ASET) Research Experiences</u>	Undergraduate		On site	No	10 weeks	\$600	Travel cost covered
<u>Discovery Hall Environmental Education Internship in Marine Science</u>	Sophomore to recent graduates		On site	Yes	10 weeks	\$400	No
<u>Research Experience for Undergraduates at the Dauphin Island Sea Lab</u>	Undergraduate juniors & seniors		On site	Food stipend	10 weeks	\$600	Possibly
<u>Interdisciplinary Research Experiences for Undergraduates in Coastal Plain Science, Georgia Southern University</u>	Undergraduate juniors & seniors		On site	Yes	10 weeks	\$625	No
<u>Gray's Reef National Marine Sanctuary in Savannah, Bridge to Research in Marine Sciences</u>	Undergraduate freshmen & sophomores		On site	No	8 weeks	\$600	Travel cost covered up to \$500
<u>Gulf of Maine Research Institute</u>	Undergraduate		On site	Food stipend	10 weeks	\$600	Unspecified travel allowance
<u>John G. Shedd Aquarium Internships</u>	Undergraduate-graduate		No	No	10 weeks, part time available	\$308	No
<u>Louisiana Universities and Marine Consortium, Research Experiences in Changing Coastal Environments</u>	Undergraduate		On site	Yes	10 weeks	\$600	Funds available for travel
<u>Mystic Aquarium, REU</u>	Undergraduate		On site	Food stipend (\$175 per week)	10 weeks	\$600	Travel cost covered up to \$600 or \$2000 if coming from Hawai'i or Alaska
<u>Woods Hole Partnership Education Program (PEP)</u>	Undergraduate juniors & seniors		No	No	10 weeks	\$500	No

Internship/ Website	Level of Education Required	Able to Fulfill Remotely?	Housing Provided?	Meals Covered?	Time Commitment	Pay (weekly)	Travel Cost to Location Covered?
60 internships		<p>Must be fulfilled at location: 95%</p> <p>Able to be fulfilled remotely: 5%</p>	<p>On-site housing: 50%</p> <p>No housing support/ not specified: 41.7%</p> <p>Off-site housing allowance: 5%</p> <p>May offer housing reimbursement: 3.3%</p>	<p>Not covered/ not specified: 71.7%</p> <p>Covered: 20%</p> <p>Meal stipend: 8.3%</p>	<p>9–12 Weeks: 63.3%</p> <p>> 12 Weeks: 11.7%</p> <p>Part Time: 10%</p> <p>6–9 Weeks: 8.3%</p> <p>2–5 Weeks: 3.3%</p> <p>< 1 Week: 1.7%</p> <p>Unspecified: 1.7%</p>	<p>Average weekly pay: \$405.40</p> <p>Unpaid: 15%</p>	<p>Not covered: 56.7%</p> <p>Fully covered: 13.3%</p> <p>Unspecified amount covered: 13.3%</p> <p>Partial amount covered: 11.7%</p> <p>Possibility to have all/some cost covered: 5%</p>

REFERENCE

Cook, S.B., A. Holloway, M. Lettrich, and K. Yarincik. 2016. The ocean science graduate education landscape: A 2015 perspective. *Oceanography* 29(1):16–21, <https://doi.org/10.5670/oceanog.2016.04>