

## UC San Diego - WASC Exhibit 7.1 Inventory of Educational Effectiveness Indicators

Academic Program	(2a) What are these learning outcomes?  <u>Students graduating with a degree should be able to:</u>	(3) Other than GPA, what data/evidence are used to determine that graduates have achieved stated outcomes for the degree? (e.g., capstone course, portfolio review, licensure examination)?	(4) Who interprets the evidence? What is the process?	(5) How are the findings used?
<p><b>Department:</b> Scripps Institution of Oceanography</p> <p><b>Major:</b> Earth Sciences</p> <p><b>(1) Have formal learning outcomes been developed?</b> Yes</p> <p><b>(6) Date of the last Academic Senate Review? [i.e. 2015-16 if the review takes place this academic year]</b></p> <p>2012-2013</p> <p>Please date the form 12/16/16</p>	<p><b>Written Communication</b></p> <p>Effectively synthesize and communicate knowledge of concepts in Earth Sciences through written and graphical representation.</p>	<p><b>Written Communication</b></p> <p>Successful completion of a research paper assignments in required courses (SIO 100 and SIO102) and in several Group B and Group C electives (e.g. SIO101, SIO108, SIO170).</p> <p>Completion of lab assignments and lab reports in required courses (e.g. SIO50, SIO104) and in several Group B and Group C electives (e.g. SIO120, SIO152, SIO162)</p>	<p><b>Written Communication</b></p> <p>Instructors and teaching assistants read and evaluate student research papers and laboratory reports.</p> <p>Instructors and the SIO program directors review student feedback on course assignments and outcomes.</p>	<p><b>Written Communication</b></p> <p>Course instructors use student feedback to regularly modify and improve their courses.</p> <p>SIO program directors review courses and make suggestions and modifications and to restructure course requirements if needed.</p>
	<p><b>Oral Communication</b></p> <p>Effectively synthesize and communicate knowledge of concepts in Earth Sciences in oral form for informational and persuasive purposes.</p>	<p><b>Oral Communication</b></p> <p>Successful completion of in-class presentations in required courses (e.g. SIO50) and in several Group B and Group C electives (e.g. SIO105 and SIO108).</p>	<p><b>Oral Communication</b></p> <p>Instructors and teaching assistants listen and evaluate student presentations.</p> <p>Instructors and the SIO program directors review student feedback on course assignments and outcomes.</p>	<p><b>Oral Communication</b></p> <p>Course instructors use student feedback to regularly modify and improve their courses.</p> <p>SIO program directors review courses and make suggestions and modifications and to restructure course requirements if needed.</p>
	<p><b>Quantitative Reasoning:</b></p> <p>Analyze geological and geophysical measurements and interpret geological and geophysical data.</p> <p>Utilize mathematical tools to address quantitative problems in Earth Sciences.</p>	<p><b>Quantitative Reasoning</b></p> <p>Successful completion of SIO103 (required course) and several Group B and Group C electives (e.g. SIO106, SIO113, SIO117, SIO 182).</p>	<p><b>Quantitative Reasoning</b></p> <p>Instructors and teaching assistants evaluate exams and assignments.</p> <p>Instructors and the SIO program directors review student feedback on course assignments and outcomes.</p>	<p><b>Quantitative Reasoning</b></p> <p>Course instructors use student feedback to regularly modify and improve their courses.</p> <p>SIO program directors review courses and make suggestions and modifications and to restructure course requirements if needed.</p>
	<p><b>Information Literacy</b></p> <p>Know how to locate, understand and evaluate published literature on topics related to research in the Earth Sciences.</p> <p>Demonstrate the ability to create and appropriately annotated bibliography.</p>	<p><b>Information Literacy</b></p> <p>Successful completion of the research paper assignment in SIO102 and in several other upper division electives.</p> <p>Successful completion of lab reports in SIO104 and in several other upper division electives.</p>	<p><b>Information Literacy</b></p> <p>Course instructors and teaching assistants read and grade research papers and bibliographies.</p> <p>Instructors and the SIO program directors review student feedback on course assignments and outcomes.</p>	<p><b>Information Literacy</b></p> <p>Course instructors use student feedback to regularly modify and improve their courses.</p> <p>SIO program directors review courses and make suggestions and modifications and to restructure course requirements if needed.</p>
	<p><b>Critical Thinking</b></p> <p>Recognize the components of the Earth System, including the hydrosphere, biosphere, lithosphere, cryosphere and atmosphere and the interactions between the components.</p> <p>Recognize the impacts of human and societies on this</p>	<p><b>Critical Thinking</b></p> <p>Most courses encourage critical thinking through analysis and application of concepts in Earth Sciences to contemporary environmental problems including climate change, water resources, biodiversity loss and pollution.</p> <p>Courses include critical thinking on ethical conduct in</p>	<p><b>Critical Thinking</b></p> <p>Assignments and students discussions are evaluated by the instructors and teaching assistants.</p> <p>Instructors and the SIO program directors review student feedback</p>	<p><b>Critical Thinking</b></p> <p>Course instructors use student feedback to regularly modify and improve their courses.</p> <p>SIO program directors review courses and make suggestions</p>

	<p>the Earth system and demonstrate the capacity to diagnose and propose solutions to lessen these impacts. Recognize and apply principles of professional, ethical and responsible conduct as Earth Sciences.</p>	<p>Earth Sciences.</p>	<p>on course assignments and outcomes.</p>	<p>and modifications and to restructure course requirements if needed.</p>
	<p><b>All other items not color coded</b> Recognize common rocks and minerals in hand sample and thin section. Read topographic and geological maps. Make and analyze geological and geophysical measurement and interpret geological features in the field Understand the origin, structure and history of the Earth and how the Earth System works.</p>	<p><b>All other items not color coded</b> Successful completion of core courses (SIO50, SIO100, SIO102, SIO103, SIO104) and most of the Group B and Group C electives.</p>	<p><b>All other items not color coded</b> Course instructors and teaching assistants evaluate exams and other course assignments.. Instructors and the SIO program directors review student feedback on course assignments and outcomes.</p>	<p><b>All other items not color coded</b> Course instructors use student feedback to regularly modify and improve their courses. SIO program directors review courses and make suggestions and modifications and to restructure course requirements if needed.</p>
	<p><b>(2b)</b> <b>Where are the learning outcomes published?</b> <b>Please provide your department/program website address.</b> <i>https://scripps.ucsd.edu/sites/scripps.ucsd.edu/files/basic-page-education/field_attachment/2015/wasc_7%201_form%20Earth%20Sciences.pdf</i></p>			

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<p style="text-align: center;"><b>Academic Program</b></p> <p><b>Department:</b> Scripps Institution of Oceanography</p> <p><b>Major:</b> Marine Biology</p> <p><b>(1) Have formal learning outcomes been developed?</b> Yes</p> <p><b>(6) Date of the last Academic Senate Review? [i.e. 2015-16 if the review takes place this academic year]</b></p> <p>N/A</p> <p>Please date the form 12/16/16</p>	<p style="text-align: center;"><b>Written Communication</b></p> <p>Effectively synthesize and communicate knowledge of concepts in marine biology through written and graphical representation.</p>	<p style="text-align: center;"><b>Written Communication</b></p> <p>Successful completion of lab assignments and research projects in the required lab course (SIO136) and through two additional required lab courses (e.g. SIO 183, SIO 185). Successful completion of writing assignments in SIO101 other electives.</p>	<p style="text-align: center;"><b>Written Communication</b></p> <p>Instructors and teaching assistants read and evaluate student and laboratory reports.</p> <p>Instructors and the SIO program directors review student feedback on course assignments and outcomes.</p>	<p style="text-align: center;"><b>Written Communication</b></p> <p>Course instructors use student feedback to regularly modify and improve their courses.</p> <p>SIO program directors review courses and make suggestions and modifications and to restructure course requirements if needed.</p>
	<p style="text-align: center;"><b>Oral Communication</b></p> <p>Effectively synthesize and communicate knowledge of concepts in Marine Biology in oral form, for informational and persuasive purposes.</p>	<p style="text-align: center;"><b>Oral Communication</b></p> <p>Successful completion of class presentations in laboratory courses (e.g. SIO184) and other upper division electives.</p> <p>Successful completion of SIO90 seminar, which introduces oral research presentations with significant student oral participation.</p>	<p style="text-align: center;"><b>Oral Communication</b></p> <p>Instructors and teaching assistants listen and evaluate student presentations.</p> <p>Instructors and the SIO program directors review student feedback on course presentations and outcomes.</p>	<p style="text-align: center;"><b>Oral Communication</b></p> <p>Course instructors use student feedback to regularly modify and improve their courses.</p> <p>SIO program directors review courses and make suggestions and modifications and to restructure course requirements if needed.</p>
	<p style="text-align: center;"><b>Quantitative Reasoning:</b></p> <p>Implement contemporary biological research techniques to conduct experiments, and use quantitative and/or statistical approaches to analyze the research and draw appropriate conclusions.</p>	<p style="text-align: center;"><b>Quantitative Reasoning</b></p> <p>Successful completion of lower division prerequisites in math. Completion of a rigorous statistics course (SIO 187). Completion of the required laboratory courses.</p>	<p style="text-align: center;"><b>Quantitative Reasoning</b></p> <p>Instructors and teaching assistants evaluate exams and assignments.</p> <p>Instructors and the SIO program directors review student feedback on courses.</p>	<p style="text-align: center;"><b>Quantitative Reasoning</b></p> <p>Course instructors use student feedback to regularly modify and improve their courses.</p> <p>SIO program directors review courses and make suggestions and modifications and to restructure course requirements if needed.</p>
	<p style="text-align: center;"><b>Information Literacy</b></p> <p>Know how to locate, understand and evaluate published literature on topics related to research in marine biology. Demonstrate the ability to create and appropriately annotated bibliography.</p>	<p style="text-align: center;"><b>Information Literacy</b></p> <p>Successful completion of required lab reports in SIO136. Successful completion of SIO139, a course on current research topics.</p>	<p style="text-align: center;"><b>Information Literacy</b></p> <p>Course instructors and teaching assistants read and grade research papers and bibliographies.</p> <p>Instructors and the SIO program directors review student feedback on course assignments and outcomes.</p>	<p style="text-align: center;"><b>Information Literacy</b></p> <p>Course instructors use student feedback to regularly modify and improve their courses.</p> <p>SIO program directors review courses and make suggestions and modifications and to restructure course requirements if needed.</p>
	<p style="text-align: center;"><b>Critical Thinking</b></p> <p>Synthesize knowledge of physical and chemical processes of oceans and the biology of organisms to ask questions about natural history and ecology.</p> <p>Form hypotheses about marine-related scientific questions and understand how experiments are executed.</p>	<p style="text-align: center;"><b>Critical Thinking</b></p> <p>Successful completion of required course SIO119.</p> <p>Successful completion of required course SIO139 and required lab courses..</p> <p>Also most other courses for the major encourage critical</p>	<p style="text-align: center;"><b>Critical Thinking</b></p> <p>Instructors and teaching assistants provide evaluations of course assignments and lead student discussions to develop critical thinking skills.</p>	<p style="text-align: center;"><b>Critical Thinking</b></p> <p>Course instructors use student feedback to regularly modify and improve their courses.</p> <p>SIO program directors review courses and make suggestions</p>

	<p>to test those hypothesis. Recognize the impact of habitat perturbation on marine organisms, and subsequent ecosystem-level consequences and feedbacks. Have a sense of community responsibility and develop awareness of scientific issues in marine biology within the larger social context.</p>	<p>thinking through analysis and application of concepts in marine biology to contemporary environmental problems including climate change, biodiversity loss and pollution. Courses include critical thinking on ethical conduct in marine biology.</p>	<p>Instructors and the SIO program directors review student feedback on course assignments and outcomes.</p>	<p>and modifications and to restructure course requirements if needed.</p>
	<p><b>All other items not color coded</b> Understand the diversity of marine organisms, their evolutionary history, biogeography, interactions with other organisms, and adaptations to their environments.</p>	<p><b>All other items not color coded</b> Successful completion of the Marine Biology Core courses (SIO 132, SIO 134, SIO 181) and other upper division course work in the restricted electives.</p>	<p><b>All other items not color coded</b> Instructor and teaching assistants evaluate students through exams and assignments. Instructors and the SIO program directors review student feedback on courses.</p>	<p><b>All other items not color coded</b> Course instructors use student feedback to regularly modify and improve their courses. SIO program directors review courses and make suggestions and modifications and to restructure course requirements if needed.</p>
	<p><b>(2b)</b> <b>Where are the learning outcomes published?</b> <b>Please provide your department/program website address.</b> <i><a href="https://scripps.ucsd.edu/undergrad/marine-biology-bs">https://scripps.ucsd.edu/undergrad/marine-biology-bs</a></i></p>			