

**2016-2017 STATE OF FLORIDA INSTRUCTIONAL MATERIALS ADOPTION  
STANDARDS ALIGNMENT  
COURSE STANDARDS/BENCHMARKS (Form IM7)**

**BID ID:** 3252

**SUBMISSION TITLE:** Oceanography, An Invitation to Marine Science, 9/E

**GRADE LEVEL:** 9-12

**COURSE TITLE:** Marine Science 1

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<b>BENCHMARK CODE</b>	<b>BENCHMARK</b>	<b>LESSONS WHERE STANDARD/BENCHMARK IS DIRECTLY ADDRESSED IN MAJOR TOOL (MOST IN-DEPTH COVERAGE LISTED FIRST)</b> (Include the student edition and teacher edition with the page numbers of lesson, a link to lesson, or other identifier for easy lookup by reviewers.)
SC.912.E.7.9:	Cite evidence that the ocean has had a significant influence on climate change by absorbing, storing, and moving heat, carbon, and water.	191–193, 527–536, 539.
SC.912.L.14.6:	Explain the significance of genetic factors, environmental factors, and pathogenic agents to health from the perspectives of both individual and public health.	This benchmark is not directly addressed in this edition of Oceanography: An Invitation to Marine Science.
SC.912.L.15.13:	Describe the conditions required for natural selection, including: overproduction of offspring, inherited variation, and the struggle to survive, which result in differential reproductive success.	370–375.
SC.912.L.17.1:	Discuss the characteristics of populations, such as number of individuals, age structure, density, and pattern of distribution.	459–460, 536–539.
SC.912.L.17.2:	Explain the general distribution of life in aquatic systems as a function of chemistry, geography, light, depth, salinity, and temperature.	368–390
SC.912.L.17.3:	Discuss how various oceanic and freshwater processes, such as currents, tides, and waves, affect the abundance of aquatic organisms.	328–329, 368–390
SC.912.L.17.4:	Describe changes in ecosystems resulting from seasonal variations, climate change and succession.	221–222, 368–390, 392–413, 416–451, 456–479, 527–540.
SC.912.L.17.6:	Compare and contrast the relationships among organisms, including predation, parasitism, competition, commensalism, and mutualism.	396, 457–459, 476–479.

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SC.912.L.17.7:	Characterize the biotic and abiotic components that define freshwater systems, marine systems and terrestrial systems.	This benchmark is not directly addressed in this edition of Oceanography: An Invitation to Marine Science.
SC.912.L.17.8:	Recognize the consequences of the losses of biodiversity due to catastrophic events, climate changes, human activity, and the introduction of invasive, non-native species.	72, 86, 158–159, 191–193, 239, 303–304, 478, 512–540.
SC.912.L.17.9:	Use a food web to identify and distinguish producers, consumers, and decomposers. Explain the pathway of energy transfer through trophic levels and the reduction of available energy at successive trophic levels.	378, 379, 380, 525, 527.
SC.912.L.17.10:	Diagram and explain the biogeochemical cycles of an ecosystem, including water, carbon, and nitrogen cycle.	380-383.
SC.912.L.17.11:	Evaluate the costs and benefits of renewable and nonrenewable resources, such as water, energy, fossil fuels, wildlife, and forests.	This benchmark is not directly addressed in this edition of Oceanography: An Invitation to Marine Science.
SC.912.L.17.16:	Discuss the large-scale environmental impacts resulting from human activity, including waste spills, oil spills, runoff, greenhouse gases, ozone depletion, and surface and groundwater pollution.	193, 486–487, 512–540.
SC.912.L.18.12:	Discuss the special properties of water that contribute to Earth's suitability as an environment for life: cohesive behavior, ability to moderate temperature, expansion upon freezing, and versatility as a solvent.	168–170, 174–179, 198–214
SC.912.N.1.1:	Define a problem based on a specific body of knowledge, for example: biology, chemistry, physics, and earth/space science, and do the following:	
	1. Pose questions about the natural world, (Articulate the purpose of the investigation and identify the relevant scientific concepts).	This benchmark is not directly addressed in this edition of Oceanography: An Invitation to Marine Science.

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	2. Conduct systematic observations, (Write procedures that are clear and replicable. Identify observables and examine relationships between test (independent) variable and outcome (dependent) variable. Employ appropriate methods for accurate and consistent observations; conduct and record measurements at appropriate levels of precision. Follow safety guidelines).	This benchmark is not directly addressed in this edition of Oceanography: An Invitation to Marine Science.
	3. Examine books and other sources of information to see what is already known,	This benchmark is not directly addressed in this edition of Oceanography: An Invitation to Marine Science.
	4. Review what is known in light of empirical evidence, (Examine whether available empirical evidence can be interpreted in terms of existing knowledge and models, and if not, modify or develop new models).	This benchmark is not directly addressed in this edition of Oceanography: An Invitation to Marine Science.
	5. Plan investigations, (Design and evaluate a scientific investigation).	This benchmark is not directly addressed in this edition of Oceanography: An Invitation to Marine Science.
	6. Use tools to gather, analyze, and interpret data (this includes the use of measurement in metric and other systems, and also the generation and interpretation of graphical representations of data, including data tables and graphs), (Collect data or evidence in an organized way. Properly use instruments, equipment, and materials (e.g., scales, probeware, meter sticks, microscopes, computers) including set-up, calibration, technique, maintenance, and storage).	This benchmark is not directly addressed in this edition of Oceanography: An Invitation to Marine Science.
	7. Pose answers, explanations, or descriptions of events,	This benchmark is not directly addressed in this edition of Oceanography: An Invitation to Marine Science.
	8. Generate explanations that explicate or describe natural phenomena (inferences),	This benchmark is not directly addressed in this edition of Oceanography: An Invitation to Marine Science.
	9. Use appropriate evidence and reasoning to justify these explanations to others,	This benchmark is not directly addressed in this edition of Oceanography: An Invitation to Marine Science.
	10. Communicate results of scientific investigations, and	This benchmark is not directly addressed in this edition of Oceanography: An Invitation to Marine Science.
	11. Evaluate the merits of the explanations produced by others.	This benchmark is not directly addressed in this edition of Oceanography: An Invitation to Marine Science.
SC.912.N.1.2:	Describe and explain what characterizes science and its methods.	This benchmark is not directly addressed in this edition of Oceanography: An Invitation to Marine Science.

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SC.912.N.1.3:	Recognize that the strength or usefulness of a scientific claim is evaluated through scientific argumentation, which depends on critical and logical thinking, and the active consideration of alternative scientific explanations to explain the data presented.	This benchmark is not directly addressed in this edition of Oceanography: An Invitation to Marine Science.
SC.912.N.1.4:	Identify sources of information and assess their reliability according to the strict standards of scientific investigation.	This benchmark is not directly addressed in this edition of Oceanography: An Invitation to Marine Science.
SC.912.N.1.5:	Describe and provide examples of how similar investigations conducted in many parts of the world result in the same outcome.	This benchmark is not directly addressed in this edition of Oceanography: An Invitation to Marine Science.
SC.912.N.1.6:	Describe how scientific inferences are drawn from scientific observations and provide examples from the content being studied.	This benchmark is not directly addressed in this edition of Oceanography: An Invitation to Marine Science.
SC.912.N.1.7:	Recognize the role of creativity in constructing scientific questions, methods and explanations.	This benchmark is not directly addressed in this edition of Oceanography: An Invitation to Marine Science.
SC.912.N.2.1:	Identify what is science, what clearly is not science, and what superficially resembles science (but fails to meet the criteria for science).	This benchmark is not directly addressed in this edition of Oceanography: An Invitation to Marine Science.
SC.912.N.2.4:	Explain that scientific knowledge is both durable and robust and open to change. Scientific knowledge can change because it is often examined and re-examined by new investigations and scientific argumentation. Because of these frequent examinations, scientific knowledge becomes stronger, leading to its durability.	This benchmark is not directly addressed in this edition of Oceanography: An Invitation to Marine Science.
SC.912.N.2.5:	Describe instances in which scientists' varied backgrounds, talents, interests, and goals influence the inferences and thus the explanations that they make about observations of natural phenomena and describe that competing interpretations (explanations) of scientists are a strength of science as they are a source of new, testable ideas that have the potential to add new evidence to support one or another of the explanations.	24–56.

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SC.912.N.3.1:	Explain that a scientific theory is the culmination of many scientific investigations drawing together all the current evidence concerning a substantial range of phenomena; thus, a scientific theory represents the most powerful explanation scientists have to offer.	24–56.
SC.912.N.3.5:	Describe the function of models in science, and identify the wide range of models used in science.	This benchmark is not directly addressed in this edition of <i>Oceanography: An Invitation to Marine Science</i> .
SC.912.N.4.1:	Explain how scientific knowledge and reasoning provide an empirically-based perspective to inform society's decision making.	This benchmark is not directly addressed in this edition of <i>Oceanography: An Invitation to Marine Science</i> .
SC.912.N.4.2:	Weigh the merits of alternative strategies for solving a specific societal problem by comparing a number of different costs and benefits, such as human, economic, and environmental.	This benchmark is not directly addressed in this edition of <i>Oceanography: An Invitation to Marine Science</i> .
SC.912.P.10.2:	Explore the Law of Conservation of Energy by differentiating among open, closed, and isolated systems and explain that the total energy in an isolated system is a conserved quantity.	This benchmark is not directly addressed in this edition of <i>Oceanography: An Invitation to Marine Science</i> .
SC.912.P.10.20:	Describe the measurable properties of waves and explain the relationships among them and how these properties change when the wave moves from one medium to another.	282–313, 347–348
LAFS.1112.RST.1.1:	Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account.	This benchmark is not directly addressed in this edition of <i>Oceanography: An Invitation to Marine Science</i> .
LAFS.1112.RST.1.2:	Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.	This benchmark is not directly addressed in this edition of <i>Oceanography: An Invitation to Marine Science</i> .
LAFS.1112.RST.1.3:	Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.	This benchmark is not directly addressed in this edition of <i>Oceanography: An Invitation to Marine Science</i> .

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LAFS.1112.RST.2.4:	Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11–12 texts and topics.	65, 111, 234, 301, 382, 471, 524, 555–556.
LAFS.1112.RST.2.5:	Analyze how the text structures information or ideas into categories or hierarchies, demonstrating understanding of the information or ideas.	This benchmark is not directly addressed in this edition of Oceanography: An Invitation to Marine Science.
LAFS.1112.RST.2.6:	Analyze the author’s purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, identifying important issues that remain unresolved.	This benchmark is not directly addressed in this edition of Oceanography: An Invitation to Marine Science.
LAFS.1112.RST.3.7:	Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.	This benchmark is not directly addressed in this edition of Oceanography: An Invitation to Marine Science.
LAFS.1112.RST.3.8:	Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.	This benchmark is not directly addressed in this edition of Oceanography: An Invitation to Marine Science.
LAFS.1112.RST.3.9:	Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.	This benchmark is not directly addressed in this edition of Oceanography: An Invitation to Marine Science.
LAFS.1112.RST.4.10:	By the end of grade 12, read and comprehend science/technical texts in the grades 11–12 text complexity band independently and proficiently.	This benchmark is not directly addressed in this edition of Oceanography: An Invitation to Marine Science.
LAFS.1112.SL.1.1:	Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 11–12 topics, texts, and issues, building on others’ ideas and expressing their own clearly and persuasively.	
	a. Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas.	This benchmark is not directly addressed in this edition of Oceanography: An Invitation to Marine Science.

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	b. Work with peers to promote civil, democratic discussions and decision-making, set clear goals and deadlines, and establish individual roles as needed.	This benchmark is not directly addressed in this edition of Oceanography: An Invitation to Marine Science.
	c. Propel conversations by posing and responding to questions that probe reasoning and evidence; ensure a hearing for a full range of positions on a topic or issue; clarify, verify, or challenge ideas and conclusions; and promote divergent and creative perspectives.	This benchmark is not directly addressed in this edition of Oceanography: An Invitation to Marine Science.
	d. Respond thoughtfully to diverse perspectives; synthesize comments, claims, and evidence made on all sides of an issue; resolve contradictions when possible; and determine what additional information or research is required to deepen the investigation or complete the task.	This benchmark is not directly addressed in this edition of Oceanography: An Invitation to Marine Science.
LAFS.1112.SL.1.2:	Integrate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, orally) in order to make informed decisions and solve problems, evaluating the credibility and accuracy of each source and noting any discrepancies among the data.	This benchmark is not directly addressed in this edition of Oceanography: An Invitation to Marine Science.
LAFS.1112.SL.1.3:	Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric, assessing the stance, premises, links among ideas, word choice, points of emphasis, and tone used.	This benchmark is not directly addressed in this edition of Oceanography: An Invitation to Marine Science.
LAFS.1112.SL.2.4:	Present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance, and style are appropriate to purpose, audience, and a range of formal and informal tasks.	This benchmark is not directly addressed in this edition of Oceanography: An Invitation to Marine Science.
LAFS.1112.SL.2.5:	Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence and to add interest.	This benchmark is not directly addressed in this edition of Oceanography: An Invitation to Marine Science.
LAFS.1112.WHST.1.1:	Write arguments focused on discipline-specific content.	

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	a. Introduce precise, knowledgeable claim(s), establish the significance of the claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that logically sequences the claim(s), counterclaims, reasons, and evidence.	This benchmark is not directly addressed in this edition of Oceanography: An Invitation to Marine Science.
	b. Develop claim(s) and counterclaims fairly and thoroughly, supplying the most relevant data and evidence for each while pointing out the strengths and limitations of both claim(s) and counterclaims in a discipline-appropriate form that anticipates the audience’s knowledge level, concerns, values, and possible biases.	This benchmark is not directly addressed in this edition of Oceanography: An Invitation to Marine Science.
	c. Use words, phrases, and clauses as well as varied syntax to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims.	This benchmark is not directly addressed in this edition of Oceanography: An Invitation to Marine Science.
	d. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.	This benchmark is not directly addressed in this edition of Oceanography: An Invitation to Marine Science.
	e. Provide a concluding statement or section that follows from or supports the argument presented.	This benchmark is not directly addressed in this edition of Oceanography: An Invitation to Marine Science.
LAFS.1112.WHST.1.2:	Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.	
	a. Introduce a topic and organize complex ideas, concepts, and information so that each new element builds on that which precedes it to create a unified whole; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension.	This benchmark is not directly addressed in this edition of Oceanography: An Invitation to Marine Science.
	b. Develop the topic thoroughly by selecting the most significant and relevant facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience’s knowledge of the topic.	This benchmark is not directly addressed in this edition of Oceanography: An Invitation to Marine Science.



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	c. Use varied transitions and sentence structures to link the major sections of the text, create cohesion, and clarify the relationships among complex ideas and concepts.	This benchmark is not directly addressed in this edition of Oceanography: An Invitation to Marine Science.
	d. Use precise language, domain-specific vocabulary and techniques such as metaphor, simile, and analogy to manage the complexity of the topic; convey a knowledgeable stance in a style that responds to the discipline and context as well as to the expertise of likely readers.	This benchmark is not directly addressed in this edition of Oceanography: An Invitation to Marine Science.
	e. Provide a concluding statement or section that follows from and supports the information or explanation provided (e.g., articulating implications or the significance of the topic).	This benchmark is not directly addressed in this edition of Oceanography: An Invitation to Marine Science.
LAFS.1112.WHST.2.4:	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.	This benchmark is not directly addressed in this edition of Oceanography: An Invitation to Marine Science.
LAFS.1112.WHST.2.5:	Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.	This benchmark is not directly addressed in this edition of Oceanography: An Invitation to Marine Science.
LAFS.1112.WHST.2.6:	Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information.	This benchmark is not directly addressed in this edition of Oceanography: An Invitation to Marine Science.
LAFS.1112.WHST.3.7:	Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.	This benchmark is not directly addressed in this edition of Oceanography: An Invitation to Marine Science.

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LAFS.1112.WHST.3.8:	Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.	This benchmark is not directly addressed in this edition of Oceanography: An Invitation to Marine Science.
LAFS.1112.WHST.3.9:	Draw evidence from informational texts to support analysis, reflection, and research.	This benchmark is not directly addressed in this edition of Oceanography: An Invitation to Marine Science.
LAFS.1112.WHST.4.10:	Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.	This benchmark is not directly addressed in this edition of Oceanography: An Invitation to Marine Science.
MAFS.912.F-IF.2.4:	For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity. ★	This benchmark is not directly addressed in this edition of Oceanography: An Invitation to Marine Science.
MAFS.912.F-IF.3.7:	Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. ★	
	a. Graph linear and quadratic functions and show intercepts, maxima, and minima.	This benchmark is not directly addressed in this edition of Oceanography: An Invitation to Marine Science.
	b. Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions.	This benchmark is not directly addressed in this edition of Oceanography: An Invitation to Marine Science.
	c. Graph polynomial functions, identifying zeros when suitable factorizations are available, and showing end behavior.	This benchmark is not directly addressed in this edition of Oceanography: An Invitation to Marine Science.
	d. Graph rational functions, identifying zeros and asymptotes when suitable factorizations are available, and showing end behavior.	This benchmark is not directly addressed in this edition of Oceanography: An Invitation to Marine Science.

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	e. Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude, and using phase shift.	This benchmark is not directly addressed in this edition of Oceanography: An Invitation to Marine Science.
MAFS.912.N-Q.1.1:	Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays. ★	This benchmark is not directly addressed in this edition of Oceanography: An Invitation to Marine Science.
MAFS.912.N-Q.1.3:	Choose a level of accuracy appropriate to limitations on measurement when reporting quantities. ★	This benchmark is not directly addressed in this edition of Oceanography: An Invitation to Marine Science.
MAFS.912.S-ID.1.1:	Represent data with plots on the real number line (dot plots, histograms, and box plots). ★	This benchmark is not directly addressed in this edition of Oceanography: An Invitation to Marine Science.
MAFS.912.S-ID.1.2:	Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets. ★	This benchmark is not directly addressed in this edition of Oceanography: An Invitation to Marine Science.
MAFS.912.S-ID.1.3:	Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers). ★	This benchmark is not directly addressed in this edition of Oceanography: An Invitation to Marine Science.
ELD.K12.ELL.SC.1:	English language learners communicate information, ideas and concepts necessary for academic success in the content area of Science.	This benchmark is not directly addressed in this edition of Oceanography: An Invitation to Marine Science.
ELD.K12.ELL.SI.1:	English language learners communicate for social and instructional purposes within the school setting.	This benchmark is not directly addressed in this edition of Oceanography: An Invitation to Marine Science.