



UNIVERSITY of HAWAII
WINDWARD COMMUNITY COLLEGE

Ke Kulanui Kaiāulu o ke Ko'olau

OCN 201 – Science of the Sea

CRN 64332 - 03 Credits

INSTRUCTOR:	David A. Krupp, Ph.D.
OFFICE:	Hale 'Imiloa 121A
OFFICE HOURS:	W 5:30 – 6:30 PM (online) Or by appointment
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ZOOM URL:	https://hawaii.zoom.us/j/96863009049 Passcode: 512665
EFFECTIVE DATE:	Fall 2024

WINDWARD COMMUNITY COLLEGE MISSION STATEMENT

'O keia ka wā kūpono e ho'onui ai ka 'ike me ka ho'omaopopo i kō Hawai'i mau ho'oilina waiwai. Aia nō ho'i ma ke Kulanui Kaiāulu o ke Ko'olau nā papahana hou o nā 'ike 'akeakamai a me nā hana no'eau. Me ke kuleana ko'iko'i e ho'ohiki ke Kulanui e kāko'o a e ho'okumu i ala e hiki kē kōkua i ka ho'onui 'ike a nā kānaka maoli. Na mākou nō e ho'olako, kāko'o a paipai i nā Ko'olau a kō O'ahu a'e me nā hana no'eau ākea, ka ho'ona'auao 'oihana a me ka ho'onui 'ike ma ke kaiāulu — hō'a'ano a e ho'oulu i nā haumāna i ka po'okela.

Windward Community College offers innovative programs in the arts and sciences and opportunities to gain knowledge and understanding of Hawai'i and its unique heritage. With a special commitment to support the access and educational needs of Native Hawaiians, we provide O'ahu's Ko'olau region and beyond with liberal arts, career and lifelong learning in a supportive and challenging environment — inspiring students to excellence

CATALOG DESCRIPTION

An introductory course to oceanography covering the dimensions of the science of oceanography, the physical and chemical properties of sea water, waves, tides, currents, life in the ocean, and the geologic structure of the ocean floor, environmental concerns, and human use of the oceans. (3 hours lecture) WCC DP

PREREQUISITES

No prerequisites nor co-requisites. The student is recommended to take the companion laboratory course OCN 201L concurrently with OCN 201 when it is available.

STUDENT LEARNING OUTCOMES

The student learning outcomes are

- Understand how the scientific method works, how it has been applied in Earth science, and how it differs from other ways of acquiring knowledge.

- Articulate how the Earth is in integrative system across many scientific disciplines.
- Understand the internal structure of the Earth and the dynamic processes of plate tectonics that shape its surface, including sea floor spreading, subduction, and continental drift.
- Understand the causes of rising sea level and its impacts on coastal areas, including erosion and beach loss.
- Identify the major pathways of chemicals to the oceans and the effect that biological processes have on redistributing and removing chemicals from the oceans.
- Describe the major processes that cause the deep and shallow circulation of water in the oceans.
- Identify the major marine habitats, the types of organisms that live in those habitats, and give examples of how organisms are adapted to their habitat.
- Describe the types of interactions that occur among organisms in the marine food web and between organisms and their environment.

REQUIREMENTS SATISFIED BY THIS CLASS

- This class may satisfy the Windward Community College Associate in Arts Degree diversification requirement for a Natural Sciences physical science class (DP).
- This class may partially satisfy requirements for the Windward Community College Academic Subject Certificate in Bio-Resources and Technology, Bio-Resources Development and Management Track (Elective Set II: Environment and Ecology).
- This class may partially satisfy requirements for the University of Hawai'i Marine Option Program Certificate as a marine survey course.

COURSE CONTENT

Course Content and Topics

- Science as a way of knowing
- Latitude and longitude
- Map projections
- Geography and physiography of the sea floor and continental margins
- Mapping the sea floor
- Plate tectonics
- Hydrothermal vents and ecosystems
- Origin of the oceans and sea water
- Marine sediments and sampling technology
- Chemical and physical properties of sea water
- Heat budget and circulation of the atmosphere and oceans
- Temperature, salinity and density of sea water at the surface and at depth; biological zonation
- Horizontal circulation and patterns, Coriolis effect, Eckman transport, La Nina and El Nino conditions, PDO, NAO changes
- Vertical thermohaline circulation, upwelling and downwelling, biological productivity
- Lagoonal and estuarine circulation
- Waves – wind, tsunamis, rogue, internal, seiche, storm surges
- Tides and the tidal wave
- Nearshore processes

- Beaches, sand budgets, and coastlines
- Greenhouse gasses and global climate change
- Classification of living things
- Marine life habitats and life styles
- Marine, food chains & webs and biological productivity
- Biogeochemical cycles
- Law of the Sea

COURSE FORMAT

This class is being delivered entirely online asynchronously. Lectures are delivered as podcasts available through the class Laulima site. Students should view these in accordance with the class schedule posted on the class Laulima site. All class resources (syllabus, class schedule, podcasts, lecture outlines, PowerPoint slides) are all available from the class Laulima site as well. Students will complete assignments, quizzes and exams as described on the class Laulima site. Finally class announcements will be made on the class Laulima site. It is imperative that the students visit the class Laulima site frequently, at least twice per week.

COURSE TASKS, ASSESSMENT AND GRADING

ENGAGEMENT ESSAYS. The student will complete two essays (25 points each) that deal with capacious topics relevant to oceanography as defined by the posted assignments. Each essay will present a thoughtful, objective, well-reasoned, organized and documented (using formal citation procedures – APA format) point of view regarding each topic. There will be a total of two such essays assigned throughout the semester. Each will be worth 25 points (50 points total). Essays must be double-spaced typed using a 12-point standard font such as Times, Arial, or Geneva with one inch margins all the way around. Assessment rubrics will provide the student with guidance about how to approach each essay topic. Assignments must be submitted by the assignment deadline. *Assignments received after this deadline (but before one week after the deadline) will receive an automatic deduction of five points. Late assignments received one week or more after the deadline will not be accepted and the student will receive a score of 0 for that assignment.*

PARTICIPATION IN ONLINE DISCUSSIONS. The student will actively engage in five online discussions during the semester (10 points for each discussion; 50 points total). These discussions, which are meant to entice interest in Oceanography, will involve posting thoughtful comments, including responses to comments, to a discussion topic posted on the Class Discussion page on the class Laulima site. *Each discussion topic will be open for limited periods of time (typically two weeks) and students will only be able to comment/respond during these open periods.*

QUIZZES. The student will take a minimum of ten quizzes (15 points each; 150 points total) administered through the Internet (Laulima) during specified time periods. These quizzes will address the detailed content and major concepts presented in the lectures, lecture outlines, text readings, and study guide activities. If the student takes more than ten quizzes, only the best ten quiz scores will be used in calculating the student's total points. *The student will be able to refer to his/her handwritten lecture notes while taking the quiz.*

EXAMINATIONS. The student will take one midterm examination (100 points) and a non-cumulative final examination (100 points) to demonstrate understanding of information presented primarily during lectures. Exams will be delivered through the Internet via Laulima. **NO**

RETESTS will be given. The student must take the exam during the scheduled time period. A student missing an exam because of an illness or legitimate emergency may take a make-up exam as soon as possible after the student returns from the illness and as determined by the instructor. In such a circumstance, the student should make every reasonable attempt to contact the instructor before the exam period is over (or as soon as possible). While make-up exams will cover the same content area as a missed exam, the exam format and specific questions may be different.

The assignment of points will be according to the following protocol:

Engagement Essays	50	points
Online Discussions	50	points
Quizzes	150	points
Midterm Examination	100	points
<u>Final Examination</u>	<u>100</u>	<u>points</u>
TOTAL	450	points

Letter grades will be assigned as follows:

A	90% or above in total points.
B	80-89.9% of total points.
C	65-79.9% of total points.
D	55-64.9% of total points.
F	Below 55% of total points or informal or incomplete official withdrawal from course.
I	Incomplete; given at the INSTRUCTOR'S OPTION when student is unable to complete a small part of the course because of circumstances beyond his or her control. It is the STUDENT'S responsibility to make up incomplete work. Failure to satisfactorily make up incomplete work within the appropriate time period will result in a grade change for "I" to the contingency grade identified by the instructor (see catalog).
CR	65% or above in total points; the student must indicate the intent to take the course as CR/NC in writing by the end of the 10th week of classes (see catalog).
NC	Below 65% of total points; this grade only available under the CR/NC option (see above and see catalog).
N	NOT GIVEN EXCEPT UNDER EXTREMELY RARE CIRCUMSTANCES (e.g., documented serious illness or emergency that prevents the student from officially withdrawing from the course); never used as an alternative for an "F" grade.
W	Official withdrawal from the course after the third week and prior to the end of the 10th week of classes (see catalog).

Waiver of minimum requirements for specific grades may be given only in unique situations at the instructor's discretion.

Students involved in academic dishonesty will receive an "F" grade for the course. Academic dishonesty is defined in WCC's college catalog.

PARTICIPANT VERIFICATION

Campuses are required by federal regulations to verify the participation of students in their classes.

In accordance with Executive Policy 7.209, all students in the University of Hawai'i system are required to establish "participation" to ensure that they are not dropped from their class(es). Students who fail to participate by the late registration period for a class will be administratively dropped from that class. Students may also be dropped from dependent prerequisite and/or corequisite classes if both courses do not establish participation.

LEARNING RESOURCES

Required Textbook: Segar, D.A., 2018. Introduction to Ocean Sciences. Fourth Edition (second electronic edition, version 4.01). This text is available as a free digital (PDF file) download from the class Lulima site.

Also available as PDF files on the Lulima site are lecture outlines that correspond to the podcasts and textbook chapters. These lecture outlines include study questions and important vocabulary to focus on for the class.

In addition, PDF versions of the PowerPoint slides presented in the podcasts are also available on the class Lulima site.

Other handouts and selected readings from various texts may also be distributed through the class Lulima site.

STUDENT RESPONSIBILITIES

The student is expected to attend and actively participate in all course lectures and activities, and complete all assignments, quizzes and examinations on time.

The student is expected to be prepared in advance before the class sessions. Being prepared includes the following: having read text materials (e.g., textbook readings and other resources) assigned for that day's activities and bringing required work materials (e.g., textbook, handouts, writing supplies, etc.) to the session.

Any changes in the course schedule, such as examination dates, deadlines, etc., will be announced ahead of time in class. It is the student's responsibility to be informed of these changes.

It is the student's responsibility to be informed about deadlines critical to making registration changes (e.g., last day of erase period and last day for making an official withdrawal).

Students should expect a level of difficulty comparable to other 200-level science classes intended for non-science majors. When difficult concepts and detailed information are presented, it is the student's responsibility to take the appropriate steps to learn and understand these concepts and information.

Science courses at W.C.C. generally require two to three hours of independent private study time for each hour in class. However, because of the nature of the material presented in OCN 201, more study time may be required (depends upon the student's science/biology background). It is the student's responsibility to allocate the appropriate time needed for study in an environment conducive to quality study. The student must budget time efficiently and be realistic about all personal and professional commitments that consume time.

HOW TO SUCCEED IN THIS CLASS

Understanding any science involves understanding many difficult concepts and vocabulary, not just knowing facts. The student should know that the details to these concepts are important. In addition, the student will be introduced to hundreds of new words. In some cases, words that are familiar in a context other than ocean science will be introduced in the context of oceanography. The student will need to understand and use these terms in an oceanographic context.

Students are expected to participate in all lecture activities and complete all course assignments on time.

The student will not succeed in this class without taking careful lecture notes and reading the corresponding material in the textbook. As soon as possible (best if done on the same day), the student should copy over these lecture notes filling in gaps and missing information by referring to the textbook and other resources provided. The student should carefully review these rewritten lecture notes as often as possible.

In addition to copying over lecture notes, study activities should include drawing labeled diagrams or graphs that illustrate important concepts (e.g., the profile of the ocean floor, temperature change with depth in the ocean, or the main features of a deep-water ocean surface wave). These diagrams need not be works of art, but should clearly illustrate significant information. Before an exam, it would be useful to redraw these labeled diagrams and graphs from memory.

The student should make flashcards for each new vocabulary word presented (refer to textbook and study guides for lists of required terms). The student should use these card for self-testing as often as possible. The student should also practice using the words to explain oceanographic concepts.

The student should do all of the recommended study guide activities and review all of the Internet resource materials provided.

The textbook and other resources may include useful study questions. The student should write out answers to all of these questions as though they were required assignments. Students could exchange these answers and provide constructive feedback to each other.

The student should read the textbook materials corresponding to a particular lecture before and after that lecture.

Students are recommended to establish study groups and study together. The students in these groups may test each other's knowledge and understanding of the information. They may also take turns teaching each other.

The student should ask the instructor to explain the things that the student does not understand.

ACADEMIC INTEGRITY

Work submitted by a student must be the student's own work. The work of others should be explicitly marked, such as through the use of quotes or summarizing with reference to the original author.

In this course, students are not permitted to use generative AI applications such as ChatGPT,

Bard, or Bing, in whole or in part, to generate course materials or assignments. Grammar and spell checking tools such as those integrated into MS Word may be used. If you have any questions about whether a particular tool or specific use is permitted, check with the professor.

In this class, students who commit academic dishonesty, cheating, or plagiarism will have the following consequence(s):

Students will receive a failing grade for plagiarized assignments.

All cases of academic dishonesty are referred to the Vice Chancellor for Student Affairs.

Windward CC Student Conduct Information

UH System Student Conduct Policy EO 7.208

STUDENT CONDUCT CODE

Windward Community College follows the University of Hawai'i Code of Student Conduct which defines expected conduct for students and specifies those acts subject to University sanctions. Students should familiarize themselves with the Code of Student Conduct since, upon enrollment at Windward Community College, the student has placed herself/himself under the policies and regulations of the University and its duly constituted bodies. The disciplinary authority is exercised through the Office of the Vice Chancellor for Student Affairs. Copies of the Student Conduct Code are available at the Office of the Vice Chancellor for Student Affairs or [online](#).

ACADEMIC SUPPORT

- [Windward Community College Library](#)
- [Library eResources](#)
- [Ka Piko Writing Lab](#)
- [Ka Piko Speech Lab](#)
- [Ka Piko Math Lab](#)
- [Evening and Online Learning at Windward Community College](#)
- [STAR Balance](#)

TECHNICAL SUPPORT

- [UH ITS Help Desk](#) – email help@hawaii.edu or call 956-8883 (or 1-800-558-2669) for Lualima and most technology support. Available 24 hours a day, 7 days a week, including holidays.
- Student Tech Support - email winhelp@hawaii.edu, call 808-235-7437, or stop by in person at Hale La'akea 228. Available Monday–Friday from 8:00 am–4:00 pm.
- Lualima – Click on the [Request Assistance](#) link at the bottom of any Lualima Page to fill out and submit a question and get your answer via email.

- [Information Security for Students](#)

DISABILITIES ACCOMMODATION STATEMENT

The Windward Community College's Disability Student Services Office (WCC-DSSO) is committed to providing equal access to qualified students with disabilities.

If you have a physical, sensory, health, cognitive, or mental health disability that could limit your ability to fully participate in this class, you are encouraged to contact the Disability Specialist Counselor, Roy Inouye, to discuss reasonable accommodations that will help you succeed in this class. The Disabilities Counselor can be reached at 235-7448, wccdsso@hawaii.edu, or you may stop by Hale Kako'o 106 for more information.

BASIC NEEDS

Basic needs include food and housing, childcare, mental health, financial resources, and transportation. Student basic needs security is critical for ensuring strong academic performance, persistence and graduation, and overall student well-being. If you or someone you know is experiencing basic needs insecurity, please see the [UH System Basic Needs website](#).

MENTAL HEALTH COUNSELING

Mental Health and Wellness at Windward Community College counseling services and activities on campus to support students' life goals as well as their academic goals. Information about services can be found at the [WCC Mental Health & Wellness website](#).

UH ALERTS

The UH Alert emergency notification system alerts the university community in the event of a natural, health or civil emergency. The information you provide will only be used in the event of an emergency that impacts the health and safety of the UH community or the closure of whole campuses. It will not be shared with others or used for routine UH communications or announcements. To sign up, visit [UH Alerts website](#) for more information.

FINANCIAL AID

If you are receiving financial aid and are contemplating not completing the course, BEFORE you withdraw, it is highly recommended that you contact the Financial Aid Office at 808-934-2712 or email them at wccfao@hawaii.edu to discuss the impact this decision may have on your financial aid eligibility.

TITLE IX STATEMENT

Windward Community College is committed to providing a learning, working, and living environment that promotes personal integrity, civility, and mutual respect and is free of all forms of sex discrimination and gender-based violence, including sexual assault, sexual harassment, gender-based harassment, domestic violence, dating violence, and stalking.

If you or someone you know is experiencing any of these, WCC has staff and resources to support and assist you. To report an incident of sex discrimination or gender-based violence, as well as receive information and support, please contact one of the following:

Leslie Cabingabang, UH System Confidential Advocate
Phone/Text: (808) 348-0432 or (808) 341-4952
Email: advocate@hawaii.edu
Office: Hale Kāko‘o 107 (Wednesdays)

Mykie E. Menor Ozoa-Aglugub, J.D., Title IX Coordinator
Phone: (808) 235-7468
Email: mozoa@hawaii.edu
Office: Hale Kāko‘o 109

Desrae Kahale, Mental Health Counselor & Confidential Resource
Phone: (808) 235-7393
Email: dkahale3@hawaii.edu
Office: Hale Kāko‘o 101

Karen Cho, Deputy Title IX Coordinator
Phone: (808) 235-7404
Email: kcho@hawaii.edu
Office: Hale ‘Alaka‘i 120

As a member of the University faculty, I am required to immediately report any incident of sex discrimination or gender-based violence to the campus Title IX Coordinator. Although the Title IX Coordinator and I cannot guarantee confidentiality, you will still have options about how your case will be handled. My goal is to make sure you are aware of the range of options available to you and have access to the resources and support you need.

For more information regarding sex discrimination and gender-based violence, the University’s Title IX resources, and the University’s Policy, Interim EP 1.204, go to manoa.hawaii.edu/titleix/

ALTERNATE CONTACT INFORMATION

If you are unable to contact the instructor, have questions that your instructor cannot answer, or for any other issues, please contact the Academic Affairs Office:

- Location: Alaka‘i 121
- Phone: (808) 235-7422

OCN 201 - Science of the Sea
Fall 2024 - CRN 64332
Schedule of Lecture Topics

Week Of	Podcast Session Number	Lecture Topics	Textbook Chapters
26-Aug	1	Course Introduction	N/A
	2	Science as a Way of Knowing	N/A
	2A	Example of the Scientific Method	N/A
2-Sep	3	The Ocean Planet	1
	4	History and Importance of Oceanography	2
9-Sep	5	Studying the Oceans	3
	6	Geography and Geology of Ocean Basins I	4
16-Sep	7	Geography and Geology of Ocean Basins II	4
	8	Basic Chemical Principles	N/A
23-Sep	9	The Chemical and Physical Properties of Water and Seawater I	5
	10	The Chemical and Physical Properties of Water and Seawater II	5
30-Sep	11	Ocean Sediments	6
	12	Atmosphere & Ocean Interaction I	7
7-Oct	13	Atmosphere & Ocean Interaction II	7
	14	Ocean in Motion: Ocean Circulation I	8
14-Oct	15	Ocean in Motion: Ocean Circulation I and Waves I	8 & 9
	16	Ocean in Motion: Waves II	9
21-Oct		Midterm Examination (Covers sessions 1-15; Textbook Chapters 1-8)	
28-Oct	17	Ocean in Motion: Tides	10
	18	Shores, Coasts, & Shoreline Processes	11

Week Of	Podcast Session Number	Lecture Topics	Textbook Chapters
4-Nov	19	Foundations of Life in the Ocean: Classification of Life	12
	20	Foundations of Life in the Ocean: Productivity in the Oceans	12
11-Nov	21	Foundations of Life in the Ocean: Ocean Habitats & Life Styles	12
	22	The Coastal Ocean	13
18-Nov	23	Estuaries: Where Rivers Meet the Sea	13
	24	Marine Ecology	14
25-Nov	25	Fish Adaptations to the Marine Environment	14
	26	Ocean Ecosystems I Coral Reefs	15
2-Dec	27	Ocean Ecosystems II Intertidal Zone, Kelp Forests and Sargasso Sea	15
	28	Human Impacts in the Ocean Part I	16
9-Dec	29	Human Impacts in the Ocean Part II Global Impacts	16
16-Dec		Final Examination (Covers Sessions 15-29; Textbook Chapters 9-16)	