ZOOL 200 Marine Biology; Fall 2022; 3 Credits; CRN 63484

Kahuku High Bldg W Rm 104 Period 7 M,H,F 1:50pm-2:35pm T 1:05pm-2:25pm

INSTRUCTOR: William Smith **EMAIL:** wsmith@hawaii.edu
OFFICE HOURS: T/H 2:35-3:00pm (W 203 after class)/Online Zoom by Arrangement
TELEPHONE: Office Cell:808-561-3692
ONLINE ZOOM ROOM: https://hawaii.zoom.us/j/3387093879

WINDWARD COMMUNITY COLLEGE MISSION STATEMENT

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

Biological, physical, and chemical characteristics, flora and fauna, and interactions of components of marine ecosystems; survey of marine environments; utilization, exploitation, pollution, and conservation of marine resources; with special emphasis on the Hawaiian marine environment. (3 hrs lecture) WCC DB

PREREQUISITES

No prerequisites nor co-requisites are required.

STUDENT LEARNING OUTCOMES

The student learning outcomes are

1. Explain the process and philosophical basis of scientific inquiry.
2. Distinguish between living things and inanimate objects.
3. Demonstrate an understanding of the physical and chemical characteristics of the marine environment, especially those of the Hawaiian marine environment, and how they impact marine life.
4. Communicate knowledge of the diversity of marine organisms, especially Hawaiian species.
5. Exhibit an appreciation of the interaction between structure and function of marine life and how marine organisms are taxonomically related.
6. Illustrate and provide examples of the ecological role of and relationships between marine organisms.
7. Describe the major life zones of the ocean and the adaptations of living things relevant to being a successful species in these zones.
8. Recognize and suggest solutions to the negative impacts of human activities on the marine environment.
9. Research and write, using the language of the field, about a marine biology topic.

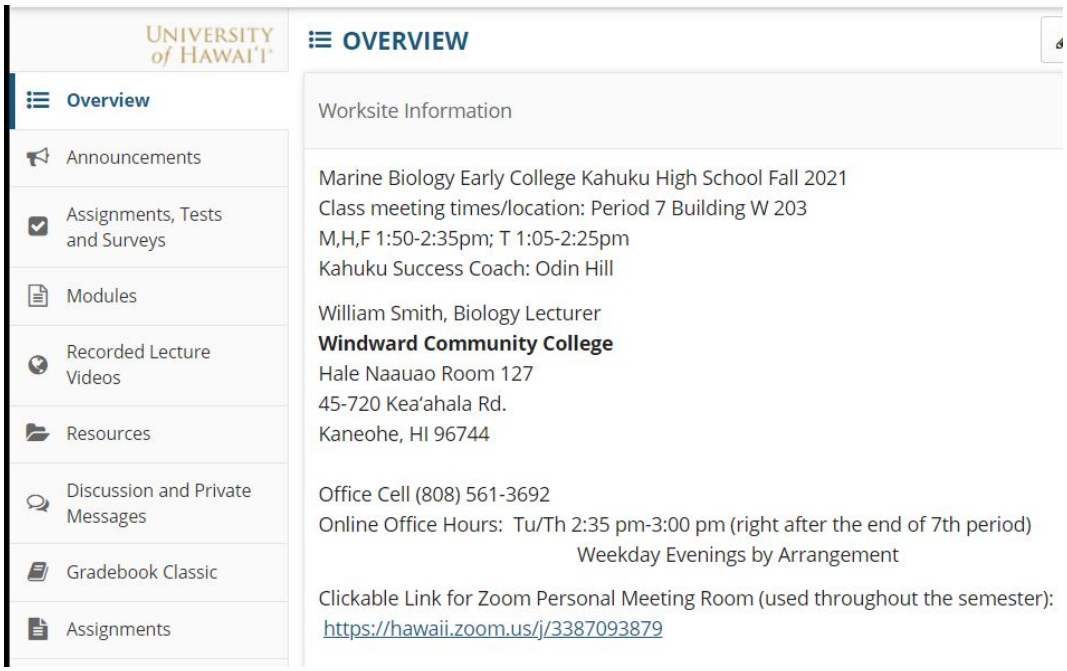
MODE OF INSTRUCTION

The previously described objectives will be achieved through the aid of the following learning activities:

- Lecture presentations and demonstrations (the PowerPoint presentations will be available from the course Laulima site).
- Internet-assisted activities and resources (e.g., Laulima, online office).
- Readings from textbook and instructor's study guides (study guides downloadable as pdf files from the course Laulima site).
- Class discussions on marine biology related topics.
- Interactive Jeopardy games played during class periods.
- Quizzes and examinations assessing the students' understanding of course content.

SCHEDULING RESOURCES

All scheduling information will be handed out in class, but will also be available on the class Laulima site under the **Modules or Assignments Tests & Surveys Tab.** This will include:
-Quiz Schedule
-Midterm and Final Exam Schedule
-Engagement Activity Schedule (Jeopardy Games)
-Lecture and corresponding Textbook Reading Schedule



REQUIRED TEXTBOOK

Required Textbook: Castro, P., and M.E. Huber, 2019. Marine Biology. Eleventh Edition. McGraw-Hill.

Handouts and selected readings from various texts will also be distributed in class or through the Internet.

REQUIREMENTS SATISFIED BY THIS CLASS

- This class may satisfy the Windward Community College Associate in Arts Degree diversification requirement for a Natural Sciences biological science class (DB).
- 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
- Overview of the History of Marine Biology
- The Characteristics of Life: The Chemical Basis of Life
- The Characteristics of Life: Complexity and Organization
- The Characteristics of Life: The Cell Theory and Types of Cells
- The Characteristics of Life: Reproduction, Inheritance, Development
- The Characteristics of Life: Interaction with the Environment and Evolution
- Geography and Geology of Ocean Basins
- Geologic History of the Hawaiian Islands
- The Chemical and Physical Environment of the Ocean
- Overview of the Diversity and Classification of Living Things
- Marine Prokaryotes, Protists and Fungi
- Marine Plants
- Marine Invertebrates
- Marine Fishes
- Marine Reptiles and Birds
- Marine Mammals
- The Principles of Marine Ecology: Population Growth
- The Principles of Marine Ecology: Species-Species Interactions
- The Principles of Marine Ecology: Primary Productivity, Energy Flow, Biogeochemical Cycles: Food Chains and Webs
- The Principles of Marine Ecology: Ecological Succession
- The Littoral Zone
- Estuaries
- Life on the Continental Shelf
- Coral Reefs
- The Deep Ocean Floor
- Living in the Water Column: Planktonic Life
- Living in the Water Column: Nekton
- Human Interaction in the Sea: Resource Utilization and Management
- Human Interaction in the Sea: Pollution

Skills or Competencies

- Using the language and terms appropriate to the natural sciences, citing examples when appropriate, the student will describe and integrate basic biological principles and define basic biological terms presented in lecture and required texts, citing specific examples when asked for. These principles includes the following areas:
    - The philosophy and characteristics of science and the scientific method.
    - The difference between hypotheses, theories and laws in science.
    - The definition of life and how living things differ from inanimate objects.
    - How living things are classified and named and the characteristics used to classify living things.
    - The chemical architecture of living things and basic biochemistry (photosynthesis, respiration, fermentation) of organisms.
    - The parts, their structures and functions, of cells; how prokaryotic cells differ from eukaryotic cells; and how plant and animal cells differ.
    - Patterns of asexual and sexual reproduction and development.
    - In the most general way, how genetic information is passed from parents to offspring.
    - Evolution as the unifying principle of biological science; and the evidence supporting evolution and natural selection.
    - The characteristics, classification and basic biology of marine prokaryotes, protists, fungi, plants, invertebrates, and vertebrates
- Using the language and terms appropriate to the natural sciences, citing examples when appropriate, the student will describe and integrate basic information related to the marine environment and the organisms that inhabit it. This information includes the following:
    - The general characteristics of the ocean as a habitat (e.g., the origin & structure of ocean basins, chemical & physical properties of seawater, and the characteristics of waves, tides & currents) and how it differs from other environments (land, freshwater, & air); the classification of the marine environment.
    - The origin of the Hawaiian Islands and the special characteristics of Hawai‘i in relationship to its marine flora and fauna.
    - The general adaptations of living things to life in the sea.
    - Population growth of marine species, including the factors that may limit this growth.
    - Interactions among marine species (competition, predation, symbioses, niche concept, keystone species, etc.).
    - The productivity of the ocean and the trophic relationships (e.g., nutrient recycling, energy flow, food chains & webs) of marine ecosystems.
    - The characteristics of the benthic environments (e.g., intertidal, shallow subtidal, abyssal benthos, hydrothermal vents & coral reefs), the organisms, and their respective adaptations, that inhabit these environments.
    - The characteristics, adaptations and ecology of marine planktonic forms.
    - The characteristics, adaptations and ecology of marine nekton forms (e.g., fish, whales, pinnipeds, marine birds and reptiles).
    - The potential of ocean resources and the influence of human activities involving the ocean (e.g., utilization and exploitation, ocean pollution problems).
    - Identification of common species of Hawaiian marine flora and fauna.

COURSE TASKS, ASSESSMENT AND GRADING

ENGAGEMENT ASSIGNMENTS JEOPARDY (30 points total) The student will participate in Three Jeopardy Games (10 points each) that deal with topics relevant to marine biology as defined by the posted assignments. The Jeopardy Games will be played during class. Each Jeopardy will also be used as a study guide for upcoming exams . ***Students must be present for in-class Jeopardy assignments, or will receive a score of 0.***

QUIZZES. The student will be graded on 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. **There will be up to 14 quizzes throughout the semester- Only the 10 best quiz scores will be counted towards the final grade.** If the student takes more than ten quizzes, some points may be counted as extra credit. Since these quizzes may be taken using home computers connected to the Internet, students may refer to instructional resources (text, study guide, lecture notes, etc.) while taking the quizzes. However, each quiz will be timed, the student having only 30 minutes to complete. Because the student will be able to drop several of the lowest quiz scores, ***no make-up quizzes for missed quizzes will be administered for any reason including computer/Internet crashes, illnesses, and emergencies (the student will receive no score for missed quizzes)***.

EXAMINATIONS. The student will take two midterm examinations (50 points each) and a non-cumulative final examination (50 points) to demonstrate understanding of information presented primarily during lectures. Exams will be taken during class periods. These exams will be open-book exams and students wil be allowed to refer to texts, notes, Laulima, and other materials while taking the exam. **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 Assignments	30	points
Quizzes	150	points
Midterm Examination 1	50	points
Midterm Examination 2	50	points
Final Exam	50	points
Total Possible	330	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.

LEARNING RESOURCES

Required Textbook: Castro, P., and M.E. Huber, 2019. Marine Biology. Eleventh Edition. McGraw-Hill.

Handouts and selected readings from various texts will also be distributed in class or through the Internet.

SCHEDULE OF LECTURE TOPICS

The tentative schedule of Marine Biology lecture topics will be provided during the first week of class, and will be available on our class Laulima site. It will roughly follow the chapters in the required textbook, with some supplemental information provided by handouts or PowerPoint slides. All PowerPoint presentations will be available to students thru the Laulima 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. Any changes will also be posted on our Lauliam class site.

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 ZOOL 200, 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 SUCEED IN THIS CLASS

Understanding biological 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 biology will be introduced in the context of biology. The student will need to understand and use these terms in a biological science 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 biological phenomena (e.g., the internal structure of the cell, how different waves form, or the anatomy of bony fishes). 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. The student should use these card for self-testing as often as possible. The student should also practice using the words to explain biological concepts.

The student should do all of the recommended study guide activities and review all of the Internet resource materials provided. Studying the quizzes is a great way to prepare for exams.

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.

DISABILITIES ACCOMMODATIONS

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 Accessibility Counselor to discuss reasonable accommodations that will help you succeed in this class. Roy Inouye can be reached at (808) 235-7448, royinouy@hawaii.edu, or you may stop by Hale Kākoʻo 106 for more information.

SEX DISCRIMINATION AND GENDER-BASED VIOLENCE RESOURCES (TITLE IX)

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:

Madoka (Doka) Kumagai, Confidential Advocate
Phone: (808) 348-0663 (cellular)
Phone: (808) 956-6084 (office)
Email: kumagaim@hawaii.edu

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

Karla K. Silva-Park, Title IX Coordinator
Phone: (808) 235-7468
Email: karlas@hawaii.edu
Office: Hale ʻĀkoakoa 220

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/

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 use of quotes or summarizing with reference to the original author.

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.

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: Alakaʻi 121
- Phone: (808) 235-7422