AQUA 201 – THE HAWAII FISHPOND
Hale Imiloa 123, Tu/Th 10:00-11:15 a.m. - 03 Credits

INSTRUCTOR: Leonard G.L. Young
OFFICE: Hale Imiloa 119
OFFICE HOURS: Tue. 9:00-10:00 a.m.
TELEPHONE: 236-9257 (office); 927-0325 (cell.), but try email first!
EMAIL: lyoung@hawaii.edu
EFFECTIVE DATE: Fall 2017

WINDWARD COMMUNITY COLLEGE MISSION STATEMENT

Windward Community College offers innovative programs in the arts and sciences and opportunities to gain knowledge and understanding of Hawaii and its unique heritage. With a special commitment to support the access and educational needs of Native Hawaiians, we provide Oahu'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 introduction into the history, development, biology and ecology, management, restoration, and future of Hawaiian fishponds. This course will study traditional Hawaiian fishponds, merging traditional knowledge with the principles of modern Western science. (3 hours lecture)

PREREQUISITES

No prerequisites. Although it would be useful if the student has taken a class in biology before enrolling in AQUA 201. The student is also recommended to take the companion laboratory course AQUA 201L concurrently with AQUA 201.

STUDENT LEARNING OUTCOMES

The student learning outcomes are

- Explain the process and philosophical basis of scientific inquiry.
- Distinguish between the types of traditional Hawaiian fishponds, the history of their construction and use throughout the Hawaiian Islands, how and where they were constructed, their operation and management, their characteristics, and their biota.
- Describe the oceanography, biology and ecology of Hawaiian fishponds.
- Describe the basic principles of aquaculture, including pond dynamics, feeding regimes, cultivated species propagation and growth, disease management, production, harvesting and maintenance.
- Discuss the status of Hawaiian fishponds in modern times, including their restoration and their future.
- Identify the personal values and attitudes that can facilitate sustainable living.
- Demonstrate how concepts of sustainability are connected to local, regional and global issues.

REQUIREMENTS SATISFIED BY THIS CLASS

- Natural Science General Education Core for the Associates Degree in Liberal Arts as a Biological Science Lecture Class (Natural Sciences Group 1)
- Bio-Resources and Technology Academic Subject Certificate in Bio Resource Development and Management (Elective Set I: Technology, Utilization, and Management).
- Hawaiian Studies Academic Subject Certificate Requirements at Windward Community College (as an elective).

COURSE CONTENT

Course Content and Topics/Skills or Competencies

- the philosophy and characteristics of science and the scientific method;
- the characteristics of living things, how they are classified and named;
- basic ecological principles, especially those applying to aquatic ecosystems and fishponds;
The assignment of points will be according to the following protocol:

- the types of traditional Hawaiian fishponds, the history of their construction and use throughout the Hawaiian islands, how and where they were constructed, their operation and management (stocking, cultivation, harvesting and maintenance), their characteristics, and their biota;
- the oceanography of Hawaiian fishponds (water circulation, stratification, water chemistry and properties, sediment composition and characteristics, and biogeochemical cycles);
- the biology of important fishpond species, especially their modes of nutrition, life cycles, and interactions with other fishpond species as well as their physical environment;
- the basic principles of aquaculture, including pond dynamics, feeding regimes, cultivated species propagation and growth, disease management, production, harvesting and maintenance;
- the operation and functioning of the fishpond in the Ahupuaa;
- the integration between traditional practices and modern aquaculture methodologies;
- Hawaiian utilization of fishpond species;
- modern fishpond problems (disuse and natural degradation, agricultural and urban development, pollution, and invasive species);
- Hawaii fishpond restoration: approaches, problems and possible solutions, and examples of restoration projects; and
- the future of Hawaiian fishponds: whether they will become mere interesting archaeological curiosities or they will represent models of sustainability for the future.

ASSESSMENT AND GRADING

This class is taught online. If you need help or want to ask questions, come to my office. You can also reach me via email and I will respond within 24 hours. The grading consists of weekly online assignments to reinforce the ideas and concepts presented in the overview and readings. I have assigned no textbook to buy. Resources are found online or in the Library. See the Science Librarian.

Your weekly and continual assignment is to read and to use the online resources of CANVAS. Each week, you will be presented with an online overview, readings, group discussion (15 points) and choice of problem reflection (20 points).

GROUP DISCUSSION: You are required to write 5 responses during the week to the group discussion for 15 points. The group discussion is focused on asking question in the Socratic manner to encourage greater and insightful learning. This will indicate your pursuit and depth of the readings, accumulation of new aquaculture information from the other students’ questions and discussions. Yes, you can answer with synthesis and summary of the group discussion too. Ideally, I urge you to search for information online and to be responsible for your own learning. The overview and readings are guidelines for information and learning. The online group discussion is a group learning and collaborative experience.

PROBLEM REFLECTION: The problem reflection will present you with three choices. You only need to choose one question to respond to as a short essay for 20 points. The value is for you to demonstrate to me that you have gained new information and learning.

Towards the end of the semester you will do a SMALL SCALE AQUACULTURE SYSTEM DESIGN AND PLAN (financial spreadsheet). The student will utilize the concepts learned to design and plan a small scale aquaculture system. This written plan will include the following information: (1) detailed description including diagrams that illustrate construction design; (2) species to be cultivated; (3) detailed description for how the system would work; (4) a plan for the husbandry and maintenance of the organisms to be cultivated including the methods for monitoring the operation; (5) harvesting protocols (when and how), including how the harvested products should be processed; (6) description of the permits that may be needed; and (7) an itemized budget detailing the anticipated costs for the construction and operation of the system.

QUIZZES and EXAMINATIONS. There are no in class quizzes, mid-terms or final examination. There will be a peer assessment at Week 5 and 10. The small scale aquaculture system design and plan will be used as the “final” peer assessment during final examination week. The small scale aquaculture system design and plan needs to be done before the end of the semester. You read another student's plan and write the final peer assessment during the examination week period.

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

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<tr>
<th>Assignment</th>
<th>Points</th>
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<tbody>
<tr>
<td>Group Discussion</td>
<td>16 x 15 = 240 points</td>
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<tr>
<td>Problem Reflection</td>
<td>14 x 20 = 280 points</td>
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Peer Assessment 2 x 60 = 120
Final Peer Assessment 100 points
Participation in Class 50 points (variable bonus)

Total Points 740 points

Letter grades will be assigned as follows:

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<tr>
<th>Grade</th>
<th>Description</th>
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<tr>
<td>A</td>
<td>90% or above in total points.</td>
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<tr>
<td>B</td>
<td>80-89.9% of total points.</td>
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<tr>
<td>C</td>
<td>65-79.9% of total points.</td>
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<tr>
<td>D</td>
<td>55-64.9% of total points.</td>
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<tr>
<td>F</td>
<td>Below 55% of total points or informal or incomplete official withdrawal from course.</td>
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<tr>
<td>I</td>
<td>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 &quot;I&quot; to the contingency grade identified by the instructor (see catalog).</td>
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<tr>
<td>CR</td>
<td>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).</td>
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<tr>
<td>NC</td>
<td>Below 65% of total points; this grade only available under the CR/NC option (see above and see catalog).</td>
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<tr>
<td>N</td>
<td>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 &quot;F&quot; grade.</td>
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<tr>
<td>W</td>
<td>Official withdrawal from the course after the third week and prior to the end of the 10th week of classes (see catalog).</td>
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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 Textbooks


Supplemental Readings


Titcomb, M., 1978. Native Use of Marine Invertebrates in Old Hawaii. Pacific Science, 32(4): 325-386. [This text is no longer in print; copies may be provided as a PDF file downloadable from the course website.]


Other materials may include handouts or Internet resources developed by the instructor. Handouts and selected readings from various texts will also be distributed in class or downloaded from the class 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. Roll will be taken.

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 100-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 AQUA 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 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, the stages of cell division, or the anatomy of the heart). 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 lecture outlines for a lists of required terms). The student should use this 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.

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 ACCOMMODATION STATEMENT**

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 to discuss reasonable accommodations that will help you succeed in this class. Ann Lemke can be reached at 235-7448, lemke@hawaii.edu, or you may stop by Hale Akoakoa 213 for more information.

**Final Examination:** May 10, 2016 (Tuesday), 10:00-12:00 p.m.
Exams begin May 7, 2016
Exam ends May 12, 2016
Spring semester closes May 13, 2016