AQUA 106/106L, SMALL-SCALE AQUACULTURE
3 Credits Lecture (CRN 60332)
TR 8:30 to 9:45am
1 Credit Laboratory (CRN 60333)
R 10:00am to 12:45pm

INSTRUCTOR: Bradley Fox
OFFICE: Hale Uluwehi
OFFICE HOURS (Monday 9am to 12 noon)
TELEPHONE: 236-9265 EMAIL: bradleyf@hawaii.edu
EFFECTIVE DATE: Spring 2019

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 the Ko‘olau region of O‘ahu and beyond with liberal arts, career and lifelong learning in a supportive and challenging environment — inspiring students to excellence.

CATALOG DESCRIPTION

Survey of possibilities of small-scale aquaculture. Application of basic biological and ecological concepts and theories to the selection, planning and design of small scale aquaculture systems. (3 hours lecture)

Activities Required at Scheduled Times Other Than Class Times

Optional extra credit activities may be scheduled at farms or research stations related to aquaculture outside of listed class hours.

STUDENT LEARNING OUTCOMES

As a result of taking this course, students can expect to attain the following outcomes:

1. Describe past and present aquaculture technologies.
2. Plan and design a small-scale aquaculture system.
3. Select appropriate small-scale aquaculture organisms.
4. Determine the optimal conditions for cultivating small-scale aquaculture organisms.
5. Develop a small-scale aquaculture husbandry and management plan.

6. Evaluate the economic feasibility of developing a small-scale aquaculture system.

**COURSE CONTENT**

**Concepts or Topics**
- History of Aquaculture
- Basic Biological Principles
- Types of Culturing Facilities (e.g., ponds, tank, raceways, pens, cages, etc.)
- Pond Construction
- Environmental Factors Affecting Aquaculture Facilities and their Control (e.g., oxygen, temperature, photoperiod, pH, salinity, nutrients, water motion, toxic materials, etc.)
- Non-Desirable Species and their Control
- Nutrition and Feeding
- Reproduction, Metabolism & Growth
- Diseases of Cultured Organisms and their Control
- Species-Specific Culture Methods
- Polyculture
- Hawaiian Fishponds
- Best Environmental Management Practices
- Harvesting and Processing
- Economic Aspects of Aquaculture
- Laws and Regulations Governing Aquaculture in Hawaii

**Skills or Competencies**
- 1. Describe the history of aquaculture.
- 2. Describe basic biological principles, including, but not limited to, characteristics of life, chemical basis for life, basic plant and animal metabolism and nutrition, basic genetics, evolution, the classification and nomenclature of living thing, and reproduction and development.
- 2. Describe basic ecological principles as they apply to aquaculture, including, but not limited to, environmental factors affecting living things, population growth, intra-and interspecific competition, predator-prey relationships, food chains and webs, biogeochemical cycles, and energy flow through ecosystems.
- 3. Describe the design, construction, and operation details for various kinds of aquaculture facilities and methods.
- 4. Describe the basic biology and specific culture requirements of common species used in small-scale aquaculture.
- 5. Compare and contrast the different types of Hawaiian fishponds, describing their respective operations and the species that were cultivated.
- 6. Describe the laws and regulations governing aquaculture in Hawaii.
- 7. Design a small scale aquaculture system, addressing all aspects of system design, including construction, species, operation, husbandry, maintenance, monitoring, harvesting and costs.

**COURSE TASKS**
1. Attend all lectures.
2. Participate in group discussions, read all assigned readings and turn in all writing and assignments on time.

Windward Community College is an equal opportunity, affirmative action institution.
3. Use objective tests/quizzes, essay questions or research/term papers to evaluate a student’s understanding of aquaculture principles and other related topics.

4. Complete IACUC Certification and write summary report

5. Students will be assigned one (1) written report and one (1) 10-minute oral presentation for this course. The report will focus on small-scale aquaculture system design plans.

For AQUA 106L
1. Attend all labs and field trips.
2. Participate in group discussions, complete exams, read all assigned readings and turn in all writing and laboratory assignments on time.
3. Complete IACUC Certification and write summary report.

ASSESSMENT TASKS AND GRADING

For AQUA 106

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<tr>
<th>Task</th>
<th>Weight</th>
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<tbody>
<tr>
<td>Quizzes (5)</td>
<td>10%</td>
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<tr>
<td>IACUC Certification Summary Report</td>
<td>10%</td>
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<tr>
<td>Projects (research paper 25%, oral presentation 15%):</td>
<td>40%</td>
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<tr>
<td>Final Exam</td>
<td>20%</td>
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<tr>
<td>Participation:</td>
<td>20%</td>
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For AQUA 106L:

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<tr>
<th>Task</th>
<th>Weight</th>
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<tbody>
<tr>
<td>Laboratory notebook</td>
<td>30% (15% each grading)</td>
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<tr>
<td>Attendance and participation</td>
<td>40%</td>
</tr>
<tr>
<td>Laboratory exams</td>
<td>30%</td>
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There will be no make up essay examinations, field trips or laboratories. Your grade will be based on your attendance, participation and performance in completing the above tasks.

Corresponding letter grades are as follows:

- A = 100 – 90 pts
- B= 89 – 80 pts
- C= 79 – 70 pts
- D= 69 – 60 pts
- F = 59 and below.

Please refer to the WCC College Catalog for audit, withdrawal, and incomplete options.

LEARNING RESOURCES

No textbook will be used in this course. Descriptions of lectures, copies of presentations, handouts and laboratory assignments and activities will be made available as downloadable files over the course period on Laulima. Having access and use of a computer with Internet connection will be essential to completing the course.

The course, particularly the laboratory section, is to be taught with a “hands-on, learn-by-doing” philosophy as described in an ʻōlelo no ʻeau (Hawaiian Proverb) compiled by Mary Kawena Pukui:

Ma ka hana ka ʻike — In the task is the knowledge and understanding.

Lectures covering the various course content and topics are to be accompanied with PowerPoint presentations and selected reading materials. The laboratory will consist of a variety of hands on
learning activities and objectives.

**ADDITIONAL INFORMATION**

- Students are expected to participate in all laboratory and field activities and complete all course assignments on time.
- Students are expected to be prepared in advance when they arrive to class.
- 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 also 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).
- If the instructor’s office hours do not work with your schedule, please e-mail or call to set up an appointment.
- The schedule and activities in this course are subject to change.
- MySuccess: Students may be referred for extra help or advising through MySuccess. Students can also explore resources at MySuccess.Hawaii.edu and windward.hawaii.edu/MySuccess

**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 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 ʻĀkoakoa 213 for more information.

**TITLE IX**

*Title IX prohibits discrimination on the basis of sex in education programs and activities that receive federal financial assistance. Specifically, Title IX prohibits sex discrimination; sexual harassment and gender-based harassment, including harassment based on actual or perceived sex, gender, sexual orientation, gender identity, or gender expression; sexual assault; sexual exploitation; domestic violence; dating violence; and stalking. For more information regarding your rights under Title IX, please visit: https://windward.hawaii.edu/Title_IX/.*

Windward Community College is committed to the pursuit of equal education. If you or someone you know has experienced sex discrimination or gender-based violence, WCC has resources to support you. To speak with someone confidentially, contact the Mental Health & Wellness Office at 808-235-7393 or Kaahu Alo, Designated Confidential Advocate for Students, at 808-235-7354 or kaahualo@hawaii.edu. To make a formal report, contact the Title IX Coordinator, Karla K. Silva-Park, at 808-235-7468 or karlas@hawaii.edu.

**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.

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Students can upload papers to [http://www.TurnItIn.com](http://www.TurnItIn.com) to have papers checked for authenticity, highlighting where the paper potentially fails to appropriately reference sources.

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: Alakai 121
Phone: 808-235-7422
Email: wccaa@hawaii.edu