AG 170 Introduction to Aquaponics
4 Credits (3 Hours Lecture 1 hour Laboratory)

INSTRUCTOR: Fred Mencher
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EFFECTIVE DATE: 1/7/13

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

The course covers aquaculture, hydroponics, aquaponics, sustainable aquatic feed production, renewable local seeding technologies and micronutrient supplementation, fish and plant physiology, renewable energy systems, water catchment and conservation techniques, and best aquaponic food safety practices. The basic physical and biological principles governing sustainable farm and agribusiness operations are emphasized.

Activities Required at Scheduled Times Other Than Class Times
None

STUDENT LEARNING OUTCOMES

The student learning outcomes for the course are:
1. At the end of the course the student will be able to:
   * Design and construct a basic aquaponic system that uses all three growout technologies (e.g., nutrient film technique (NFT), ebb and flow and floating raft) either alone or in combination.
   * Apply best aquaculture practices (BAP) for culturing fishes (e.g. Tilapia) in an aquaponic setting.
   * Identify the water quality parameters and manage them in order to maximize fish, plant and microbial outputs in an aquaponic setting.
   * Use best agricultural practices (BAP) for plant crop production in an aquaponic setting.
   Prepare seedlings for planting, harvest produce, stagger production of both plant and fish, and apply food safety procedures.
COURSE CONTENT

Concepts or Topics

- Water cycle
- Nitrification cycle
- The Ahupuaa model of resource management
- Scientific method
- Hydroponic growing methods of growing – nutrient film technique (NFT), floating raft, ebb and flow filter bed
- Fish (e.g., aquaculture) production systems
- Growing mediums – cinder, expanded clay balls
- Management of water and nutrients
- Water chemistry testing and test equipment
- Fish and plant anatomy
- Pumps, filtration
- Use of basic tools used in carpentry and plumbing
- Food safety and hygiene
- Marketing, Packaging, labelling etc
- Create a business plan

COURSE TASKS

1). Take two (2) essay examinations. 20 points each
2). Attend all lectures, field trips and laboratories 20 points
3). Construct and successfully operate an aquaponic system 20 points
4). Contribute toward a group project 20 points

ASSESSMENT TASKS AND GRADING

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. Having access and use of a computer with internet connection will be essential to complete 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 noʻeau (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.

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 ʻAkoakoa 213 for more information.