Las Positas College
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Course Outline for HORT 71

FUNDAMENTALS OF HYDROPONICS AND AQUAPONICS

Effective: Fall 2017

I. CATALOG DESCRIPTION:
HORT 71 — FUNDAMENTALS OF HYDROPONICS AND AQUAPONICS — 3.00 units

The ecological design and operation of urban agriculture that covers the fundamental principles of raising fish and vegetable crops in soil-less media.

2.50 Units Lecture 0.50 Units Lab

Grading Methods:
Letter Grade

Discipline:

	MIN
Lecture Hours:	45.00
Lab Hours:	27.00
Total Hours:	72.00

II. NUMBER OF TIMES COURSE MAY BE TAKEN FOR CREDIT: 1

III. PREREQUISITE AND/OR ADVISORY SKILLS:

IV. MEASURABLE OBJECTIVES:

Upon completion of this course, the student should be able to:

A. Design a crop rotation plan for four vegetable species
B. List four species of fish used in aquaponic systems and describe the advantages and disadvantages of each
C. Name four biological components of a closed aquatic system and how each relates to other components of the system
D. Use water testing equipment to test water and chart the levels of pH, ammonium, nitrites, nitrates, and phosphorous
E. Demonstrate the correct safe food handling procedures used in aquaponic vegetable and fish farming

V. CONTENT:
A. Methods of growing crops hydroponically
B. Methods of fish production systems
C. The Scientific basis of closed system aquatic ecology
D. Water chemistry testing and equipment
E. Food production, safety, hygiene, and marketing

VI. METHODS OF INSTRUCTION:
A. **Lecture** -
B. **Projects** -
C. **Field Trips** -
D. **Lab** -

VII. TYPICAL ASSIGNMENTS:
A. Design a hydroponic crop rotation plan.
B. Write an essay describing the pros and cons of various fish species used in aquaponic systems.
C. Diagram the aquatic nitrogen cycle and explain how each biological component of the cycle fits in.
D. Demonstrate in a lab setting the proper procedure for testing water chemistry.
E. List and describe the various tasks involved in food handling.

VIII. EVALUATION:
A. **Methods**

1. Exams/Tests
2. Quizzes
3. Projects
4. Field Trips
5. Home Work
6. Lab Activities

B. **Frequency**

1. Classroom participation and lab activities will be observed, and students will be evaluated on a daily basis.
2. A mid-term exam, a final exam and multiple short quizzes will be scheduled.
3. Homework will consist of readings from the textbook, and written assignments due before every class.
4. One field trip will be scheduled to visit a aquaponic or hydroponic production facility.
5. Students will be involved with at least one food production project during the semester.

IX. TYPICAL TEXTS:

1. Jacobson, Andy. *Aquaponics: The Essential Guide.* first ed., Createspace Independent Publishing Platform, 2016.
2. Dudley, David. *Aquaponics Design Plans.* 1st ed., Howard Publishing, 2016.

X. OTHER MATERIALS REQUIRED OF STUDENTS:

A. Students will be expected to wear appropriate clothing, shoes, or other personal protective equipment, in order to participate in lab activities.