MRSC A246: PRACTICAL EXPERIENCE IN AQUACULTURE II

Item	Value
Curriculum Committee Approval Date	03/12/2025
Top Code	040100 - Biology, General
Units	2 Total Units
Hours	108 Total Hours (Lab Hours 108)
Total Outside of Class Hours	0
Course Credit Status	Credit: Degree Applicable (D)
Material Fee	No
Basic Skills	Not Basic Skills (N)
Repeatable	No
Open Entry/Open Exit	No
Grading Policy	Standard Letter (S)

Course Description

Students will apply their experience and knowledge of working with recirculating aquaculture systems to take additional responsibility in system life support, organisms health, and facility management. PREREQUISITE: MRSC A245. Transfer Credit: CSU.

Course Level Student Learning Outcome(s)

1. Contribute a greater role in managing all parts of OCC's recirculating aquaculture systems in terms of life support, water quality, and animal husbandry needs.
2. Explain complex scientific concepts in aquaculture science in plain terms that peers and students can easily understand.
3. Assessing and demonstrating biosecurity, quarantine, and proper reproduction techniques needed for a successful aquaculture program.

Course Objectives

- 1. Demonstrate proper husbandry techniques for fish, invertebrates and plants.
- 2. Describe facility management goals and explain how to develop procedures to keep aquaculture recirculating systems clean, safe, and efficient.
- 3. Practice proper protocols to facilitate high density reproduction in a variety of aquacultured species.
- 4. Demonstrate methods of explaining complex scientific concepts in aquaculture in plain terms.
- 5. Illustrate levels of success through the use of database management and spreadsheets.
- 6. Assess current recirculating aquaculture systems based off of best practices.

Lecture Content

Lecture: not applicable.

Lab Content

Lab content: 1. Aquaculture recirculatins system design and construction (filtration, aquascaping, species planning, ease of maintenance). 2. Advanced system characteristics (raceways, aquaponics, ponds, among others). 3. Proper maintenance and critical analysis of potential problems. 4. Plumbing of aquaculture recirculating systems. 5. Water chemistry and methods of achieving proper water quality. 6. Species composition planning for multitrophic systems. 7. Husbandry techniques for fish, invertebrates, and plants. 8. Facility management and developing procedures to keep recirculating aquaculture systems clean, safe, and efficient. 9. Use of technology in the recirculating aquaculture systems including advanced lighting, reactors, and controllers. 10. Effective group management. 11. Potential careers involving recirculating aquaculature systems skills and experience. 12. Leadership, initiative, and working as an effective team in an aquaculture setting. 13. Developing educational content, good communication skills, and effective teaching techniques. 14. Quarantine and health procedures that can identify and treat sick and injured organisms. 15. Emergency procedures related to system failures and safety guidelines. 16. Diversity of recirculating aquaculture systems, equipment, organisms, and procedures exhibited at OCC.

Method(s) of Instruction

- Lab (04)

Instructional Techniques

This class will employ a variety of instructional techniques. Weekly class meetings will incorporate class discussions led by the instructor but heavily dependent on student contributions. Student presentations on special topics will commonly accompany these discussions. Guest speakers and field trips will help provide additional specialized information. The development and completion of both group and individual projects will be a central focus. Students will also be evaluated and coached in their modeling and explanation of content to general aquaculture science students during their lab hours.

Reading Assignments

Identification and evaluation of different methods of managing aquaculture facilities.

Writing Assignments

Writing will play a role in the course through the primary aquaculture journal communicating and documenting system parameters as well as itemizing the work that is completed each day. Education and advertising materials may also be assigned for aquaculture promotional use.

Out-of-class Assignments

Students will be required to maintain various recirculating aquaculture systems and mentor aquacultre science students outside of scheduled class times.

Demonstration of Critical Thinking

As a living educational tool where many things often can and do go wrong, students must constantly critically evaluate the recirculating aquaculture systems for equipment failures, water quality issues and organism health concerns. They must use the information they receive visually or from test and probes to determine why the issue is occurring and what is the best way to address the problem. Instructor will evaluate the student s identification, explanation and action to correct the issue.

Required Writing, Problem Solving, Skills Demonstration

Students will be evaluated by their contribution to the aquaculture journal and writing materials they produce for the aquaculture program as well as their continued ability to demonstrate proper techniques and identify/address potential problems.

Eligible Disciplines

Biological sciences: Master's degree in any biological science OR bachelor's degree in any biological science AND master's degree in biochemistry, biophysics, or marine science OR the equivalent. Master's degree required.