MRSC A221: PRACTICAL EXPERIENCE IN AQUARIUM SCIENCE AND MANAGEMENT 2

Item	Value
Curriculum Committee Approval Date	10/30/2024
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

This course will expand and develop student skill sets as a student aquarium manager and mentor. Student managers will apply their experience and knowledge of marine aquarium science and take additional responsibility in aquarium planning, maintenance and coordination of the aquarium. Students will learn about a variety of topics ranging from water chemistry to animal husbandry in greater scientific detail and take greater levels of responsibility in actively managing the aquarium facilities. PREREQUISITE: MRSC A220. Transfer Credit: CSU.

Course Level Student Learning Outcome(s)

1. Explain complex scientific concepts in aquarium science in plain terms that peers and students can easily understand.
2. Contribute to aquarium planning meetings in a meaningful and well-prepared manner.
3. Evaluate the design, construction and effectiveness of aquarium system filtration, water flow and species composition.
4. Demonstrate proficiency in testing water parameters and resolving any potential issues before they become a problem.
5. Identify common species and husbandry techniques need to care for them as well as recognizing and addressing potential health problems.

Course Objectives

- 1. Discuss proper species composition planning and its importance to a well-functioning system
- 2. Demonstrate proper husbandry techniques for fish, invertebrates and plants
- 3. Demonstrate methods of explaining complex scientific concepts in aquarium science in plain terms.
- 4. Illustrate methods of creating effective aquarium educational materials
- 5. Describe facility management goals and explain how to develop procedures to keep aquarium clean, safe and efficient

Lecture Content

1. Discuss proper species composition planning and its importance to a well-functioning system2. Demonstrate proper husbandry techniques for fish, invertebrates and plants3. Demonstrate methods of explaining complex scientific concepts in aquarium science in plain terms.4. Illustrate methods of creating effective aquarium educational materials5. Describe facility management goals and explain how to develop procedures to keep aquarium clean, safe and efficient

Lab Content

1. Aquarium system design and construction (filtration, aquascaping, species planning, ease of maintenance 2. Advanced system characteristics (reef tanks, planted tanks, kreisels, aquaponics, among others) 3. Proper maintenance and critical analysis of potential problems 4. Aquarium plumbing 5. Water chemistry and methods of achieving proper water quality 6. Species composition planning 7. Husbandry techniques for fish, invertebrates and plants 8. Facility management and developing procedures to keep aquarium clean, safe and efficient 9. Use of technology in the aquarium including advanced lighting, reactors and controllers 10. Effective group management 11. Potential careers involving aquarium skills and experience 12. Leadership, initiative, and working as an effective team in an aquarium setting 13. Developing educational content, good communication skills and effective teaching techniques 14. Contributing to social media content and aquarium tours as part of the aquarium s community outreach 15. Quarantine and health procedures that can identify and treat sick and injured organisms 16. Emergency procedures related to system failures and safety guidelines 17. Diversity of aquarium systems, equipment, organisms, and procedures exhibited a t the OCC Aquarium

Method(s) of Instruction

- Lab (04)

Instructional Techniques

This class will employ a variety of instructional techniques. Weekly lecture meetings will incorporate class discussions led by the instructor and lead student aquarium manager, 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 aquarium science students during their lab hours.

Reading Assignments

Reading assignments will be based on researching alternate methods of achieving aquarium water quality goals and husbandry information on existing and potentially new species for the aquarium systems. Based on the number of species kept in the facility, this will be a significant component.

Writing Assignments

Writing will play a major role in the course through the primary aquarium 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 aquarium promotional use.

Out-of-class Assignments

Students will be required to maintain the various aquarium systems and mentor marine aquarium science students (MRSC120) outside of lecture class.

Demonstration of Critical Thinking

As a living educational tool where many things often can and do go wrong, students must constantly critically evaluate the aquarium 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 aquarium journal and writing materials they produce for the aquarium 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.

Other Resources

1. Lab Manual