MRSC A220: PRACTICAL EXPERIENCE IN AQUARIUM SCIENCE AND MANAGEMENT 1

Item	Value
Curriculum Committee Approval Date	11/17/2021
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
Grading Policy	Standard Letter (S)

Course Description

This course introduces students to the complexity involved in working in, and actively managing a functioning public aquarium as a student aquarium manager. Students will gain hands-on experience planning, designing and maintaining exhibits in the OCC Public Aquarium. They will be responsible for helping to educate and mentor students in the marine aquarium science course and giving tours to visitors. Course content will introduce more advanced aquarium equipment and technology and the student will take an active role in identifying potential issues, evaluating possible solutions, and implementing resolutions based on an understanding of aquarium science. All prospective students will be required to perform a facility safety and proficiency demonstration to enroll in this course. PREREQUISITE: MRSC A120. Transfer Credit: CSU.

Course Level Student Learning Outcome(s)

1. Evaluate the design, construction and effectiveness of aquarium system filtration, water flow and species composition.
2. Demonstrate proficiency in testing water parameters and resolving any potential issues before they become a problem.
3. Identify common species and husbandry techniques need to care for them as well as recognizing and addressing potential health problems.

Course Objectives

- 1. Describe proper design, construction and effectiveness of aquarium system filtration, plumbing and water flow.
- 2. Illustrate the proper techniques to test water parameters and resolve potential issues before they become a problem.
- 3. Describe the challenges of keeping common aquarium species and how to recognize and address potential health problems.
- 4. Explain proper maintenance of aquarium systems

Lab Content

1. Aquarium system design and construction (filtration, aquascaping, species planning, ease of maintenance2. Advanced system characteristics (reef tanks, planted tanks, kreisels, aquaponics, among others)3. Proper maintenance and critical analysis of potential problems4. Aquarium plumbing5. Water chemistry and methods of achieving proper water quality6. Species composition planning7. Husbandry techniques for fish, invertebrates and plants8. Facility management and developing procedures to keep aquarium clean, safe and efficient9. Use of technology in the aquarium including advanced lighting, reactors and controllers10. Effective group management11. Potential careers involving aquarium skills and experience12. Leadership, initiative, and working as an effective team in an aquarium setting13. Developing educational content, good communication skills and effective teaching techniques14. Contributing to social media content and aquarium tours as part of the aquariums community outreach15. Quarantine and health procedures that can identify and treat sick and injured organisms16. Emergency procedures related to system failures and safety guidelines17. Diversity of aquarium systems, equipment, organisms, and procedures exhibited at 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 students 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: Masters degree in any biological science OR bachelors degree in any biological science AND masters degree in biochemistry, biophysics, or marine science OR the equivalent. Masters degree required.

Other Resources

1. Instructor handouts. 2. Lab Manual.