MRSC A130: HUSBANDRY OF AQUATIC ORGANISMS

Item	Value
Curriculum Committee Approval Date	11/16/2022
Top Code	040100 - Biology, General
Units	2 Total Units
Hours	72 Total Hours (Lecture Hours 18; Lab Hours 54)
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 focuses on the husbandry of various aquatic organisms in an aquarium setting. Students will learn how to properly care for a diverse assemblage of freshwater and marine fish, invertebrates, algae, and aquatic plants. Course content will focus on common organisms' natural history, nutrition, growth, reproduction, transportation, acclimation, disease diagnosis and treatment, and community planning. Students will be required to demonstrate proper aquatic animal husbandry skills, help care for a living collection of organisms, and perform critical evaluations of procedures in the OCC Public Aquarium. Field trips to local aquariums or to collect organisms may be required to demonstrate particular concepts. PREREQUISITE: MRSC A120 or concurrent enrollment. ADVISORY: MRSC A180 and MRSC A180L. Transfer Credit: CSU.

Course Level Student Learning Outcome(s)

1. Describe how a properly designed aquarium environment (habitat, water parameters, filtration components and microbial populations) influences the health of aquatic organisms.
2. Identify commonly kept aquatic organisms and explain what critical aspects of their anatomy, physiology and life history a well-trained aquarist must know to be successful with their growth and potential reproduction.
3. Describe proper techniques for transport, acclimation, quarantine, possible treatment, and feeding of a variety of aquatic organisms.

Course Objectives

- 1. Describe the health importance of creating a natural habitat for organisms and identify the type of habitat required for various collections of aquatic species.
- 2. Explain how aquarium water quality affects the physiology and health of aquatic organisms.
- 3. Describe what steps and equipment an aquarist can use to manipulate water quality parameters to better care for aquatic organisms.
- 4. Identify a wide range of freshwater, temperate, and topical marine organisms (invertebrate and vertebrate), and describe the characteristics that aquarists need to recognize to properly care for them.
- 5. Demonstrate how to properly care for a variety of aquatic organisms.
- 6. Demonstrate proper techniques for transporting, acclimating and evaluating organisms to safely add to existing systems.
- 7. Diagnose the health of aquatic organisms and create a treatment plan that includes options for both environmental improvements and medication.
- 8. Demonstrate the knowledge and techniques needed to provide an appropriate and nutritious diet to a variety of aquatic organisms.
- 9. Design an aquarium community plan based on organism compatibilities, system characteristics, and requirements of individual species.
- 10. Demonstrate proper data collection and record keeping required to evaluate the health, growth, and reproductive potential of aquatic organisms in a collaborative group setting.

Lecture Content

I. System design for life support A. Water quality requirements B. Habitat and system characteristics C. Importance and growth of beneficial microbes II. Husbandry D. General fish biology, physiology and behavior E. Freshwater fish and invertebrate husbandry F. Aquatic plants and planted systems G. Saltwater fish husbandry (temperate and tropical) H. Elasmobranch husbandry I. Saltwater invertebrate husbandry (temperate and tropical) J. Macroalgae and refugiums K. Coral characteristics and proper care L. Coral fragging M. Reef tank care III. Skills and procedures N. Diagnostics and treatments of disease O. Acclimations, dips and administering medications P. Quarantine and treatment tanks Q. Analy sis of nutrition, prepared foods, supplements, and growth R. Live foods and filter feeders S. Specimen collection, transport, and handling T. Reproduction and breeding U. Community planning and compatibilities in aquarium systems V. Proper data collection and record keeping

Lab Content

I. System design for life support A. Water quality requirements B. Habitat and system characteristics

Method(s) of Instruction

- Lecture (02)
- Lab (04)

Instructional Techniques

This class will employ a variety of instructional techniques. Weekly lab meetings will incorporate class discussions led by the instructor on the husbandry of various aquatic organisms. Student presentations on special topics will commonly accompany these discussions. Guest speakers and field trips will help provide additional specialized information. Students will engage in a variety of hands-on practice and application of techniques discussed in class. Group evaluation of existing OCC Aquarium organisms and systems will be a consistent theme.

Reading Assignments

Reading assignments will be based on researching husbandry information on common organisms kept in aquariums (less than 0.5 hours / week).

Writing Assignments

Writing assignments will be based on contributing to an ongoing collection of species husbandry notes that may be used for future student reference information (less than 0.5 hours / week).

Out-of-class Assignments

Out of class assignments will be based on communications with industry professionals to learn about husbandry information on common organisms kept in aquariums (less than 0.5 hours / week).

Demonstration of Critical Thinking

Proper care of aquarium organisms requires knowledge of species natural history, water quality, community compatibility and health needs. Students will need to be able to evaluate aquarium conditions, compatibilities, nutritional requirements, and sources of potential issues to properly care for individual organisms. This will require students to be able to synthesize information and make determinations on the proper ways to care for individual species. The instructor will evaluate students based on their knowledge of organism husbandry and determination of proper care.

Required Writing, Problem Solving, Skills Demonstration

Students will be evaluated by their contribution to the husbandry binders as well as their knowledge of organism husbandry, continued ability to demonstrate proper techniques and identify/address potential problems, and determination of proper care.

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. OCC Aquarium Procedure Manual (Most recent edition: Found on course Canvas site)