Course Content and Outcome Guide for AQS 186

Course Number: AQS 186
Course Title: Introduction to Scientific Diving
Credit Hours: 3
Lecture Hours: 20
Lecture/Lab Hours: 20
Lab Hours: 0

Course Description
Examines the technical and safety components of scientific diving and meets all academic training requirements compliant with American Academy of Underwater Sciences (AAUS) standards. Includes professional level of emergency responder certifications, waterman-ship proficiency, and authorization as a surface tender to support scientific diving operations.

Intended Outcomes for Course
1. Demonstrate a knowledge of AAUS scientific diving standards.
2. Work as an authorized scientific diving tender.
3. Act as an emergency first responder in rescue scenarios.
4. Independently create dive plans.
5. Demonstrate adequate waterman-ship skills while working as a tender for aquatic operations.

Course Activities and Design
The format for this course is a combination of lecture and scenario based activities which provide the necessary skills and understanding of scientific diving as defined by the American Academy of Underwater Sciences standards. Instruction will be based at the OCCC Central Campus and at local/regional recreational and field locations determined by the instructor.

Outcome Assessment Strategies
- Class discussions and participation in activity-based scenarios and demonstrations.
- Scheduled quizzes and exams to evaluate knowledge of material presented in lectures based on AAUS Modules, assigned readings and demonstrations.
- Evaluations for the qualification as a Divers Alert Network (DAN) First Aid for Professional Divers administrator.
- Final theory exam and waterman-ship skills proficiency practical exam resulting in certification of scientific dive tender by AAUS.

Course Content (Themes, Concepts, Issues and Skills)

Themes

- Scientific diving history, regulations and procedures.
- Diver and support equipment.
- Diving physiology and physics.
- Diving accident management and emergency procedures.
- Diving with compressed gases.
- Dive planning and logistics.
- Diving under special conditions.

Concepts

- Exploration of scientific diving principles over time to modern day uses in occupational settings.
- Influence of occupational diving regulations and regulatory agencies or organizations (OSHA, AAUS) on scientific diving operations.
- Identification, use and handling of diver and dive support equipment.
- Principles of handling high pressure cylinders and procedures when using compressed gases such as air and mixed gases (i.e. Nitrox) in dive operations.
- Considerations and impacts of diving on diver physiology such as decompression and the physical environment.
- Exploration of dive safety principles in the workplace for managing dive accidents and administering emergency procedures related to decompression illness, trauma and stress.
- Administration of diver first aid, CPR, AED and emergency oxygen administration.
- Identification of scientific diving roles and responsibilities for divers and dive tenders.
- Principles of developing and executing a proper dive plan with roles, responsibilities and logistics.
- Considerations for special dive circumstances such as diving with hazardous aquatic life, diving in confined spaces, diving in deep environments, extreme temperatures or at night.

Issues

- Requirements for maintaining scientific diving standards.
- Safety and emergency management in occupational diving environments.
- Impacts of diving on diver physiology and health.
- Regulations influencing occupational scientific dive operations.

Skills

- Understand and identify regulations impacting scientific diving operations.
- Identify types and uses of diver and dive support equipment.

- Use and handling of high pressure cylinders in dive operations.
- Identify and distinguish between diving ailments and trauma related to diving accidents and emergencies.
- Determine and deliver safe diving practices for planned occupational dives in the workplace.
- Create a scientific dive plan.
- Determine roles and responsibilities of a scientific dive team.
- Identify special conditions for scientific dive operations and their procedures.
- Act as an AAUS certified dive tender.
- Deliver first aid, CPR, AED and emergency oxygen as a DAN First Aid for Professional Divers Administer.
- Demonstrate competency of waterman-ship skills as a scientific dive tender.
    - 10 minute water tread
    - 400 yard swim without swim aids
    - 25 yard swim on a single breath