

SCIENTIFIC DIVING II

11:628:346, 3 credits

CLASS MEETING TIMES: Monday 5:40—10:00pm. The class session is split into classroom and pool sessions. Open water dives are scheduled for October.

CLASS LOCATION: Werblin Recreation Center, Busch Campus

CLASS METHOD: Classroom Lecture, Pool Sessions, Open Water Dives at Dutch Springs, PA (class meets in person)

INSTRUCTORS: Debby Miller

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OFFICE HOURS: Scheduled upon request

COURSE DESCRIPTION

This is the second course of the American Academy of Underwater Sciences (AAUS) Scientific Diver Certification, designed to provide the student with the academic, practical, and SCUBA skills training to meet and exceed the AAUS minimum standards for Scientific Diving certification. The course provides the student with training in dive safety, diving emergency procedures, oxygen administration, neurological assessment, first aid for hazardous marine injuries, mixed gas (Nitrox) and technical diving methodology, dive planning, and the application of science diving techniques. These core elements cover the advanced academic and practical skills application in both confined water (pool) and open water environments. Training materials developed by the AAUS, the Professional Association of Diving Instructors (PADI), and the Divers Alert Network (DAN) are used for the academic components of the course.

COURSE LEARNING GOALS and ASSESSMENT

Students completing this course will be able to:

1. Construct dive plans according to AAUS Scientific Diving Regulations and Procedures for Science Divers.
2. Demonstrate the skills necessary to be a safe scientific diver, including planning and executing safely a dive with a buddy, use of the NOAA dive planner, lost buddy procedures, out of air/low on air emergencies, hand signals, and a pre-dive safety check.
3. Explain the benefits, risks, and procedures for Enriched Air Nitrox diving, including planning Nitrox dives and gas analysis.
4. Relate competent SCUBA knowledge/skills and scientific diving considerations, including the NOAA Diver & Support Personnel.
5. Make use of procedures and considerations of diving under special conditions and polluted water diving.
6. Utilize methodology for specialty diving, such as use of full face mask equipment, surface supplied air, Blue water and Underwater photography
7. Demonstrate knowledge of accident management, emergency procedures and treatment skills for recreational diving illness, including hyperbaric chambers, support equipment, oxygen administration, diving neurological assessment, and first aid for hazardous marine injuries.
8. Apply concepts about the underwater aquatic environment and marine conservation to scientific diving.

These goals will be assessed by demonstrated proficiency in both knowledge of course materials (homework assignments, quizzes, mid-term and final exams) and confined water applications (dive skills,

in-water safety, and emergency management procedures). In addition, students will be required to prepare a five-page paper and oral presentation to the class and instructional staff. The paper and presentation will be an independently researched paper expanding upon course subject matter, such as science diving methods and techniques.

COURSE REQUIREMENTS

Pre-requisite: Scientific Diving I (11:628:345). Students who have not taken Scientific Diving I may be granted admission if **they have a minimum SCUBA diving certification level of “Rescue Diver”** or its equivalent from a nationally/internationally recognized dive certification agency and arrange to complete AAUS topics from 11:628:345. Additionally, medical clearance for SCUBA diving is a prerequisite requirement prior to in-water training. Individuals interested in receiving the AAUS Scientific Diving Certification will be required to complete a medical evaluation in accordance with the AAUS Standards and the Rutgers Scientific Diving Program prior to certification.

Students must demonstrate satisfactory swimming ability, physical stamina and emotional stability to instructor during the course.

Water skills requirements:

- Transport a passive person of equal size a distance of 25 yards/meters in water
- Rescue of unconscious diver at the surface
- Open Water Skills (24) circuit
- Advanced Buoyancy skills

Students successfully completing individual training components of the program will receive certification with the Professional Association of Diving Instructors (PADI) –PADI Enriched Air certification (optional); and Divers Alert Network (DAN) – Dive Emergency Management Provider (DEMP) certification. An **AAUS Science Diver Certification** will be issued to those students meeting all the requirements of the AAUS training program. Certification requirements must be completed within 6 months after course completion.

Participation in and completion of the course is required to obtain AAUS certification, however it does not grant or guarantee your certification.

COURSE MATERIALS & TEXTS:

1. American Academy of Underwater Sciences Training PowerPoints (Sakai)
2. DAN Emergency Oxygen for Scuba Diving Injuries
3. DAN First Aid for Hazardous Marine Injuries
4. NOAA Diving Manual Diving for Science and Technology 4th Edition (Sakai)
5. Rutgers Scientific Diving Manual (Sakai)

EQUIPMENT REQUIREMENTS

SCUBA diving is equipment-intensive. The equipment used is designed for life-support; there will be no compromise in this respect. Safety above all will be emphasized, with respect to both equipment and training. Students will complete a Medical Statement and may need to obtain a Physicians release to participate in SCUBA.

All equipment is provided as part of the course. Students may use personal equipment, provided that it is appropriate for SCUBA and has proof of annual service (where applicable). Students will have the opportunity to purchase discounted equipment through the university equipment purchase program.

COURSE TOPICS

1. AAUS & Scientific Diving Regulations & History
2. Nitrox Diving

3. Procedures for Science Divers
4. NOAA Diver and Support Personnel
5. Sampling Methods, Site Location, Marking & Data Collection Techniques
6. Diving Under Special Conditions
7. Polluted Water Diving
8. Methodology for Specialty Diving: Fullface Mask, Surface Supply, Blue Water, UW Photography
9. Accident Management & Emergency Procedures
10. Hyperbaric Chambers and Support Equipment
11. Neurological Assessment
12. Oxygen Administration
13. First Aid for Hazardous Marine Injuries

IMPORTANT COURSE REQUIREMENTS

Participation, Assignments and Quizzes: Assigned reading should be done before class. Homework and quizzes are due at times to be announced in class. Late work or quizzes will not be accepted unless arrangements are made beforehand, in person (not by e-mail or voice mail), or a doctor's note stating the severity of your illness is provided. All written work handed in must be in your own words, even if you consult with other students or work in groups (see Rutgers Academic Integrity policy at <http://academicintegrity.rutgers.edu/academic-integrity-policy/>).

Reading Assignments and Homework:

- To succeed in this course, you should do all assigned textbook readings prior to class and review class notes and knowledge reviews regularly.
- Late homework is not accepted. Students who must miss class on a due date can email the assignment by the start of class for full credit.

Participation and Attendance:

- Students earn credit for each class they attend and participate in. Arriving late, leaving early, cell phone use, as well as any other disruption of class will result in loss of credit.
- Unexcused absences will result in a loss of participation credit; excused absences (i.e., those with acceptable documentation of an emergency) will not result in point loss.
- Regardless of excused absences, all diving performance requirements and written exams must be successfully completed to meet requirements for certification(s).

Exams: It is expected that students will check the course schedule and show up on time for exams the day they are given. No make-up exams will be given unless arrangements are made beforehand, in person (not by e-mail or voice mail) or a detailed doctor's note or other written evidence of an emergency at the time of an exam is provided—see below. Note: electronic devices are not allowed in the classroom during the taking of exams. Cheating on an exam is grounds for a failing grade in the course.

Exam and Quiz Policy:

- Quizzes will be given during the first 20 minutes of class. Laptops will be allowed and required for in class quizzes.
- For certification(s) students need a grade of 75% or higher. If students score below a 75% they are allowed to make up the quiz or exam. The first attempt of a quiz or exam will be used to calculate the student's grade.
- Mid-term and Final exams will take up one whole class meeting. All exams will be closed

book/notes. The use of electronic devices is strictly prohibited during exams. A calculator may be used.

- Makeup exams *may be* offered to students with emergencies, but only if they can provide acceptable documentation of the emergency (e.g., hospital admit slip, etc.).
- The final exam cannot be made up for any reason.

COURSE GRADING

AAUS Homework & Quizzes	20%
Exams	20%
DAN/PADI Exams & Skills	10%
Paper/Presentations & Class Participation	20%
Water Skills & Confined Water Skills	15%
Open Water Skills	15%

Behavior: This is a college course, and your instructors expect that students will act responsibly whether in the classroom, pool side or in the water. Disruptive behavior that interferes with other student's learning or compromises safety will result in suspension from class. All mobile phones, pagers, audio playing devices etc. are to be kept off during class periods. No browsing the internet, texting, or emailing is allowed during class.

Pool Make-Up Policy

Due to the unique and critical nature of the confined water (pool) sessions requirements associated with scuba diving courses, the following make-up policy is in effect:

- The instructor will determine, consistent with the course syllabus, the need for any pool make-up and also will establish the deadline for that make up.
- The instructor will schedule the specific time for each make-up consistent with staff / student availability.
- Student cost for each make-up is \$20 per hour for a minimum of 2 hours per student, payable in advance.

CERTIFICATION INFORMATION

A grade is separate from a diving certification. Certification is given through separate participation in the required open water dives for each certification. Certification performance requirements are evaluated by certifying Instructor(s) in accordance to AAUS or PADI training standards. Certification dives with Rutgers require separate fees but include all required equipment. Certification dives can be completed between May – October based on available schedules.