Research Diving Methods: Theory and Practice (3 credits)

Instructor: Alex Hunter, Dive Safety Officer and Small Boats Manager

Synopsis of Course Content

The Research Diving Methods course is taught one day per week, for the first ten weeks of the semester, as well as in conjunction with CRE and MIZ class dives. Given the usefulness and increasingly common employment of SCUBA as a research tool for marine scientists, students possessing underwater research qualifications will enjoy a competitive advantage. This course aims to familiarize students with the fundamentals of scientific diving, both theoretical and practical. Research methods and practices are taught in class by BIOS's Dive Safety Officer (DSO), and then subsequently rehearsed on SCUBA during open-water sessions in the field. Underwater research techniques imparted include: navigation, search and recovery procedures, underwater photography skills, systems of data acquisition whilst underwater, and more specific survey methods such as estimation of populations. By the end of the semester, students will be qualified Science Divers, as defined by the American Academy of Underwater Sciences, of which BIOS is an organizational member. During the course students will also have the option to elect into further specialist PADI qualifications, such as Advanced Diver, CPR, and Oxygen provider.

Prerequisites

Students must already be SCUBA certified by a nationally-recognized agency, prior to arriving at BIOS. In order to be permitted to dive at BIOS, you must complete, and return to the DSO, various forms and meet certain medical safety standards, which will require physical examination from a health practitioner. The student dive package, including all such forms and supplemental information, can be found here on the BIOS website.

Course Objectives

- To become confident and skilled at underwater multi-tasking and using SCUBA as a tool to further scientific research
- To become a fully qualified scientific diver as defined by the American Academy of Underwater Sciences
- To be fully prepared to design and execute scientific projects requiring SCUBA as an essential element

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Content Outline

Theory (including but not limited to):

- Diver emergency care training
- Dive rescue
- Physics and physiology of diving
- Introduction to diving environments, including specialized environments and conditions
- Decompression theory and its application
- AAUS dive regulations and history
- Underwater scientific methods and data gathering techniques (including, but not limited to, quadrating, transecting, mapping, photography, collecting, identification and survey techniques)
- Handling high pressure cylinders

Practical (including but not limited to):

- Checkout dive
- Search and recovery
- Rescue diving
- Navigation
- Application of underwater scientific methods and techniques (in conjunction with CRE and MIZ courses)
- Mapping project

Final Class Grade Will Be Based On

- Module quizzes: 10%
- Final exam: 40%
- In-water skills assessment: 50%

Course Texts

- AAUS self-study theory modules
- PADI Advanced Open Water, Rescue, and O_2 Provider manuals
- Emergency first response participant material