

Research Methods and Applications

Course Overview:

This course will examine all aspects of conducting a research project including project development, planning, experimental design, gathering results, maintaining data, and analyzing the data. The course will emphasize a group approach to research with students conducting a research project in the field of environmental science. All students will participate in the project and will have an active role. Students will collaborate to produce a final report and team presentation. This course will provide students with a step-by-step approach and will contribute to individual growth, team development and self-evaluation. Critical thinking and analysis will be an important aspect of this class.

Course Objectives:

- Learners will be able to develop skills necessary to completing a research project
- Learners will be able to determine credible versus non-credible information
- Learners will be able to identify the steps to conduct a successful research project
- Learners will be able to identify the major components of an experimental design
- Learners will be able to define roles within a group project and work with others
- Learners will be able to conduct a project assessment, group assessment and individual assessment
- Learners will use statistical applications to compare data
- Learners will be able to produce at least two types of presentation formats to present the results of the project

Course Description:

This course will give students the opportunity to participate in an actual research project. Students will focus on primary literature and will develop a class project that will be conducted throughout the class. This course will include field applications and methods and will give students the opportunity to conduct research. Results generated will be analyzed and presented in a professional – style. Students will meet scientists, travel to field sites, and will have opportunities to view research projects within the local environment and Barnegat Bay. This course will include handouts, assessments, maintaining a daily journal and using technology. Students will also have the opportunity to conduct extended field activities that will be advertised in advance. Students will continue to develop critical thinking skills and analysis skills. This course will provide students with an active learning environment with strong cross-content links and encompassing multiple sciences, technology, and math within the project.

Grading Policy:

This course is an applications course and student participation is very important. The course will feature much discussion and team project development. We will also conduct this class by reducing paper use and will incorporate technology into the course as appropriate. Students will also be responsible for keeping a journal of the course including field, laboratory and project development. Grades will be based on a points system with all final in accordance with the MATES/OCVTS based on amount of amount of points attained divided by the total possible number of points.

Grading Breakdown...

Evaluations and Quizzes	25%
Journal	20%
Projects and Team Project	25%
Field/Lab Write-ups	20%
Participation	5%
Written Assignments	5%

We will work together on a few team activities and several field-based activities so participation and involvement are the keys to being successful.

Requirements:

All readings and handouts will be distributed in the course. We will use PDF formats for journals which will be sent to the students by e-mail.

Students will receive a **bound journal book to record all observations, data, experiences, pictures, diagrams, etc...**

Students should have an extra set of clothes to change for the field on field days (scheduled for Wednesdays, but we could be in the field 2 days per week).

There will be some other experiences for the students that will be announced in the near future as part of the research experience (i.e. research presentations, Rutgers Field Station Visit, Lighthouse Center all day visits, etc...). We may be participating in an overnight from April 27 into the 28th at the Massachusetts Maritime Academy Environmental Symposium,

We will be on the water on the 40' pontoon "Bay Cruiser" and/or the 28' R/V Sirenia. All students will follow prescribed water safety rules and field sampling techniques.

Any experience that goes beyond the confines of the school day will be announced well in advance. Any conflicts due to family commitments or performance in other courses will be discussed and take president.