Instructor: Dr. Todd Levine  
Office: Rankin 305  
Phone 524-7283  
Office: RK305  
Email: tlevine@carrollu.edu

Course Description:

This course provides an opportunity for interested and highly motivated students to pursue research under the supervision of a Biology faculty member or an off-site research supervisor. Students will develop sufficient mastery of a research system of interest to allow them to acquire data appropriate for the resolution of their specific research question.

Prerequisites:

BIO 225 and permission of the course instructor

Student Learning Objectives:

After participating in undergraduate research, students should be able to:

Define ethical practice in research and demonstrate ethical behaviors
Demonstrate competency in some of the fundamentals of scientific inquiry including:
  o Formulating a testable hypothesis
  o Designing experiments that test this hypothesis and yield meaningful data
  o Demonstrating proficiency with respect to relevant research skills and techniques
  o Maintaining appropriate data collection records
  o Communicating results through a scientific poster
Demonstrate the ability to work independently, including behaviors related to:
  o Managing time
  o Setting goals
  o Identifying a problem
  o Suggesting possible solutions
  o Applying the most appropriate solution
  o Evaluating the outcome
  o Asking for help when appropriate

Expectations:

A. Time Commitment: a typical 4-credit course meets for four hours per week over 14 weeks. In addition, a student is expected to spend approximately 2 hours working outside of class for every hour in class. Thus, in a 14-week research experience, a student should
spend approximately 10 - 12 hours per week (140 - 160 hours, total). This includes both time
spend in actual data collection and time spent working on activities related to the research
experience.

Research experiences taken for fewer credits have pro-rated expectations:

1 credit 35 - 40 hours
2 credits 70 - 80 hours
3 credits 105 - 120 hours
4 credits 140 - 160 hours

B. Activities: the actual activities the student is involved in will vary depending on the
research setting. To the greatest extent possible, the student should gain hands-on
experience with as many aspects of the research experience as possible.

C. Assignments:

Laboratory Log – The student should maintain a daily log of activities completed as part of
the research experience. Entry should include the date and the beginning/ending time. A
log of research activities as determined by Dr. Lombard will also be kept to match typical
records keeping in that laboratory. Details about the expectations for the notebook will be
provided by the research mentor.

Ethics Discussion – the student will engage in a discussion of research ethics with their
mentor, when possible in conjunction with other mentor/student teams. The students
understanding of ethical principles in science will be assessed by way of this discussion.

Research poster – the student will report the results of his/her research experience by
preparing an electronic poster that includes the following sections: Abstract, Introduction
(with appropriate literature review), results, conclusions, acknowledgements, and
references. The extensiveness of the literature review required will depend on the number
of credits involved:

1 credit approximately 8 references cited
2 credits approximately 10 references cited
3 credits approximately 15 references cited
4 credits approximately 20 references cited

Evaluation:

The grade for the research experience will be determined based on the following criteria:
20 % Quality of the laboratory/field notebook
40 % Quality of the research poster
10 % Evidence that all requirements of the research experience have been met
30 % Evaluation by the research mentor

**Syllabus modification**

This syllabus may be modified by the instructor at any time. Students will always be notified at least one class meeting in advance, both in-class and via email, of any modifications to the syllabus. Students with documented disabilities who may need accommodation or any student considering obtaining documentation should make an appointment with Carroll’s disabilities services coordinator, Marty Bledsoe, no later than the first week of class. Ms. Bledsoe can be reached at 524-7335 or bledsoe@carrollu.edu.