BIOS 399 STUDENT HANDBOOK 2018-2019

**COURSE DESCRIPTION**
BIOS 399: Independent Research provides students with an opportunity to gain experience researching in an academic laboratory setting, while being mentored by a faculty mentor on a self-directed project. Through this experience, students learn to think and problem solve like a scientist. BIOS 399 prepares students for graduate or professional school, and may even clarify a student’s educational and career goals.

**PREREQUISITES**
Students must have a minimum of 2.00/4.00 Cumulative GPA in Biological Sciences courses, consent of a UIC faculty mentor, and departmental approval. To receive departmental approval, students must complete an Application for Independent Research for the semester in which they intend to enroll in BIOS 399, as well as a Proposal (See “Writing Your Proposal” below).

**GRADING AND CREDIT HOURS**
BIOS 399 is a 2 credit hour course with “Satisfactory/Unsatisfactory” grading. Because there are no letter grades for this course, BIOS 399 will not affect a student’s GPA; however, BIOS 399 will count as credit hours towards completion of a degree. Satisfactory completion of BIOS 399 requires a student to dedicate at least 10 hours per week to research in the laboratory (20 hours per week during summer semesters), participate in any required workshops/seminars, and to complete a final research paper at the end of the semester (see “Writing Your Research Paper” below). The paper will be reviewed by the student’s faculty mentor, as well as by the Biological Sciences department. Credit will not be given for previously conducted research. The research must be done while a student is enrolled in BIOS 399.

**STARTING OR CONTINUING A RESEARCH PROJECT**

*New Research.* To take BIOS 399, students must first apply by the published deadline, which is typically the add/drop deadline of the designated semester. Students must work at least 10 hours/week in the lab and attend any mandatory workshops/seminars. At the end of the semester, a final paper or deferral is due to the Biological Sciences department.

*Continuing Research.* If a student has not completed their research in the designated semester, a student can request to defer the grade in order to complete the research in the following semester. The student must arrange with the faculty mentor to submit a deferred grade (DF>R) for the semester. DF>R grades do not affect a student’s GPA; it merely shows that the student is still working on the research project. To register for an additional semester(s), students must submit a Deferral Form attached to a project update, called a Deferral Notice (See “Writing a Deferral Notice” below). Once the department obtains a final research paper, the student must request from the faculty mentor that the DF>R grade be changed to the appropriate final grade (Satisfactory or Unsatisfactory). Importantly, a student finishing deferred research must continue to participate in any required workshops/seminars until the work and paper are completed. A student will earn 2 credit hours* for every semester that they are deferring a BIOS 399 project.

*New Research Project, Previous BIOS 399 Student.* In order to receive an additional 2 credit hours* for a new BIOS 399 project, students must turn in a new Application for Independent Research and associated proposal by the published deadline, participate in the semester’s workshops/seminars (if applicable), and complete a new paper. In order to receive more than 2 credit hours for the work associated with the same lab, the student’s new project must be substantially different from what was previously done by the student.
*Students may repeat BIOS 399; however, no more than 5 hours of credit from BIOS 391 and BIOS 399 can be used as credit towards the Biological Sciences major. Students are allowed up to 16 credit hours of independent study coursework, which includes BIOS 399, toward their Bachelor’s degree (not exceeding 8 hours within a single department).*

**WRITING YOUR PROPOSAL**

The proposal that is attached to the application, should be written in a scientific fashion and show include the following components:

1) Brief review of literature, which means that in-text citations and an accompanying list of references must be included.
2) Hypothesis or research question that will be tested in the semester.
3) Methodology that will be used to test the hypothesis. This should include the use of relevant statistical analysis.

**WRITING A DEFERRAL NOTICE**

The Deferral Notice should be written in the style of a grant update that provides useful information about the status of the project. Be sure to include the following components:

1) Reintroduction to the research question and hypothesis.
2) Discussion of progress made during the first semester.
3) Rough outline, but written in sentences, of the experiments that are left to complete.

**WRITING YOUR RESEARCH PAPER**

The final research paper for BIOS 399 should be written in the style of a peer-reviewed journal article. In order to receive credit for BIOS 399, a student must submit a paper with the following components:

1) **Cover Sheet** – Complete the **Cover Sheet** and have your faculty mentor sign off on your final paper before submitting to the department.
2) **Introduction** – Briefly describe the scientific problem and highlight relevant findings in the field of study. Succinctly link your project’s findings to the scientific problem and previous findings. This section needs to include in-text citations that are formally cited at the end of the paper (see References).
3) **Materials and Methods** – Provide useful descriptions of the protocols and materials used during your experiments. Remember, another scientist should be able to roughly use this section to replicate your findings.
4) **Results** – Using figures and/or tables, you should summarize the results of your project. You should plan on using statistical methods and referencing specific figures or tables in the text. The Results section must contain words, as well as figures and/or tables!
5) **Discussion** – Review the importance of your findings and place them in the context of previous knowledge. Extrapolate the significance of your findings to future experiments and larger questions.
6) **References** – Provide a full list of references that go along with your in-text citations. You should expect to have **at least** 10 references. Please use one, consistent type of citation formatting. As a rule of thumb, most references that you use should have been published within the last 10 years.

**Omission of any of these components will result in an Incomplete or Unsatisfactory grade.**

**Formatting Your Research Paper**
The length and content of the research paper is ultimately decided upon by the student and the faculty mentor; however, the department will look for the following standard formatting for peer-reviewed journal articles and grants:

- Font: Arial, size 11
- Margins: 1” on all sides
- Spacing: 1.15” *maximum*
- 5 pages *minimum* (not including figures, tables, and references)

**Recommended Reading**

**CONTACT INFORMATION**
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