

## BIOL 4590: Research Project Lab Syllabus

SECTION, TERM, YEAR (3 credit hours)

Lecture: BUILDING AND ROOM, DAY, TIME

Lab: BUILDING AND ROOM, DAY, TIME

Instructor: NAME, CONTACT INFO

Teaching assistant: NAME, CONTACT INFO

**Course description:** Students will gain experience in designing, implementing, and communicating a biology research project, and practical training in modern approaches for biological research. This section will have a scientific theme of <INSERT THEME & DESCRIPTION HERE>.

BIOL 4590 is a 3-credit lab-based course. BIOL 4450 (Senior Seminar) is a co-requisite for BIOL 4590 because students will present their research from BIOL 4590 in Senior Seminar. Students enrolled in BIOL 4590 can sign up for any section of BIOL 4450 as long as it occurs during the same semester.

Because this is a lab-based course, attendance and active participation are required. We expect absences to be rare, and each unexcused lab absence will lower your final grade by 5%. Examples of excusable absences include documented illness, death in the family, accident, and sanctioned Institute events. If you know that you are going to be absent from a lab, you must let the instructor know ahead of time. Unexcused absences from lecture sessions will lower the course participation grade.

**Office hours:** PROVIDE HOURS OR STATE BY APPOINTMENT

**Lab essentials:** INCLUDE SAFETY EQUIPMENT (LAB COATS), NOTEBOOK, TEXT

**REQUIRED or OPTIONAL text:** Writing Papers in the Biological Sciences by Victoria E. McMillan (4<sup>th</sup> edition), Bedford/St.Martin's, Boston/NY, 2006. Approx. \$30.

**Lab safety:** Georgia Tech has a strict policy regarding appropriate clothing in laboratories where chemicals and organisms are used or manipulated. Students not conforming with the following requirements will be asked to leave the lab to acquire appropriate clothing. In the laboratory, students must wear

- 1) **Long pants.**
- 2) **Close-toed shoes** that cover the sides and top of the foot.
- 3) **Lab coats**, when working at the bench. Lab coats must be 100% cotton and cover the wearer to the knees. Students are responsible for keeping their lab coats in good condition and reasonably clean so as to not create a hazard.
- 4) **Safety glasses**, when working at the bench. Safety glasses must have side shields for splash protection and conform to the wearer's face. Glasses must be worn over prescription glasses and contact lenses. Georgia Tech Biology provides safety glasses for student use in the lab. Safety glasses prevent eye exposure to liquid reagents and breakables, as well as dangerous substances such as bacteria, toxins, acids or UV light.

**Evaluation** is based on student research and the ability to communicate that research in writing:

Research portion (evidence that research is being conducted effectively) 40–60%

INSTRUCTOR SHOULD SPECIFY HERE WHAT ELEMENTS THIS INCLUDES, THEIR WEIGHT IN THE FINAL GRADE, AND HOW THEY WILL BE ASSESSED:

**ATTENDANCE (HOURS ON TASK), PARTICIPATION, NOTEBOOKS, READING ASSESSMENT, QUIZZES, ETC.**

Scientific writing portion (evidence that student can communicate research) 40–60%

**SHOULD INCLUDE (3): EXPERIMENT PROPOSAL, MANUSCRIPT DRAFT FOR FEEDBACK, FINAL MANUSCRIPT. THE THREE WRITING ASSESSMENTS CAN BE BROKEN INTO SMALLER UNITS TO PROVIDE ADDITIONAL FEEDBACK IF DESIRED.**

**Proposals** consist of plans of the project to be conducted. If working in a group, each group of students will submit a single proposal for their project that is approved by all members of the group. The proposal (1-2 page single-spaced, 12-point font) should include: a title, introductory background and justification, hypotheses, experimental design, data analysis, statement of expected results, and how the results relate to the introduction. In addition, the proposal should cite the essential literature in-text, and include a journal-style literature cited section (not included in the page limit). **DUE IN WEEK ~2-4**

**Preliminary manuscripts** consist of the introduction and methods sections of the manuscript related to the student's research project, written in the style of the journal <**INSERT APPROPRIATE JOURNAL**>. The introduction should be no more than 4 pages (double-spaced, 12-point font) and should include the background, justification, and goals for the research project. Citations should be included in-text and listed at the end of the preliminary manuscript and are not included in the page limit. Feedback from the instructor can then be used to improve the introduction and methods for re-submission as part of the final manuscript. If students are working in groups, each student will write his or her own preliminary manuscript. **DUE IN WEEK ~-9**

**Final manuscripts** are in the style of the journal <**INSERT APPROPRIATE JOURNAL**> and should be no more than 15 pages (double-spaced, 12-point font), plus figures, tables, and citations. The final manuscript must include an abstract, introduction, methods, results, and discussion. Data should be appropriately summarized and provided in tables and/or figures with legends, as modeled in the journal. There is no limit on the number of citations used. Each student will write his or her own final manuscript. **DUE AT BEGINNING OF LAST WEEK OF CLASS**

**Academic Integrity:** Academic dishonesty will not be tolerated. This includes cheating, lying about course matters, plagiarism, stealing classroom materials, or helping others commit a violation of the Honor Code. Students are reminded of the obligations and expectations associated with the Georgia Tech Academic Honor Code and Student Code of Conduct, available online at [www.honor.gatech.edu](http://www.honor.gatech.edu). While students will collaborate in performing the experiments and collecting the data, each student is expected to write his or her own notebooks and manuscripts, including creating his or her own tables and figures. Plagiarism includes reprinting the words or ideas of others without citation. As direct quotes are seldom used in scientific writing, you are expected to rephrase the words of others and provide the citation. If this is unclear, please ask your instructor or TAs for help as you write before turning in your assignment.

**Learning Accommodations:** If needed, we will make classroom accommodations for students with disabilities. These accommodations must be arranged in advance and in accordance with the ADAPTS office (<http://www.adapts.gatech.edu>).