**Expectations for Biology 299/399: Directed Study**

Dr. Kristi Hannam

A directed study (Biol 299/399) provides an opportunity for students to work on a research question in biology under the supervision of a faculty member. In my laboratory, a directed study may take a variety of forms: a reading and review of the literature culminating in the production of a research proposal, the collection and analysis of field data, or the synthesis and analysis of data collected by others to test hypotheses and identify patterns. I will work with you to identify and define a project for your directed study. I will help you learn the techniques required for your project (or point you to appropriate resources if the techniques are new to me as well). We will generally work together to design sampling strategies and identify appropriate analyses for your data. Ideally, you will grow to work more independently over the course of your project.

**Expected time commitment**

For a 1-credit directed study, I expect you to be engaged in lab work (or comparable activities like data analysis or field data collection) for a minimum of 3 hours a week, plus one additional hour in related supplementary activities like reading relevant literature, writing, organizing laboratory notes, entering data, etc. (A 2-credit directed study requires twice the time commitment as 1-credit.) This commitment is expected to be maintained over at least 13 weeks of the 14-week semester. However, the effort may be concentrated more in some weeks than others depending on other class and extracurricular commitments.

**Expectations for conduct, commitment, and accountability**

* You will keep track of your time in lab and lab-related activities on a Google spreadsheet that is updated weekly.
* You will write a brief summary of your progress every week in a Google document accessible to me. This summary should briefly describe what you accomplished during the week and your plans for the next week. You can also use it to express any concerns about your project. We will plan to meet at least bi-weekly face-to-face to review your progress and address any issues you describe.
* You will read carefully all emails from me and respond in a timely manner. I should not have to remind you to log your hours and submit weekly summaries.
* You should show up on time and prepared for meetings (either individual meetings or group meetings).
* You should keep accurate and detailed records of all lab activities (or data analysis methods) in a laboratory notebook. Be prepared to surrender this notebook (or prepare a copy of it) when you complete your research – it will remain a resource for the lab for future students.
* You will carefully follow all field protocols and rules for working in the lab.
* You will NOT go out to an off-campus field site alone – take a buddy with you, either another student from the lab or a roommate or friend. This is for your safety.
* When going to an off-campus field site without Dr. Hannam, send a text message to 585-447-1419 both when you leave campus AND when you return.
* In case of emergency, on campus or off campus, ALWAYS call 911 first, then if it is safe, contact Dr. Hannam.
* You will pick up after yourself, and return equipment to its proper place after use so it is accessible and available to others that may need it. You will use the sign-out form for equipment that requires that.
* You will respect the needs of other research students to share use of equipment, work areas, and the lab computer.

**Expectations for carrying out your project**

* You will read all assigned articles, prepare a written summary of each, and come to meetings prepared to discuss them.
* If you are assigned to create a research proposal, you will be responsible for sharing drafts with me well before the final proposal due date. You can expect help from me in developing the methods section, but in your drafts you are expected to show a strong effort in writing all sections of the proposal.
* You will take careful notes and be attentive when learning new methods.
* You should not hesitate to ask questions if you are unsure about a method, but aim to be able to perform it independently in the future.
* You should understand the principles behind each type of data you are collecting or in your analyses.
* Before departing for the field, think ahead, make a list and make sure you have all the equipment and materials, and that no one else is scheduled to use the equipment you need.
* If you fear a mistake has been made that could compromise the quality of your data, you should record it in your notebook and make me aware of the potential problem as soon as possible.
* Your field/lab notebook should be a detailed, relatively neat, and accurate reflection of your activities.
* Data in digital form should be saved in appropriate locations on the lab computer, and backed up on the lab external hard drive with descriptive filenames. Backups should be made every 2 weeks at a minimum, or for sound data collected in the field, within 48 hours of collection. Sound data also requires entry of each file in the lab database on the shared Google Drive.
* You should show initiative in thinking of ways to analyze your data, and then consult with me.
* You should organize all digital forms of your work (raw data, analyzed data, R script files, etc.), keep a record of what each file represents in a single excel or word-based document, and make it available to me when you are done with your project.
* You should provide well-written and thorough summaries of your progress and findings when requested.
* You should prepare to meet deadlines (grant and abstract submissions, poster or talk preparation) in a timely manner; do not wait until the last minute to submit work for feedback from me.

**Intellectual engagement**

* You should understand the overall goals of your own project and how they may relate to the lab's work in general. This is typically demonstrated first in a research proposal that you write.
* You should do all suggested reading, and perform literature searches on your own to find other primary literature relevant to your project. You should be able to synthesize information from the literature and relate it to your research objectives and/or findings.
* You should be able to write about your project in a professional scientific style using the language appropriate to your field.
* You should be able to speak clearly about your project to others unfamiliar with the system and methods.
* You should plan to present your research at GREAT Day and/or some other research conference.
* If required to obtain funding, you should write an effective and articulate research proposal.
* You should be able to reflect thoughtfully on your research experience and describe in writing whether it met your expectations, what you learned from it, and what you would change if you could.

**Evaluation**

Please be aware that students who do research in my lab for credit will earn BIOL 299 credit and will be graded on a Satisfactory/Unsatisfactory basis for the first semester in the lab (this S/U credit does NOT count toward the Biology major elective credits). If we agree to continue working together after that first semester, you can earn 399 credit, and it will be Dr. Hannam’s discretion whether that credit will be graded as S/U or on a regular letter grade scale.

Your grade for an S/U BIOL 299 or BIOL399 will be graded on the basis of how well you fulfill the expectations outlined above, the effort you invest, and the quality of the products of your work.

S: Student has exhibited *at least* satisfactory effort, and meets most of the criteria outlined above.

U: Student has exhibited marginal effort and participation during the semester or less, and fails to meet at least half of the criteria outlined above.

Your grade for the directed study will be determined by how well you fulfill the expectations outlined above, the effort you invest in your project, and the quality of the products of your work. Particular products required for your directed study will be specified in the directed study forms we prepare at the beginning of each term.

A: Student has exhibited outstanding effort and meets and exceeds all the expectations outlined above. Shows independence of thought, takes initiative in approach to project, and is able to communicate well the goals and results of the project.

B: Student has exhibited good effort and meets most of the criteria outlined above, but does not quite show sufficient independent thinking or competence in communication to warrant a grade of A.

C: Student has exhibited satisfactory effort but failed to achieve some of the criteria above and shows sufficient engagement in the research.

D: Student has exhibited marginal participation in the project during the semester.

E: Student failed to achieve anything substantial during the semester.