

BIOLOGY DEPARTMENT POLICY FOR INDEPENDENT STUDY

Biology 499

Description: A research project designed by a student in consultation with a faculty member at Lewis & Clark and carried out at Lewis & Clark, in the field, or at other research institutions in the metropolitan area.

Credit: 2-4 Semester hours per semester. Graded. Time devoted to the project should be comparable to that in regular courses, that is about 3 hours per week of work and preparation for each semester hour of credit earned. You should negotiate with your faculty mentor what level of effort you will devote to your independent study project and how much credit you should receive. Up to 4 credits of Independent Study may be applied towards a biology major, but they do not substitute for an upper division lecture or lab course.

Eligibility: Available to students who have demonstrated initiative and ability in biology class and laboratory work at Lewis & Clark.

Registering: The course can only be added to your schedule in a two-step process during the add/drop period. First, prepare and submit a written research proposal that must be approved by the biology department faculty. Following approval of the proposal, an electronic form must then be submitted to the Registrar's office and approved by the Lewis & Clark faculty member mentoring your research project.

1. Prior to registering for Independent Study, you must select and confer with a faculty mentor and submit a written research proposal for consideration by the entire biology department faculty. The proposal can be brief (about 2-3 typewritten pages, double spaced), but needs to demonstrate that you have done enough planning to insure a reasonable chance of success. To do this, your proposal should include a clear statement of the hypothesis that you plan to test, a review of the scientific background on the topic, a list of current references to the biological literature, a description of the research activities to be carried out, and a statement of what resources are necessary for the project (e.g., funding, special equipment, accessibility to field sites, etc.). You should work closely with your faculty mentor in developing your proposal.

Because the whole department faculty will require up to 5 days to read and evaluate your proposal, you should give the final electronic version of the proposal to your Lewis & Clark faculty mentor no later than the last day of the first week of classes. Your faculty mentor will then circulate your proposal to the entire biology department faculty for approval. Failure to plan ahead and submit your proposal by this deadline may result in your being disappointed because you are unable to register for independent study by the final Add Date.

2. While your proposal is being reviewed by the biology department, fill out and submit the Independent/Directed Study Learning Agreement electronic form located on the Registrar's website. Your faculty mentor will then complete the form and submit it to the Registrar after the research proposal has been approved by the biology department. At this point the course will be added to your schedule.

The form contains a series of questions that you must answer, shown below. Here are some tips about how to answer them:

1. *List your primary learning objectives. Describe what you hope to accomplish and learn from this experience.* (explain your research question and hypotheses, and what you hope to gain from the experience)
2. *Provide a complete description outlining your specific responsibilities, projects, and/or tasks.* (this should be a brief summary of your proposed research plan)
3. *Describe the type and frequency of the feedback you will receive* (weekly meetings with your mentor? Discuss with them). *When and how will your performance be evaluated?* (final end-of-semester paper? Oral presentation to department?)
4. *How will you demonstrate to your faculty sponsor what you have learned. Be specific. Also include the date when work is due. It is recommended that for a written product, the length be commensurate with the amount of credit being granted.* (It is typical for independent studies in biology to culminate either with a written report or with an oral presentation to the entire department. Discuss these options with your mentor.)
5. *Describe your arrangements for contact with your faculty sponsor* (we recommend weekly in-person meetings, see below).

Product: Students will keep a laboratory/field notebook with chronological entries of work in progress, including brief notes on relevant readings in the scientific literature. Students are expected to meet at least weekly with their faculty mentor to give regular oral progress reports and to plan their next experiments. At the conclusion of the term, the student must submit a final report in the form a scientific paper or a formal research presentation. This should include an Introduction that presents the question you are addressing and places it in the context of previous work in the area. There should then be a section describing the Experimental Methods used in the investigation. The main emphasis of the report should be on presentation of the Results and on your Discussion of how the Results relate to the question that you posed. Finally, there should be a bibliography (or Reference section) listing the scientific literature that is relevant to your study.

Grading: As indicated above, students who are doing Independent Study projects are expected to meet at least weekly with their faculty mentor to discuss their progress. They are also expected to work on the project diligently for the appropriate number of hours per week, as determined by the amount of credit for which they are registered. You will be judged on whether you meet these expectations and on the quality of your research report or presentation.