

PROGRAM IN BIOLOGY POLICIES FOR UNDERGRADUATE RESEARCH

I. General Policies

1. Students are encouraged to pursue independent research with faculty members in the Departments of EEB and MCDB. Under appropriate conditions, credit for this work can be included as part of the student's concentration program. It is also possible to receive credit for research done under the direction of a faculty member in another department or unit of the University, as long as a member of the Department of EEB or MCDB serves as a co-sponsor (see section II, Research work in a lab outside the Departments of EEB and MCDB).
2. Independent research is defined as a lab, field, or modeling project in which the student will have a say in the design, conduct, and interpretation of experiments.
 - It is expected that the student will meet regularly with his or her mentor, and will also gain exposure to the scientific literature of the field.
 - It is recognized that many research projects will begin with a semester during which the student is mainly learning experimental techniques. It is appropriate for the student to receive credit for EEB or MCDB 300 during this term, as long as the project is structured in a way that will lead to independence.
3. **Library research projects and lab projects that are strictly technical training experience or clinical studies do not qualify for credit as undergraduate research.** Faculty members should not use the course numbers EEB or MCDB 300 or 400 for such work.
 - Students may receive general degree credit for these types of studies by registering for Biology 200 (Undergraduate Tutorial).
 - Up to 2 credits of Biology 200 can be counted toward any of the concentrations except the CMB and Microbiology concentrations (i.e., students who are CMB or Microbiology concentrators who take Bio 200 cannot apply these credits toward their concentration).
4. The table indicates the maximum number of independent course credits that may count toward a concentration, and the appropriate course students should register for depending on the concentration.

| Concentration | Maximum Credits | Course numbers |
|---|-----------------|--|
| Biology, General Biology, and Plant Biology | 3 | Biology 200 (see # 3 above), or EEB 300 or 400, or MCDB 300 or 400 |
| Cellular and Molecular Biology | 3 | MCDB 400 |
| Microbiology | 3 | EEB 400, or MCDB 400, or Micro 399 |
| Ecology and Evolutionary Biology | 6 | Biology 200 (see # 3 above), or EEB 300 or 400 |
| Neuroscience | 3 | MCDB 300 or 400, or Psych 331, or Psych 326, or Psych 422 |

5. Independent research credit can be used to fulfill a laboratory requirement, or in some concentrations an advanced elective requirement. The table below indicates the number of credits a student must take to fulfill a particular requirement, the specific requirement that the independent research credits fulfill, and the specific course numbers that students should register for depending on their concentration (e.g., a CMB concentrator would have to take 3 credits of MCDB 400 to fulfill an advanced laboratory requirement).

| Concentration | Credits | Requirement | Course numbers |
|---|----------------|--|--|
| Biology, General Biology, and Plant Biology | 3 | Lab, or advanced elective | EEB 300 or 400, or MCDB 300 or 400 |
| Cellular and Molecular Biology | 3 | Lab, or advanced elective | MCDB 400 |
| Microbiology | 3 | Advanced elective | EEB 400, or MCDB 400, or or Micro 399 |
| Ecology and Evolutionary Biology | 3 | Lab, or independent research requirement | EEB 300 or 400 |
| Neuroscience | 2-3* | Lab | MCDB 300 or 400, or Psych 331, or Psych 326, or Psych 422 * A student who elects MCDB 300 or 400 has the option of taking 2 credits to fulfill the requirement; otherwise the student must take 3 credits from one of the approved Psych courses. |

Note: Three credits of independent research credit must be completed in one term to fulfill a requirement, with the exception of Neuroscience (see above table).

Note: • Students can register for EEB or MCDB 300 or 400 for multiple terms, up to a maximum of 9 credits; however, only 3 credits will be applied toward the concentration, with the exception of the EEB concentration (see # 4). • If a student elects to take more than 3 credits of independent research, the credits will count towards the student's general pool of 120 credits required to graduate from LS&A.

6. To be eligible for EEB or MCDB 300, a student must have completed at least 10 credits of biology courses and have a concentration GPA of at least 3.0. Typically students will register for EEB or MCDB 300 for 3 credit hours. It is expected that this research will require 10-15 hours per week.
7. To be eligible for EEB or MCDB 400, a student must have completed at least 13 credits of biology courses, and have a concentration GPA of at least 3.0. Students should have completed at least one term of EEB or MCDB 300 before registering for EEB or MCDB 400. It is expected that this research will require 10-15 hours per week.
8. All research courses that will be used as part of a concentration must be assigned letter grades.

II. Research work in a lab outside of the Departments of EEB and MCDB

1. Students wishing to receive credit toward a concentration for research done under the direction of a faculty member in another department or unit of the University must obtain approval from a faculty member in the Departments of EEB or MCDB who agrees to serve as co-sponsor **before** beginning the project. (*Note:* Microbiology concentrators who elect to take Micro 399 do not need to find a co-sponsor, nor does a Neuroscience concentrator who elects to take Psych 331, 326, or 422)
2. Faculty members in the Department of EEB or MCDB should only agree to co-sponsor a project if they are familiar with the experimental methods that will be used in the study.
3. A prospective co-sponsor will verify that the proposed research meets all of the criteria required of research carried out within the Departments. To facilitate reaching a judgment on this question:
 - a) **The student must provide a one-page (double spaced) research proposal to the prospective co-sponsor** who will use this proposal to decide whether the proposed research meets the departmental criteria for independent research in EEB or MCDB. • Furthermore, the co-sponsor will verify that the research is biological in nature. • Work that the co-sponsor judges to be purely applied training in biomedical techniques or clinical studies are not eligible for EEB or MCDB research credit. An example of a course that is not eligible for such credit is Surgery 499.
 - b) The co-sponsor will sign the co-sponsorship form. This form will verify that:
 - i) the project will allow the student to have a say in the design, conduct, and interpretation of experiments, and that it is not strictly a technical exercise.
 - ii) he or she will meet regularly with the student to discuss the project.
4. The EEB or MCDB Department co-sponsor will indicate approval of the project by signing the co-sponsorship form. The student will then return the form with signatures from the sponsor (i.e., the faculty member the student is working with outside the department or unit) and the co-sponsor, along with a copy of the student's research proposal to the Program in Biology Office. A copy of the student's research proposal and the co-sponsorship form will be kept on file. **Students must turn in both the one-page proposal and the required signatures before they can be granted an override to register for EEB or MCDB independent research credits.**
5. If an external unit or department offers its own undergraduate research course, the student may elect it instead of EEB or MCDB 300 or 400. However, to be eligible for concentration credit, the co-sponsorship rules described in 1-4 must be met (see # 1, Research work in a lab outside of the Departments of EEB and MCDB for exceptions). If this option is chosen, the course will count as a cognate course for those concentrations that accept cognate courses as part of the concentration (see individual concentration requirement to determine if a cognate course can count toward the concentration). Students should be aware that **no more than 20 credits of non-LS&A work can be counted toward a degree in the College of LS&A.**
6. A faculty member in the Department of EEB or MCDB who is serving as co-sponsor of research done by a student in another department has the option of allowing the student to register for EEB or MCDB 300 or 400 under his or her independent study number. However,

they are under no obligation to do so if they do not feel they will be able to sufficiently monitor the project. • Faculty who elect this option will usually require a written progress report from the student and from the research mentor prior to turning in a grade. • Students are reminded that if an “incomplete” is turned in because a progress report is not received, the grade will lapse to an “E” if work is not completed by the 4th week of the next Fall or Winter Term in which the student is enrolled.

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PROGRAM IN BIOLOGY UNDERGRADUATE RESEARCH CO-SPONSORSHIP FORM

- Independent research is defined as a lab, field, or modeling project in which the student will have a say in the design, carrying out, and interpretation of experiments. It is expected that the student will meet regularly with his or her mentor, and will also gain exposure to the scientific literature of the field. It is recognized that many research projects will begin with a semester during which the student is mainly learning experimental techniques. Experiences that are strictly technical or clinical are not eligible for independent research credit, but it is appropriate for the student to receive credit for independent research during a term he or she is mainly learning techniques, as long as the project is structured in a way that will eventually lead to independence. Students can register for Biology 200, EEB or MCDB 300, or EEB or MCDB 400, depending on their prior experience. **Students should read the Policies for Independent Research thoroughly to determine the exact course number and the number of credits that can be used to fulfill requirements in the various concentrations offered through the Program in Biology.**
- A student wishing to receive credit toward his or her concentration for research done under the direction of a faculty member in another department or unit of the University must obtain approval from a faculty member in the Department of EEB or MCDB, who agrees to serve as co-sponsor **before** beginning the project. A co-sponsor is needed whether or not the student will register for EEB or MCDB 300 or 400, or for a course in another department.
- A prospective co-sponsor will verify that the proposed research meets all of the criteria required of research carried out within the Department of EEB or MCDB. To facilitate reaching a judgment on this question, **the student must give their co-sponsor a one-page (double spaced) research proposal.** The faculty co-sponsor will use this proposal to decide if the proposed research meets the departmental criteria for independent research. In particular, the co-sponsor will be responsible for deciding
 - the appropriateness of the nature of the research, and
 - that the project will help the student develop independence, and is not simply a technical training exercise.

Student Name (printed) _____

Student UMID # _____ Course & Section # _____

I have read the above policies and agree that the experience that I will provide in my lab meets them.

Sponsor Name _____

Signature _____ Date _____

I have read the student's research proposal, and agree to co-sponsor the project. I have also made arrangements with the sponsor as to how registration and grading will be handled.

Co-sponsor Name _____

Signature _____