

## Biology Senior Thesis

One of the options for biology majors is to add an **Honors Research Emphasis** to the Biology BS or Biology BA degree, including the Biomedical or Ecology, Evolution & Organismal Biology emphases.

### Process:

1. To begin the process, the student must find a thesis/research advisor, and then complete a declaration of curriculum form to add the emphasis to their degree.
2. Completion of the Honors Research Emphasis requires completion of a minimum of 4 credits of research (BIOL 3190) over the course of two or more semesters; any further research credits count as university-elective credits.
3. In addition, the student must register for one credit of senior thesis (BIOL 3191) and write a formal senior thesis, with help from their thesis/research advisor, according to the guidelines that follow in fulfillment of that credit.
4. Once the thesis has been completed and approved by the thesis committee, the thesis should be delivered to the department head. This should be completed by the last day of finals. The thesis mentor is responsible for verifying this is done by the student before issuing a grade for BIOL 3191. Traditionally, we have kept a bound copy (Cerlox is fine) of every undergraduate student thesis in the Biology office.

### Recognition:

1. The Biology Honors Research Emphasis is noted on the student's transcript.
2. The title of the thesis can be added to the student's transcript and can be printed in the program for Commencement. For this to happen, the student and faculty advisor must provide the department head or secretary with the thesis title by April 1 for spring commencement or by November 1 for fall commencement.

### Special circumstances:

1. Students who are participating in the University Honors program have sometimes been allowed to use their Biology Senior Thesis work to meet University Honors requirements. Students are encouraged to work with the University Honors program to explore this option.
2. *Off-campus research.* If the research project is to be carried out off-campus, the student should contact a UNI Biology department faculty member regarding the possibility of doing honors research **prior to** the off-campus experience. The off-campus faculty supervisor or mentor **must** be in contact with **both** the student and the UNI faculty member regarding the proposed project. Both on-campus and off-campus mentors should discuss the progress of the project during the student's time off campus. Additionally, the student must sign up for at least 1 hour of research credit (BIOL 3190) **at UNI** with the UNI faculty advisor, prior to writing the formal thesis under BIOL 3191 (Senior thesis).

## Role of the Thesis Committee

Each student, in consultation with their advisor, must form a thesis committee consisting of the thesis advisor and at least one other member of the faculty. The student must prepare and present a formal research proposal to the committee, toward the beginning of the program. All members of the committee must read and approve the final senior thesis.

As stated above, if a thesis appears to be on track for completion before a student's graduation date, the thesis advisor should share the title of the thesis with the secretary or department head so that the thesis title can be transmitted to the Office of the Registrar for inclusion in the university Commencement program. Also, the thesis advisor is responsible for ensuring that the thesis is properly copied and delivered to the department office before issuing a grade for BIOL 3191.

### **Requirements for Biology Honors Senior Thesis**

1. Generally follow the thesis format provided by the Graduate College. This covers margins, references and other format information. There are small variations from institution to institution, but every institution has similar requirements. Having written a formal thesis will be an asset when the big one comes along.
2. Some variations on the UNI thesis format guidelines are acceptable. Graphics should be of high quality. Page numbers may be sequential throughout, or they may be arranged by chapter. Any citation format from a scientific journal, or the one specified in the Graduate College manual, is acceptable. Any deviations from these guidelines should be deliberate, logical, and consistent, not random or accidental.
3. Provide the advisor and the biology-department head with either a PDF copy of the thesis or a bound (plastic comb is fine) copies of the thesis. The department will retain copies of the theses for future reference by students and advisors.
4. It is the responsibility of the advisor, the student, and the thesis committee to assure the scientific and technical quality of the thesis. The thesis will be signed by the advisor, thesis committee, and the department head.
5. The student is encouraged to give a public presentation (such as at a scientific meeting). This can be a poster presentation.

### **Senior Thesis: The Parts**

0. In this order: title page, signature page, abstract, acknowledgments, table of contents, list of tables, list of figures. All except for the title page should be numbered using lower case roman numerals. The body of the text, etc., will then start with page 1.
1. Introduction / Literature Review. This section provides background information for the statement of hypothesis or objectives of the research. (What are you doing and why is it biologically important?). In this section, you must include a brief survey of the literature (chiefly primary literature) that relates directly to the work you are undertaking. (What have others done before you and how does the research you do fit in?)
2. Materials and Methods. This should be in great detail, so that another student can take up where you left off. Theses often have more detail than scientific papers. Methods for data analysis should be included. (What did you do and how did you do it?)
3. Results. This should present graphically and in text form your results, similar to the way results are presented in a scientific paper. Statistical results are often placed here. (What did you find out?)

4. Discussion. This section should relate your results to each other, and to the work of others. It should point out what conclusions can be made (or not made) from your results, and how they answer the questions proposed in the introduction. A final paragraph with the major conclusions and proposed future research directions may be included. (What does it all mean?)

5. Literature Cited. Use a standard format (CBE), as specified in the Graduate College guidelines, or another from the best journals in the field. Be consistent throughout!

6. Appendices with data and methodological details (optional). One of the hardest things to do after a student has left is find all the data and what it means. This is the place to store data forever. A key thing is to have all columns, etc. clearly labeled as to content and units.

7. Figures and tables can be embedded in the text or on following pages, as appropriate. It is useful to keep them separate until the final printing.