

Frequently Asked Questions about Bard Biology Senior Project

This document is designed to answer several common questions that students have when planning for and embarking on the Senior Project experience. Like all things at Bard, your experience will be unique based specifics to your adviser, project, and overall lab/field needs. However, this sheet should provide many of the answers to logistical questions. As more come up, don't hesitate to ask!

How do I come up with a project idea/topic?

This is probably the first question most students have when they begin the process of thinking about the senior project. The answer is that senior project ideas/topics/hypotheses are developed over time between a student and their senior project advisor. This conversation often begins in the semester before starting senior project, by discussing current research the faculty member may be working on, previous senior projects that have developed into new questions to be answered, as well as considering what the student is interested in pursuing. Faculty have been through this process before, and have a good idea of the type of questions that can be addressed in the time constraints of the senior project. Faculty are also able to help students decide what an appropriate sized question might be, as well as what resources/restrictions may be applicable to the project. The first semester of the senior project experience is typically when students begin learning techniques for the field or lab, gathering pilot data, and writing up the introduction.

What is the format of the Biology Senior Project?

The components of the senior project include:

- a. Execution of laboratory/field based experiments, model building and analysis, or other novel analysis of data
- b. Written senior project document, in the form of an extended primary research paper (details below)
- c. Poster production and presentation at the annual SM&C poster session
- d. Midway and Final Board meetings with your advisor and 2 other faculty members

What are some major steps in the Biology Senior Project Process?

1. Identify a general question or topic that you are interested in focusing on (with guidance, help, and suggestions from your senior project advisor) ***[Timeline- end of semester prior to beginning senior project, at beginning of Senior Project I semester]***
2. Formulate a hypothesis/testable question (one that you can answer within the confines of Bard facilities and a two-semester academic year), one that pushes the field forward, not just repeats experiments already done. ***[Timeline- beginning of Senior Project I semester]***
3. Do the appropriate background research and reading to be knowledgeable of the topic; typically draft of introduction is written during the first semester. ***[Timeline- beginning of Senior Project I semester]***
4. Design experiments, including controls, variables, number of times repeated, etc. ***[Timeline- beginning of Senior Project I semester]***
5. Write up your results in the form of a (long!) primary scientific paper for a scientific journal including:

- Abstract [*Writing timeline: after completion of experiments; writing*]
 - Introduction (ranging from 15-25 pages- in the format of a scientific review article) [*Writing timeline: first semester, draft*]
 - Materials and Methods [*Writing timeline: during experimental design, pilots; during intersession*]
 - Results [*Writing timeline: during experimental design, pilots; Second semester*]
 - Figures/Figure legends [*Writing timeline: during experimental design, pilots; Suggestion - make Powerpoint document to put 1 figure per page, as data is generated*]
 - Discussion [*Writing timeline: after completion of experiments*]
 - Conclusion [*Writing timeline: after completion of experiments*]
 - In text citations (in the proper format—see adviser for preferences)
 - Bibliography
6. Production of poster for presentation at the end of the second semester [*Timeline: Typically due within one week of handing in the senior project*]
 7. Schedule and complete senior project board [*Timeline: Typically occurs within two weeks of handing in the senior project*]

How many experiments/how big of a question can I ask?

A common suggestion is that the scope of a senior project should be the equivalent to one (*maybe two*) figures in a primary research manuscript. This doesn't necessarily mean that you will only have one or two figures in your project, but rather the pilot experiments, repeated assays, and troubleshooting the work can be included, and the final data, with appropriate replicates, statistical analysis, etc. will be what you would find in one final, polished figure in a manuscript.

When do I start working in the field/lab on my experiments?

This is highly project and student specific. You will begin meeting weekly (likely!) with your senior project adviser in the first week or two of the first semester of your project. You may begin earlier, but most students are engaged in pilot experiments or studies by the first week of October (just before fall break).

How much time should I be spending on Senior Project?

Senior project receives 4 credit hours per semester (with all 8 awarded following completion of senior project). The expectation is that you will be working on senior project between 16-20 hours per week. There will be some weeks that this work will take place primarily in the form of reading papers and writing text. Other weeks will have much more time devoted to lab/field work. To make consistent progress, you should try and get some writing completed each week, and our weekly writing meetings should help with that goal. The grade for senior project is based on the quality of the work, the effort, writing of the final project, performance during the board and poster session, as well as consistency of effort. A student who puts off all work to February (or later) will not likely earn as high of a grade as one who works diligently throughout the 2 semesters.

How do I know where my workspace is, or gain access to the lab/facilities?

Your senior project adviser will work with all members of their research group to assign space, and will give you a key card access form, or something like it, so you will have access to the facilities you'll need.

How often do I meet with my:

- a. **Adviser?** Typically once per week, often 30 min.
- b. **Lab Group?** Not all advisers meet as a group, however many do. Often this is a once a week for 1 hour, where writing details are covered.
- c. **Project board?** Formally, typically twice. Once for your midway (Early weeks of Second Semester), and Final board 1-2 weeks after submission of senior project. You should feel free to check in with board members to answer questions, sort through experimental details, and how to analyze results throughout the year.

How do I select my board?

The senior project board is composed of your adviser and 2 other biology faculty. This decision is one that you make suggestions on, but the adviser has the final say as to the make-up of the senior project board. This is due to the adviser having insight into who will be able to best help you make the most of the senior project experience. For some projects, having a faculty member from another program would be ideal, and can be added as the adviser sees fit.

When do I know who is on my board?

This is determined by late September.

When should I finish up my experiments/lab/field work?

This differs from adviser to adviser. One rule of thumb is to allow for approximately 4-5 weeks prior to submission of the project for writing. Writing of the introduction can occur in semester 1 of the senior project, and writing of materials and methods can also be done over time.

What are the deadlines that I have to be aware of and meet?

- a) Provide photo and synopsis of project for biology and senior posters (**LATE SEPTEMBER**)
- b) January - Possible project work *Please let adviser know by 2nd week of November if you will need housing during January on campus*
- c) Schedule board meetings (Typically conducted the first week of Spring Semester)
*Be sure and schedule your **FINAL BOARD** during your midway!*

d) *Wednesday May 2nd by 5 PM- SENIOR PROJECTS ARE DUE**

* Senior project due date is decided by the college. This is not a movable deadline, and extensions are not granted by faculty. Permission to submit a Project later than the due date must be secured from the Faculty Executive Committee not later than one week prior to the due date, and must include the written support of the adviser and an explanation of the reasons for the request. Late submission of the Project without permission will result in a lowering of the grade.

- e) May 2016- Prepare poster for SM&C Division poster session

- f) May 2016- Have final board meeting
- g) Optional opportunity to present a poster session for the Hudson Valley Life Sciences Symposium (TBA- May 2016)
- h) Some students will be asked to give a 15 minute oral presentation on their project during BIO208 in May. Students are selected based on faculty suggestion, as well as presenting a wide type of projects. This is not suggestive of the grade, or the quality of the project. We have many very capable students would give a wonderful talk, and we can only schedule a small number of talks per year.

Where can I get help with writing of my project?

Write early drafts, and often. We recommend peer reviews, either facilitated by the faculty adviser, or informally done. The Learning Commons also has a number of workshops and writing sessions that are extremely helpful to stay on track, or to gain momentum in writing.

Where do I get information on formatting when writing my senior project?

The general

Print Submission Guide: <http://libguides.bard.edu/dc-prep>

Contents:

- Title page - [download template at: <http://www.bard.edu/library/images/dcimages/sproj-template-paginated.docx>]
- Dedication/Acknowledgements
- (Preface, if included)
- Table of contents (list of chapters with their page numbers)
- Introduction
- Body of text
- Footnotes (if these do not appear elsewhere)
- Bibliography

Format

- Use uniform size paper, 8.5 x 11 inches.
- Leave a margin of approximately 1 inch on the left and 1 inch on the right, top, and bottom of the page.
- Double space the body of the text. Ask your adviser whether you should follow the MLA, APA, or CMS recommendations for your citations and bibliography.
- Illustrative material such as graphs, maps, and photographs can be integrated into the text or placed in appendices at the end.
- Number pages consecutively, with Arabic numerals; the first numbered page should be the first page of the text proper. The title page, dedication, and table of contents should not be numbered. (These preliminary pages or any others may be designated with roman numerals if desired.)
- Numbers should appear in the upper right hand corner of the pages, or in the middle of the top margin, without periods or hyphens.
- The final version of your senior project should be carefully proofread for typographical errors, correct grammar, and proper citation. Rely on Merriam-Webster's Collegiate

Dictionary, The MLA Handbook or The Chicago Manual of Style, 14th ed. for all editorial questions.

What do I hand/submit in when I hand in my written senior project?

All projects must be submitted in both an unbound printed copy (1) for the library, and 2 additional copies of your title page. The Biology Program has made arrangements with the Dean's office to accept senior projects as a final PDF, which still must be individually emailed to all board members by 5 pm on May 2nd, 2018. You are still responsible for printing the single unbound copy for the college/library, and you *may* need to print copies for your board. However, in order to officially submit to the program and college, the PDF version on the submission day (via email) is sufficient. You can then deliver the bound, print copies to your board members, should they request them.

You will also need to submit a PDF digital copy for inclusion in the Digital Commons by 5 pm on May 2nd, 2018

PLEASE SPEAK WITH YOUR ADVISER ABOUT THEIR REQUIERMENTS IN SUBMISSION TO THE DIGITAL COMMONS WITH REGARDS TO ON CAMPUS VS OFF CAMPUS ACCESS TO THE PROJECT.

Digital Submission Guide is found on line at the following web site:

<http://libguides.bard.edu/seniorprojectguidelines>

What is factored into my grade (which is for 8 credits, awarded in the second semester)?

Faculty take into account the amount of work you put into the project (e.g. the amount of time you spend per week working on your project), the consistency of work (e.g. you worked on the project both semesters, not just during the last two months of the academic year), the innovation you put into addressing the hypothesis, the quality of the final write up (specifically a full, complete, thorough introduction, a careful results with appropriate analysis applied, a thoughtful and in depth discussion), the performance at the board, and your poster. This grade is discussed by the board, and also is discussed by the program prior to being assigned.

You will receive your grade, and the critre sheet narrative when grades are officially released, NOT at the board.