

Frequently Asked Questions about Bard Biology Senior Projects

This document is designed to answer common questions that students have when embarking on the Senior Project experience. Like all things at Bard, your experience will be unique, based on your interests as well as your adviser and the specific project you develop. However, this document should provide answers to some important logistical questions. You can always ask your academic advisor or one of your biology professors if you have other questions.

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:

1. Execution of laboratory or field research, model building and analysis, or other novel analysis of data
2. A written senior project document, in the form of an extended primary research paper (details below)
3. Production and presentation of a poster at the annual SM&C poster session
4. 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) ***[End of semester prior to beginning senior project, at beginning of SPI semester]***
2. Formulate a hypothesis/testable question (one that you can answer within the confines of Bard facilities and in a two-semester academic year); the question should be novel, pushing the field forward, not just repeating studies that have already been done. ***[Beginning of SPI semester]***

3. Do the appropriate background research and reading to be knowledgeable about the topic; typically draft of 15-page literature review is written during the first semester. **[SPI semester]**
4. Design your study, including controls, variables, number of times repeated, etc. **[Middle of SPI]**
5. Conduct the study, trouble-shooting its design and implementation as needed **[Middle of SPI to early SPII]**
6. Write up your results in the form of a (long!) primary scientific paper for a scientific journal, including:
 - Abstract
 - Literature review and introduction (~15 pages)
 - Materials and Methods
 - Results
 - Figures/Figure legends
 - Discussion
 - In-text citations (in the proper format—see adviser for preferences)
 - Literature cited
7. Production of poster for presentation at the end of the second semester **[Due within one week of handing in the senior project]**
8. Schedule and complete senior project board **[Typically occurs within two weeks of handing in the senior project]**

How many experiments should I do, or how big a question can I ask? A common suggestion is that the scope of a senior project should be the equivalent of 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; you will probably include results from your pilot studies, assays you repeated, and troubleshooting you've done. 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 on my research in the field or lab? This is highly specific to the question you are asking and how you are asking it. You will begin meeting weekly 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 studies by the second month of SPI.

How much time should I be spending on Senior Project? Senior project receives 4 credit hours per semester. 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. Your 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 both semesters.

How do I know where my workspace is, or gain access to the lab and other facilities? Your senior project adviser will assign space, and 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:

- **Adviser?** Typically once per week, often 30 min.
- **Lab Group?** Not all advisers meet as a group, however some do. Often this is a once a week for 1 hour, where writing details are covered.
- **Project board?** Formally, typically twice. Once for your midway, and once for your final board 1-2 weeks after you submit your senior project. You should feel free to check in with board members throughout the year to ask questions, sort through experimental details, and discuss how to analyze results.

How do I select my board? The senior project board is composed of your adviser and two other biology faculty members. You may suggest members, but the adviser has the final say as to the composition of the senior project board. 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 during your SPI semester.

When should I finish up my research? This differs from adviser to adviser. One rule of thumb is to allow for approximately 4-5 weeks for nothing but writing before you submit the final project. Writing of the introduction can occur in SPI, and writing of Methods can also be done over time.

When is the senior project due? The senior project due date is decided by the college, and is typically in early May (or early December, if you are doing a spring-fall project). 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 no later than one week prior to the due date. The request 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.

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. The Learning Commons also has a number of workshops and writing sessions that are extremely helpful for staying on track, or for gaining 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/sprojtemplate- 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)
- Literature cited

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 with both one unbound printed copy for the library and two 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 the day the projects are due. You are still responsible for printing the single unbound copy for the college/library, and you *may* need to print copies for your board. You will also need to submit a PDF digital copy for inclusion in the Digital Commons. The Digital Submission Guide is found on line at the following web site: <http://libguides.bard.edu/seniorprojectguidelines>

What is factored into my grade? 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, careful results with appropriate analysis, 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 crite sheet narrative when grades are officially released, NOT at the board meeting.