

Senior Project Information



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1. Checklist and Timeline for Senior Project.

1. Meet with the Head of the Biology Major Program to discuss ideas
2. Find an appropriate advisor and committee for your project
3. Complete a proposal and have it approved
4. Register for the senior project with your academic advisor
5. Complete a rough draft of the paper, including:
 - a. An introduction
 - b. A review of current literature
 - c. Methods and Materials section
 - d. Results Section
 - e. Discussion Section
 - f. Conclusions Section
 - g. Literature Cited Section
 - h. Optional Bibliography
 - i. Glossary of terms and abbreviations
6. Distribute copies of draft to committee members
7. Edit and complete final paper with:
 - a. Title Page
 - b. Abstract
 - c. Acknowledgments
 - d. Table of Contents
 - e. List of Figures
 - f. List of Tables
 - g. Correct pagination, style, etc.
8. Present senior project to committee & college before last day of classes
9. Distribute copies of final paper to committee members

before final deadline
10. Have one copy each for college office and library

2. Timeline

| | |
|---|---|
| Fall term, junior year | Make mental notes of areas of study that interest you. |
| Winter term, junior year January | Meet with your advisor to discuss possible topics. If you are interested in doing a summer internship or research experience, now is the time to apply. |
| Early spring term, junior year March | Select topic and project advisor. Identify two additional readers: this will be your “committee”. Submit outline of project proposal by April 14 Submit your final proposal by May 5* Proposal must be approved by the committee by May 19*. |
| Summer between Jr and Sr year | Preliminary research for source materials, internship(s). |
| Fall term, senior year | Complete research (lab, field and library). Outline of project write-up due by end of fall term* |
| Winter term, senior year | Write first draft. Submit COMPLETE first draft by the end of winter term* to all in committee. |
| Spring term, senior year | Edit and complete project. Submit final copy at least three weeks prior to graduation date (generally by May 1)*. Present research with other students as a College Colloquium before classes end spring term*. |

***Graduation with a Bachelors in Biology is contingent on meeting each of these deadlines.**

3. Description of Biology Senior Project

The Biology Senior Project is meant to be the capstone writing experience for students at Bryn Athyn College pursuing a bachelors degree in biology. The senior project is a required course in the biology program, listed as Biology 495, worth 3 credits. The requirements include a proposal, outline, written paper of approximately 25-30 pages, and a 20-30 minute presentation. The senior seminar series (Bio 490-492) includes three terms at one credit each to complement this project in a variety of ways. Biology internships (Bio 298 and 398) may also support the senior project experience.

The nature of the biology senior project can be one of the following. Each require the same returns of a proposal, outline, written paper and presentation:

1. Laboratory-based or field-based research project.

This project involves, under close supervision of the advisor and/or a project director of an internship, developing a limited laboratory or field study using any reasonable scientific methodology including pure theoretical work, GIS studies, computer simulations, bench chemistry, laboratory or field biology, or a combination of these.

2. Intensive scholarly study into a current issue.

This project allows students to develop a substantial understanding of a particular subject in biology or chemistry with regard to a specific question or hypothesis. The study should describe both historic and current investigations and discoveries pertaining to the topic, relevant unknowns and possible areas of future research. This essay may incorporate New Church doctrines as they apply to the subject .

3. Product project.

This project involves research for, and production of a “product”, such as an environmental handbook for students at Bryn Athyn College, or a “unit box” for elementary or secondary education related to environmental science. In addition to the “product”, the returns would be the same as for all other senior projects.

4. Biology Senior Project in a Nutshell

Four main expectations within the written senior project:

1. The senior project should address one or more specific scientific questions or hypotheses.
2. The senior project should either include one or more experiments or cite experimental results of others, and include analysis of the methods and results of the(se) experiment(s).
3. The senior project should exhibit the student's breadth and depth of knowledge in a field of biology in terms of placing the topic in an appropriate context and making the topic available to an audience educated in biology.
4. The senior project must be in a formal organized format with correct use of spelling, grammar, references, structure, tables, figures, pagination, etc. (it must follow some type of scientific style and format).

The general format for the senior project would include an abstract, introduction, results, discussion, conclusions and reference sections. To support these, a table of contents, glossary, list of tables, list of figures, title page and acknowledgements are necessary.

A checklist and timeline follow after description of the selection of the committee.

5. Senior Project Committee

The senior project committee must consist of at least two science faculty at Bryn Athyn College, with at least one biology faculty member. The third committee member may be from another institution or another discipline related to the subject area of the project. The student should choose a project advisor who will be the main contact person for most meetings and questions regarding the project. All committee members agree to serve at the request of the student. The committee members are required to approve the senior project proposal and agree to read and grade the senior project. The student may also ask for feedback on drafts of the final project of all committee members.

6. Proposal Guidelines

The senior project proposal is submitted Junior year and should include:

1. **Title page**, including:

- a) Title
- b) key words
- c) investigator(s) and affiliations
- d) date submitted

2. **Abstract** . One to two paragraph summary of proposed project – not the same as an abstract of a finished project – you don't have any results yet!

3. **Nature, Scope and Objectives of Research**. Background and introduction to the problem, including related research – a beginning on literature review and background for the final project.

4. **Methods, Procedures, and Facilities**. How do you plan to proceed; set up of experiment(s); what methods will be used and reference them; etc. If library research is planned, state that.

5. **Expected results, product or benefits of research**

6. **Literature (References)**. – preferably have the beginning of a literature review along with relevant references that you have collected so far.

7. **Schedule of Tasks** . Timeline.

8. **Proposed Budget**.

- (a) Equipment needed (list and costs).
- (b) Supplies and Expendables (list and costs).
- (c) Travel – to other libraries, local dump, etc.
- (d) “production” costs (e.g., printing of handbooks)

7. Presentation grading rubric for Senior Project

Score each of the following criteria for the presentation from 1-5, with 5 = excellent and 1= poor.

| 1. Objective or hypothesis clearly stated | Score: | Comments: |
|--|--------|-----------|
| 2. Methods/techniques clearly explained | | |
| 3. Results and explanation of data | | |
| 4. Discussion: does it follow from and support the results? Are new questions posed? | | |
| 5. Organization of presentation | | |
| 6. Graphics and data presentation | | |
| 7. Speaking ability | | |
| 8. Proper referencing of material, images (and acknowledgements) | | |
| 9. Poised during questioning – answers questions in a meaningful way | | |
| 10. Presentation corresponds to abstract of the senior project paper | | |

Total score possible: 50.

Grade of A = 45-50 average score, B=39-44 average score, C=33-48, D=28-32

8. Grading rubric for Senior Project

| | Grade |
|---|-------|
| 1. The senior project should address one or more specific scientific questions or hypotheses: Development of thesis. Scope and issues clearly defined. | 20% |
| 2. The senior project should either include one or more experiments or cite experimental results of others, and include analysis of the methods and results of the(se) experiment(s). Empirical evidence cited to support thesis and critique of at least one work. | 20% |
| 3. The senior project should exhibit the student's breadth and depth of knowledge in a field of biology in terms of placing the topic in an appropriate context and making the topic available to an audience educated in biology. | 25% |
| 4. The senior project must be in a formal organized format with correct use of spelling, grammar, references, structure, tables, figures, pagination, etc. (it must follow some type of scientific style and format). | 25% |
| 5. Public presentation of senior project to scientific/academic audience with some allowance to general audience | 10% |