Biology, Society, and Environment (BSE)
Senior Project Instructions and Guidelines

All BSE students must complete a Senior Project and are encouraged to identify a senior project supervisor with expertise in a field related to their intellectual interests and/or career goals. BSE students have completed many different kinds of senior projects, including laboratory, field, survey, and historical research in natural sciences, medicine, social sciences, and humanities disciplines—as well as comparative and synthetic projects. Project outcomes have included one or more of the following: traditional senior theses, oral presentations, laboratory reports, conference posters, journal articles, as well as more innovative outcomes. BSE Senior Project supervisors hold appointments in a variety of UofM colleges, schools and institutes (CLA, CBS, CFANS, Medical School, School of Public Health, Center for Bioethics, etc.). As the culmination of a student’s undergraduate training, each project should develop from an interest or specialization defined through BSE courses and related experiences.

Students are encouraged to begin the process of identifying a senior project supervisor and topic as soon as possible. Ideally, select topic and supervisor during junior year. Students who select their topic and supervisor during their senior year will have more limited options, but still complete excellent and rewarding projects.

Instructions for Your Senior Project

I. Getting Started:
- **Attend a Senior Project Planning Workshop (SPPW) the semester you declare the major.**
- Talk with other students about what they’ve done for their senior project.
- Attend lectures and colloquia related to your interests; this will help you generate ideas, gain knowledge related to your subject area, and identify potential supervisors.
- Attend a UROP Undergraduate Symposium Talk with these students about how they developed their topical interests and identified a faculty mentor and learn how they came to apply for a UROP. [http://www.urop.umn.edu/symposium.html](http://www.urop.umn.edu/symposium.html)
- Consider your goals:
  - Are you planning to attend graduate school, a professional program, or apply for a specific job after graduation? How might your senior project help you attain your goal?
  - Are you unsure what you want to do after graduating? Consider developing a project that would help you explore an area of interest or otherwise help you to define or refine your goals.

II. Identify a Topic: Begin generating ideas for your senior project. Think about whether you want to do a laboratory-based research project or explore some aspect of biology, environment, or medicine from a social sciences, philosophical, or historical perspective.
- Start by identifying a general subject area and consider what disciplinary approaches or research methods you enjoy.
  - Take courses that are designed to develop methodological skills or disciplinary expertise relevant to your subject area.
  - Consider whether a smaller project completed for a BSE course could inform the basis of your senior project. Is there a topic, concept, or methodology you would like to learn more about or follow through with in greater detail?
  - Talk with the BSE Advisor and your instructors about your early ideas. Go to their office hours to discuss your interests and ask questions about their past, present, and future research projects.
  - Attend extracurricular events related to your senior project topic.
Volunteer, complete an internship, or work in a laboratory, community organization, or clinic related to your interests or career goals. Such experiences may form the basis for your senior project &/or a UROP.

- Refine your Topic and Consider your Goals:
  - Come up with several potential topics within your subject area; this may help you identify potential supervisors who have topical or methodological expertise.
  - Apply for a UROP and develop your senior project out of that research.
- If you have specific goals (e.g., applying for grad school, grant or fellowship) could the senior project help you to achieve them?

III. Select a Senior Project Supervisor:
Choose a supervisor whose intellectual interests or methodological approach are compatible with your goals. Your primary project supervisor must be a UofM employee holding a higher degree, though in some cases students work with multiple supervisors, including laboratory technicians, graduate students, or other persons with special expertise with whom you have developed a relationship. Think about relationships you have already established, or use resources to identify professors that work in areas related to your topic.

IV. Things to consider:
Some faculty members will only supervise students with whom they have worked previously; if you would like to work with a specific person, make sure to take one to three courses with them prior to the semester you’ll be working on the senior project. In most cases, speak with potential supervisors as soon as you think you might want to work with them on a project. Go to their office hours and talk with them about your interests and seek advice early about what courses might prepare you to work with them.

If your faculty mentor is teaching a compatible course the semester you would like to complete the project, this may be an excellent way to simultaneously complete two requirements (see 2 extra credit course option).

Finding a lab position or a project supervisor may seem like a difficult task at first. The UofM has great resources to help you through this process. Use college websites (i.e., CBS, CLA, CFANS) for information on professors and opportunities within specific fields. The CBS website offers a “Roadmap to Research” which is a useful tool while planning your senior project, regardless of whether it is research-based or not: http://www.cbs.umn.edu/students/roadmap-research

In addition to these resources, the UofM has developed resources such as the “Experts @ the U” website to help students identify faculty with similar interests: http://experts.umn.edu/default.asp

V. Contacting a prospective supervisor:
- If you have already met your potential supervisor, it is appropriate to go directly to office hours or send a brief, professional email asking to meet with them in person.
- If you are emailing the professor as your first method of contact:
  - Spend some time drafting and editing the email.
  - Use this opportunity to express your interest.
  - Mention past learning experiences which give you knowledge on the topic.
  - Express that you have interest in their work and why they would be a great supervisor for such a project
  - Connect the work you would be doing in your project with work they have conducted.
  - Your first contact with a potential supervisor should be professional and coherent.
VII. Meeting with prospective supervisors:
- Prepare for this process as you would for a job interview. Make sure to be professional and prepared to discuss with your supervisor, and show your interest in the topic.
- Do some homework ahead of time and read recent publications by your supervisor, even if you have already established a relationship with them through coursework or other experiences.
- Make it clear that you are passionate and prepared, and ready to work with them on a project closely related to theirs or propose an exciting new project!
- Always suggest a next step (eg: I can come to your office hours to meet or contact you via phone or email. What time is best for you?)
- Use resources from the CLA Careers Center to help get you started and give you a general idea of how to professionally and respectfully contact your supervisor: http://www.clacareer.umn.edu/coverletter/
- Emailing prospective supervisors: The CLA career center has handouts on emailing prospective employers. [[Find a link and create 2 sentences talking about professionalism and timeliness.]]

VIII. Develop a Timeline for your Senior Project based on your goals: Careful planning and consideration of your options is strongly recommended. Due to the wide variety of possible BSE senior projects, it is important to contact your supervisor early and ensure that you can make a project that is both appropriate for your discipline and fits the BSE major.
- Students are encouraged to begin the process of identifying a senior project supervisor and topic as soon as possible.
- Students who identify a supervisor early may be able to apply for a UROP that would fund their research. The UROP project could be the basis of the senior project. (UROP recipients still need to register for senior project credits.)
- Contact the potential senior project supervisor at least one semester prior to when you plan to begin working on the project (including course instructors for 2xcr registration option).
- Students who begin work on their senior project prior to their final semester may be able to use the research experience or the product of their project for an application to grad school, professional programs, internships, jobs, or grants.
- Some students have published peer reviewed articles, presented their work at professional meetings, or applied for grants and fellowships based on their senior projects. The chance that you might too is increased when your work is well planned and there remains time to refine the work with the help of the faculty mentor after completing the actual senior project.
- Some students plan (and complete) their senior project during their final semester. Their options are more limited.

IX. Course Registration Options:
There are multiple registration options that satisfy the credit/course requirement for the senior project. Whether you register for the senior project course during the regular registration period or during the first few weeks of the semester varies. See below for details.
- Students must register A/F (and earn C- or better), unless completing Directed study in CBS and S/N is the only registration option for the course (i.e., Directed Study courses offered by CBS are only offered S/N).
- Students must complete a minimum of 3 credits in an approved Senior Project course option with the following exceptions:
  - Students may register for 2 credits in a Directed Study course and concurrently enroll in an approved BSE Core/Theme Elective course offered by a CLA department to fulfill the senior project requirement.
Students may register for two 2cr Directed Studies courses if their research plan requires multiple semesters of work (pre-approval required).

Students who enroll in PHIL 3993 to complete a “stand alone” project with Philosophy Faculty may register for 2 credits to complete the BSE Senior Project course requirement.

- Students should contact the BSE Advisor prior to registration to verify that their proposed project and registration plan meet the BSE Senior Project requirement.

**Registration Options:**

1. Directed Research in CLA
2. Directed Research in CBS
3. Directed Research outside CLA/CBS
4. Major Paper Courses and Senior Seminars
5. Coordinated Directed Research (Registration in BSE 3996 coordinated by Dr. Squires while working with select non-CLA faculty supervisors)
6. 2 Extra Credit Registration in a Directed Research course while concurrently enrolled in a BSE core or theme elective course (CLA)

1) **Directed Research in College of Liberal Arts:** Students should register for three (3) or more credits in a Directed Research course (e.g., ANTH 4994W, GEOG 3996, etc.) by completing a CLA Student-Faculty Contract. The SP Supervisor, the student, and the department’s Undergraduate Advisor should each sign the SFC. Students then submit the SFC to CLA Student Services (49 Johnston) to obtain a permission number to register for the appropriate class. Student must submit a legible copy to the BSE advisor within one week of registration.

CLA Student-Faculty Contract [http://www.clacareer.umn.edu/directedstudy/research.html](http://www.clacareer.umn.edu/directedstudy/research.html)

2) **Directed Research in College of Biological Sciences:** Students should register for three (3) or more credits in a Directed Research course (EEB/GCD/BIOL 4794W or 4994, etc.) by completing the CBS Directed Research Contract. The SP Supervisor forwards the electronic copy of the contract to appropriate Director of Undergraduate Studies (see DRC instructions). Student must submit a legible copy to the BSE advisor within one week of registration.

CBS Directed Research Contract: [http://www.cbs.umn.edu/students/directed-research](http://www.cbs.umn.edu/students/directed-research)

CBS DRC Deadline: Approved contract must be received by CBS Student Services by 10th day of semester.

3) **Directed Research outside of CLA/CBS:** Students may register for three (3) or more credits in an upper-division Directed Research, Directed Studies, or Independent Study course in accordance with the procedures of a given UofM department or institute (FR, ESPM, BTHX, PUBH). Complete any forms required for course registration and register for the course. Student must submit a legible copy of all required forms and a CAR Form signed by the senior project supervisor to the BSE advisor within one week of registration.

- Student must register A/F.
- Students should register for a 3xxx or 4xxx level course when available.
- Registration in an 8xxx level course is not allowed.
- When no appropriate course option is available (Academic Health Services, Medical School, etc.), see “Co-ordinated Registration for Directed Research” (below).

4) **Major Paper Courses and Senior Seminars:** Students who have completed 2 or more courses in a discipline may wish to request permission to take a Senior Project Seminar or Major Paper course offered by a department (especially if that course is being taught by a desired supervisor).

- The History of Medicine Department regularly offers a Senior Project Seminar designed for BSE students (HMED 4960). Contact instructor/department for details.
5) **Co-ordinated Registration for Directed Research:** The Director of Undergraduate Studies for BSE, Dr. Rod Squires, serves as a coordinator for the SP research experience when there is no obvious registration option available due to a supervisor’s affiliation (Medical School, School of Public Health, Centre for Population Studies, etc.). The Supervisor is responsible for all aspects of mentorship, supervision, and evaluation of the student.

a) Student and SP Supervisor complete a CAR Form (supervisor should sign this form) and describe the project in detail in the body of the CLA Student-Faculty Contract (Supervisor DOES NOT sign the SFC!)

b) Coordinator (Dr. Rod Squires) and BSE Advisor sign SFC and student submits it to CLA Student Services (49 Johnston) to obtain a permission number to register for BSE 3996.

c) When the project has been completed, the Supervisor contacts the Coordinator, who submits the final grade for the course.

6) **2 Extra Credit Registration in BSE Core or Theme Elective course:** Concurrent 2 credit registration with a BSE Core/Theme elective course offered by a CLA department. The senior project must be incorporated into the course structure and include a separate requirement for the student to complete, such as a senior thesis.

   Once the SP Supervisor and student have met to discuss the details of the senior project, they describe the project in the body of the CLA Student-Faculty Contract and complete a CAR Form. The student should register for two (2) credits of directed study in the CLA department offering the “parent” course (BSE Core or Theme Elective). The student submits the SFC to CLA student services (49 Johnston) to obtain a permission number so that they can register for the directed research/study course. Student must submit a legible copy of the SFC and a CAR Form signed by the senior project supervisor (parent course instructor) to the BSE advisor within one week of registering for the directed research course.

**OTHER IMPORTANT INFORMATION:**

- Obtain Turabian, K. L. (2007). *A manual for writers of term papers, theses, and dissertations* (Seventh ed.). Chicago, IL: University of Chicago Press. Use this style manual to help structure your paper, as well as to order your citations, references, maps, figures, graphs, and tables.
- Obtain and fill out the required forms for your project. These forms must be completed and a copy must be given to the BSE advisor to complete the senior project and to graduate.
- It is not required, but is recommended, that you submit a final manuscript with the Senior Project forms to the BSE Advisor. A final manuscript is one that is complete and final, ready for submission as your Senior Project. Turning in a manuscript means that your thesis will be archived within the department and make it available for other students to refer to when planning their own senior project. In addition to this, you can submit your senior project to win the Brown Day Best Senior Project within the Geography department.

8 **QUESTIONS YOU SHOULD ASK YOUR PROJECT ADVISOR**

1. What is the process through which I choose and refine the topic of my project?
2. Do you expect my project to be “scholarly” and can you explain to me what that means to you?
3. How frequently will we meet (or email) to discuss the project on my project?
4. How many hours per week do you think I will need to put into my project?
5. Will there be “milestones” with due dates assigned over the course of the semester (e.g. topic statement, annotated bibliography, rough drafts, etc.)? Are these negotiable? What are the consequences if I fail to meet a milestone?
6. What are the minimum and maximum acceptable amounts of data and references for my project? How many pages do you expect my project to be, and does that include tables, figures, maps, and bibliography?
7. What is the due date for project?
8. What criteria do you use to assess my work and assign a final grade?
Abstract or Manuscript submission requirements:
Students should submit an abstract of their senior project. Students have the option to submit a full manuscript of a senior thesis.

Recommended Manuscript Formatting Requirements:
Ask your supervisor if they have specific formatting requirements. If your supervisor does not have a preference, follow the BSE manuscript formatting requirements:

- Select and adhere to a style guide (MLA, APA, Chicago, etc.).
- Margins: at least 1” on all sides
- Type size: 11 or 12 pt. font
- Font: Use easily readable fonts such as Times New Roman, Palatino, Schoolbook, or Bookman. Do not use Courier, Helvetica, Script, or their equivalents, as they are not designed for manuscript reading.
- Spacing: Use 1.5 or double spacing format for all main text
- Sections:
  - Title Page
  - Acknowledgements (optional)
  - Abstract or Summary
  - Table of Contents
  - Body of the Thesis
  - Appendices (optional)
  - Bibliography or Works Cited

Title Page formatting requirements
Your title page for the FINAL MANUSCRIPT must mimic the following example:

  TITLE [capital letters]

    A Senior Project submitted to the Faculty of the Biology Society and Environment Program, University of Minnesota, in partial fulfillment of the requirements for the [Bachelor of Arts or the Bachelor of Science]

    Your Name [first, middle initial, last]

    Date [day, month, year--e.g., 1 December 2013]

Also contact Jeanette Simmonds, Undergraduate Advisor for BSE: Email: geogadv@umn.edu