

Individual professors advise each student directly: For Fall 2016/Winter 2017 the approved advisors will be Professors Stephen Murphy, Brad Fedy, Sarah Wolfe and Dan McCarthy.

Note: To take ERS 411/412, you must have an APPROVED EMAIL CONTRACT (see Appendix A at the end of this document well in advance (normally two terms) of the term in which you undertake your Senior Honours Project.

THE BASIC SURVIVAL GUIDE AND EXPECTATIONS OF 411/412

Preamble: You made it to the 4th year thesis (“411/412”) Congratulations! The goal is for you to tackle a topic related to environment, resources and sustainability and turn it into a tractable research project that advances knowledge or leads to some form of novel action in trying to resolve an issue.

Choose your own adventure: By this stage, it is time to spread your wings and be creative. The course has no formal lectures but there are some required components as follows

- 1) This course is taught in sections by your advisor on Wednesday mornings. Make sure that you are signed up for the correct section under your advisor’s name.
- 2) There is an overall syllabus but your advisor may choose to have an additional syllabus.
- 3) Your advisor may also have his or her own LEARN website that you should check regularly.
- 4) Submit a project or thesis proposal to your advisor for marking along with the research ethics forms by the end of November. **Research ethics forms and your proposal are to be submitted before the December holiday break and uploaded on the website.**
- 5) Final Power Point presentations in the last two weeks of March during Wednesday morning class times. For Winter 2017, the presentation date is: Wednesday March 22, during the 10:30-12:30 class time slot. You are required to be present for the entire duration of your presentation slot.
- 6) Submit your final project last day of classes in winter term and upload to the website. For Winter 2017, this date is: April 3, 2017.
- 7) You must also meet with your advisor on a regular basis. There is a reserved slot (Wednesday mornings) that advisors use for weekly or bi-monthly meetings with their group of students.
Note: Wednesday mornings has also been reserved for important 411 meetings and presentations. Make sure that you don’t register for other elective courses at this time. You will be registered in your appropriate section by Patti Bester after she receives your email contract.

Elements of 411/412: This is a research project in the general sense but is really a senior undergraduate thesis project – as the researcher, you conceptualize a project, conduct a thorough examination of peer-reviewed (and other relevant) literature, determine a research question, design a methodology to answer the question, analyze results, draw conclusions, and present your project with a Power Point presentation.

Context and rationale: Mastery of the basic skills of problem definition, proposal preparation and project implementation are key to dealing with a wide range of 'real-life' situations, both on and off the career

path. In the 411/412, each student has an opportunity to develop these skills further by designing and implementing a project of special personal interest.

Solo or team: Students may, if they wish, work as a small team in carrying out their 411 project. In this case, the role and contribution expected of each member must be clear at the time the project is approved, and the input of each team member to the project must be identifiable in the end product in a way which permits individual assessment.

The difference between 411 and 412: The project may be undertaken for extra credit, in which case, a student enrolls in 412A/B (2.0 credits). Undertaking work for more than 1.0 credit must be discussed with, and approved by the advisor. Think of a 412 project as one demanding about 18 hours a week. It would be expected that a 412 project have the potential to be published, or similarly substantive in an appropriate context.

What are the minimum standards for 411/412?

- Originality - do not undertake work that already has been conducted.
- The project should be one that gives ample opportunity to acquire and/or demonstrate a reasonable mastery of relevant skills and subject matter, yet also be manageable within the time that can be devoted to it. Keep in mind that it is to be seen as equivalent to an academic course of two terms' duration, rather than a 'term paper' for a one-term course. If 411 is one of five courses you carry each term, 9 hours per week is not an unrealistic expectation of time to devote to all phases of your project. The scope of the project, results produced, and the final report will be judged accordingly.
- Do not treat this course as the production of a simple, large term paper. You can write a thesis that uses only secondary literature and does not include field work. It must, however, be intensively researched. It would also reach the top of Bloom's Taxonomy which includes analysis, synthesis and evaluation.
<http://www.learningandteaching.info/learning/bloomtax.htm>
- The 411 project is to be treated as professional research and action experience. All work must contain some form of scholarship and must reflect critical thinking.
- You may advocate a position but the thesis must meet acceptable standards for academic integrity and quality.
- A 411 project may be primarily a research effort involving original data collection and analysis. Assignments which are developed as written research projects should be presented as research papers in a form suitable for publication in a scholarly journal. Follow the style of a journal related to your field to ensure conventional format and style for such papers— one you might wish to submit a paper for consideration.
- A 411 project may also combine active community or university involvement with an analytical, or other, written appraisal of the experience. It also may involve approaches that are less conventional. Examples in the past included organizing community advocacy groups (with the provisos above), a concert to promote environmental awareness, a musical workshop by ERS student Hingman Leung that included Juno® winning artist Sarah Harmer, an environmentally themed theatrical play by Crystal Bradford that was staged professionally, and an extensive treatment by Jonny Olsen for a children-focused environmental

entertainment program that ultimately became a reality. If you want to do something off the beaten track, be creative and serious to the extent that it is a substantial piece of work.

Advisors: We have advisors who are ERS professors who will guide your graduating projects. Make sure you approach a potential advisor early in Winter term and get an email from them that states they have agreed to serve as your advisor for the following academic year Fall/Winter. If you leave it too late, you will need to enroll in ERS 413 which is the alternative to the ERS 411/412 project. You need to successfully complete one of these three, namely 411A&B (1.0 unit), 412A&B (2.0 unit), or 413 Winter term only (1.0 unit).

THE FORMAL 411/412 PROCESS

- If you are enrolled in the ERS 411/412 course, you must have an email contract signed by you and an approved advisor and submitted to Patti Bester in the semester before you begin your 411/412.
- The email contract is available below (See Appendix A) and submitted to Patti Bester. Make sure that Patti, you and your advisor all have copies of the email contract.
- **If there is no contract, you will be required to take ERS 413 in Winter 2017 term, instead of ERS 411/412 beginning in the Fall of 2016.**
 - **ERS 413: Senior Honours Seminar** (course weight 1.0 credits): This course consists of intensive readings, seminar discussion and a major one-term research paper. This course be taken instead of ERS 411/412: Environmental Research Project. Students will be required to produce a one-term analytical research paper that will be primarily grounded in secondary material and course readings. Students will be expected to participate in weekly discussions based on demonstrated knowledge of the assigned readings and present their research paper at the end of term.
- Meet regularly with your advisor (once every two weeks at a minimum) to discuss your 411 progress and, where required, submit a written draft of the elements of the proposal (in 411A/412A term) and the proposed work (e.g. draft sections or chapters) at each stage according to the deadlines set out in the formal proposal/agreement with your advisor. Again, this will vary from advisor to advisor.
- You will prepare a detailed project proposal in regular consultation with your advisor. The process for proposal writing will vary from advisor to advisor. This project proposal forms the basis of the deeper agreement between the student and the advisor. Generally, expect to include the following:
 - description of the proposed work, that is, a description of the general problem area; an outline of the specific questions/issues to be addressed; a preliminary list of expected sources of information (references, people, places); a summary of the results of your initial literature search. Be sure all of the above are included. Some advisors may wish to have you do a more extensive literature review at this juncture so be sure that you are clear about your advisor's expectations.
 - discussion of the importance of the proposed work in terms of your chosen model, that is, its relevance to the proposed client, or to the general advocacy issue, or to the disciplinary or interdisciplinary research community, or to some other model you are using.
 - breakdown of the steps to be taken to complete the project, described in terms of the specific tasks involved, for example, collect data from this source, complete literature search on this question, carry out analysis of this debate.
 - methodology
 - description of the output: paper(s), presentations, other media if applicable.

- proposed evaluation process: by advisor only or with involvement of external advisors or resource people, if any
 - a work schedule, with dates, showing how this work is to be divided into stages, what product is to be expected at the end of each stage, and deadlines
 - a draft table of contents, where appropriate
- Your proposal is to be submitted to your advisor for assessment and comments: It is either a pass/fail or your advisor may decide to assign a grade to the proposal (typically 15%) determined in the first week of classes. In any event, you cannot proceed to the next stage until you have the go-ahead from your advisor, and ethics approval (if required). Grade at term's end is "IP"(i.e. in progress). The final grade after the thesis is finished will be applied to both your two term courses (ERS 411A and 411B).
 - In your 411B term, you will continue to meet regularly with your advisor as you move forward with implementation of your proposal. You will submit to your advisor a preliminary draft of the final report or other product at least one month before the end of your 411B term. Ordinarily, a 40-page maximum will be suggested, but your advisor will discuss this with you, as well as any different arrangements that need to be made because of the nature of your project.

GRADING STANDARDS AND GRADING PROCESS IN ERS 411/412

You are required to submit to your advisor a one-page single spaced summary of the proposal in mid-October that includes the following information: research objectives and questions; specific examples of scholarly and comparative literature and journals; methodology or approach; clear outcomes regarding the scope and the short and long term applications of the project.

Thesis or Project Presentation: Pass/Fail requirement: All students will participate in the Power Point presentations scheduled in the last two weeks of March 2017 during the Wednesday morning class time.

The date for the project presentation will be: Wednesday, March 22, 2017.

Final Thesis Project: Typically 85% of Final Grade in ERS 411/412 (Remember your advisor may also wish to assign part of that grade to the thesis proposal usually about 15%, or just have the proposal as a required milestone).

Your final 411 project is due on the final day of lectures in winter term (April 3 2017). An e-copy must be posted to your Learn website by 23:59 h on the last day of lectures. A second copy must be sent to the advisor for evaluation (advisors can require e-copies and/or paper copies). The advisor grades the thesis basing the mark on the entire eight months of work and expectations agreed upon by advisor and student. The thesis must include a written component (and for most theses this will be the only product). For those doing projects that involve media in addition to a form of scholarly written work, the criteria can be adjusted at the discretion of the 411/412 advisor. These discussions must be concluded by the first Monday of October in fall term. Late penalties are determined by the advisor.

APPENDIX A - Email Contract for ERS 411 or 412 Senior Honour's Project

After an ERS professor (chosen from the approved list) has agreed to advise you in a graduating project, you will need an email confirmation from that professor, forwarded to Patti Bester and copied [cc'd.] to the advisor.

*****Patti will enroll you in your section of ERS 411 or 412 once she receives your email contract.*****

In the email subject line, include your full name followed by the title *ERS 411 <or 412> Email contract*

Example:

To: pmbester@uwaterloo.ca

Cc: advisor email <of the approved ERS 411 advisor that has agreed to advise you>

Subject: David Black <better yet, your real name> ERS 411 Email Contract

In the body of the email forward text include:

- 1) Your student number and contact information, e.g. your uwaterloo email address
- 2) Acknowledgement that you have completed all the pre-requisites for the course.
- 3) The topic of your project
- 4) Indicate whether your project is to be a 411 or double credit 412. Your advisor will let you know if it is considered substantial enough to be worth a 412.
- 5) A forwarded message to you from your SERS advisor confirming that she or he has agreed to advise your project. (Advisors for F16/W17 are: Steve Murphy, Brad Fedy, Dan McCarthy and Sarah Wolfe).

Example of template of a 411/412 email contract to submit to Patti Bester:

Name:

ID #:

Uwaterloo email address:

I have completed 3rd year SERS core requirements: YES__

Advisor:

Topic/Research Area:

ERS 411A/B (1.0 unit) ERS 412A/B (2.0 unit) - (circle one) - Advisor approval is needed for ERS 412A/B.

Forwarded message:

From Bfedy@uwaterloo.ca

Sent: October 6 2016

To: dblack23@uwaterloo.ca

Subject: Your 412 project

Hi David: Yes, I agree to be your 412 advisor for Fall 2016/Winter 2017 looking at the impact of windmills on raptor populations.

Brad