School of Environmental Studies – 4th year Options

Students in Environmental Science Majors and Environmental Studies Majors may choose between ENSC 430 and ENSC 501 or 502 as a fourth-year honours project to complete their degree. Final course registration for ENSC 501 or 502 is through the School of Environmental Studies (SES); **students cannot self-enroll in ENSC 501 or 502**. Additionally, Environmental **Studies** (ENVS-M-**1**) Majors and Environmental Science students in the **modular major** (ENSC-M-**3**) introduced in 2025 may choose two seminar courses (e.g. ENSC 407, 408, 425, 445, 480, 482) in place of these project options.

Course Description

ENSC 430 Honours Project in Environmental Sustainability (6.0 units)
Interdisciplinary study of the scientific, socio-political, and economic aspects of selected local, national, or global issues related to environmental sustainability. Teamwork is emphasized.
NOTE Field Trip: estimated cost $30.
Requirements: Prerequisite Level 4 or above and registration in an (ENSC Major, ENVS Major, ENVS Medial, EBIO, ECHM, EGEO, EGPY, ELSC or ETOX Plan) or permission of the School.

This course runs for the full academic year. This two-term capstone course for ENVS and ENSC majors challenges students to apply the knowledge and methods gained throughout their studies to a real-world case study. The 2025/26 theme is Applied Climate Science.

In the fall term (ENSC 430A), we focus on three key areas: (a) climate model analysis, where students learn to access, process, and interpret model data to assess climate change impacts on ecosystems and societies; (b) environmental monitoring, using satellite and in situ observations to evaluate current conditions, with an emphasis on ecosystem resilience; and (c) socio-economic pathways, which involve examining mitigation strategies from integrated assessment models and analyzing interactions between climate, society, and the economy. In the winter term (ENSC 430B), students apply the skills acquired in the first term by working in groups on a topic of their choice, such as the impacts of climate change on biodiversity, wildfires, or drought, or the effectiveness of Canada's carbon tax. The course concludes with a public Project Symposium, where each group presents its findings to peers and faculty.

ENSC 501 Independent Environmental Study (6.0 units) – fall/winter term

https://www.queensu.ca/ensc/undergraduate/courses/ensc-501502

This is an independent study (20% of academic time, 8-10 hours/week, over two terms) of an environmental topic by individuals or inter-disciplinary groups, with supervision by faculty members either of the School of Environmental Studies or from other Departments at Queen's. The course includes supervised research into a topic to produce a literature review and report, and to present the work at a final symposium featuring all students in the course.

ENSC 502 Research Project in Sustainability (12.0 units) – fall/winter term

https://www.queensu.ca/ensc/undergraduate/courses/ensc-501502

This is an interdisciplinary research project (40% of academic time, 16-20 hours/week, over two terms) related to environmental sustainability, with supervision and training in appropriate research methods by faculty members of the School of Environmental Studies. The course includes supervised research including a research proposal, a seminar presentation and a final thesis.

See some examples of past ENSC 501/502 research project theses here.

Reasons to choose ENSC 501 or 502 instead of ENSC 430

Some of the advantages of independent study projects are:

- provide flexibility in topic selection to match an area of interest;
- allow in-depth study of a topic when an advanced course does not exist;
- provide opportunity to work closely with a faculty member in established area of research;
- demonstrate ability to work independently, manage time, meet deadlines, etc.;
- provide flexibility with respect to timetabling (i.e. no lecture schedule);
- provide students with a thesis or thesis-like experience in preparation for graduate studies or related post-secondary research activities.

Choosing between ENSC 501 or 502

ENSC 501 is a 6-unit course that will involve a significant amount of literature research, mostly of primary academic literature (i.e. peer-reviewed) but may include grey literature such as government reports, policy documents, and information from institutions and organizations such as NGOs. It may also involve analysis of existing data. The study should have a thesis statement and objectives and lead to novel conclusions, or a problem statement and lead to detailed recommendations. In either case, the student should

synthesize novel ideas or concepts through the combination of available information.

ENSC 502 is a 12-unit course that normally includes acquisition of new data or substantial analysis of an existing data set. This can be from laboratory work, surveys, field studies, etc., usually done as a member of the supervisor's research group. Often ENSC 502 projects are started in the summer before registering in the course, e.g. as a summer research assistant.

Choosing a project or topic along with a supervisor for ENSC 501 or 502.

There are two common situations for students who choose these courses.

A) a student is really keen to study a particular environmental topic as part of their degree, and would love to spend many hours researching the topic to become an expert. Getting course credit for doing all that work sounds like a great way to make time for it.

B) a student has met Prof. X (in a course, at a seminar, etc.) and really wants to do more in-depth work with Prof. X than is possible in a regular course. The exact topic is not critical as long as it's in Prof. X's research area and Prof. X will supervise the work.

Step 1: Find a Supervisor

Each student will have a supervisor and an examiner. The supervisor has the primary responsibility for student advising, while the examiner is involved with providing feedback and marking course components (outline, draft report, etc.). If appropriate, the student can have two co-supervisors instead. The supervisor is usually a faculty member in SES, (includes Adjunct and Cross-appointed faculty) with expertise in the research topic area. The examiner can be from outside SES with approval of the ENSC 501/502 Coordinator. Occasionally (e.g. Situation B above) the supervisor may be from outside SES, in which case the examiner must be from SES and there must be approval from the Coordinator.

It is the student's responsibility to identify a supervisor, and this should be done as early as possible (i.e., spring or early summer). Usually this is done through an e-mail request from the student to the faculty member. A list of faculty members and their interests can be found here: https://www.queensu.ca/ensc/people/faculty-and-staff. If a student is not sure who to contact for a particular topic, they may also contact other SES faculty or the Coordinator for advice on who might be an appropriate supervisor. Note that leaving this until late August or September will make it more difficult to find a supervisor and will delay registration in the course.

Step 2: Registration Process

The supervisor must be confirmed through an e-mail message to the Coordinator, Professor Diane Orihel (diane.orihel@queensu.ca) and Tammy Wintle (wintlet@queensu.ca) in the SES office. For supervisors outside SES, the examiner should also be confirmed. Once confirmed, Tammy will check that all prerequisites are met and process registration in the course.

Step 3: Supervision

The student and supervisor will discuss and refine the specific research topic to be addressed. The supervisor should provide advice related to defining the scope of the study, suggest relevant literature and other sources of information and provide input on the basic plan for the student's work. This can begin at the start of September. More information regarding timelines and deliverables will be posted on onQ by September.

Further information:

Undergrad Chair:	Dr. Stephen Brown stephen.brown@chem.queensu.ca
Instructor of ENSC 430:	Dr. Christian Seiler christian.seiler@queensu.ca
Coordinator of ENSC 501/502:	Dr. Diane Orihel diane.orihel@queensu.ca