Faculty of Science

Division of Natural Science

http://natsci.info.yorku.ca/

Course Outline (Tentative)

NATS 1840 Section B, *Science, Technology & The Environment*
FW, 2017-18
Tuesday 2:30-4:30pm, Friday 2:30-3:30pm, SLH D

Course Instructor(s) and Contact Information

Name: **Dr. C. Wolfe (Course Director)**
Office: 227 Petrie Science & Eng. Bldg.
Office Hours: TBA, or by appointment.
Phone: (416) 736-2100 ext. 20882
Email: **nts1840b@yorku.ca**

Students are encouraged to make use of the weekly office hours for personal consultation, or to speak with the Professor immediately after class. For urgent matters, such as missing a test, students can try phoning. But for most matters email is the preferred method of contact. (Students are also asked to refrain from using the Moodle messenger feature.) Replies can usually be expected within three to four business days for routine matters. (Responses may take a bit longer during 'peak' times, such as just before tests and assignment due dates.)

It is highly recommended that students use their York University email account when contacting the professor, since the behaviour of the York spam filter is otherwise unpredictable. Messages from Hotmail or Gmail, for example, have been known to vanish without a trace. Every student at York is entitled to a York email account and to Moodle access; all students are strongly urged to make use of these.

Email Policies and Etiquette

When composing email messages, students should try to project a certain professionalism. That means addressing the recipient(s) of the message respectfully and thinking ahead about what they will need to know in order to act on the message (if action is needed).

In the context of this course, that means including the phrase 'NATS 1840B' in the subject line of your message so that I know which course you are in. The subject line should also include a brief statement of the main purpose of your message (eg. NATS 1840B: Help needed for Assignment #2). Professionalism also means including your name and lab section number (if the question is lab-related), and using a respectful tone. I prefer to be addressed as "Dr. Wolfe" or "Professor".

Expanded Course Description

Science is a part of everyday life. It is therefore important to become familiar, to some extent, with the scientific method and outlook, and to be cognizant of some of the achievements of scientific thought. The Natural Science courses at York University are designed to promote the scientific literacy of students in non-science programmes.

Natural Science 1840, Science, Technology and the Environment, is a six-credit course concerned with the impact of humanity, and in particular technological advancements accompanying the development of humanity, upon the environment. The course endeavours to convey basic knowledge concerning the structure of the ecosphere and the interplay between technology and the environment, and in the process develop powers of scientific reasoning

which will help you to better assess key environmental issues. It is hoped that the course will enable you to make more informed (i.e., less emotional) decisions about environmental matters and help you to make meaningful contributions to environmental debates. After all, the environment is something we all have to live with, so the more you know about humanity's interactions with it, the more likely it is that you will be able to have a positive influence on the course of our lives.

Course Learning Outcomes

Upon successful completion of this course students should be able to:

- Explain how science obtains and validates its results and how it differs from other modes of human thought;
- Interpret data presented in tabular and graphical form, and apply rules and formulae provided to solve simple problems;
- Describe the rules and processes governing the behaviour of matter and energy in general and how they are cycled and flow through the environment, and apply these rules to real-world situations;
- Describe the basic structure of the ecosphere and explain how its broad features emerge from simple principles;
- Explain the origins and significance of biodiversity, and predict the impact of environmental changes on a population using the principle of natural selection;
- Describe how living populations grow and the limits to which they are subject; explain the reasons for rapid human population growth during the past century and the approaches that are most likely to be effective for lowering fertility rates;
- Explain the difference between risk perception and objective risk assessment, and describe the components of the latter; explain why life-cycle analysis is an important part of the objective comparison of different possible technological choices;
- Describe how the long-standing quests for food, water, and energy (that is our basic technologies) are interconnected and how they affect the ecosphere's ability to continue supporting life;
- Explain and critically assess selected solutions to problems of declining soil quality, water supply and pollution, and energy supply;
- Explain the basic problem of climate change, its possible consequences, and the reliability of what we know about the problem; critically assess the feasibility of proposed solutions.

Evaluation

In **each term**, students will be required to complete four laboratory sessions, four take-home assignments, one mid-term test, and one end-of-term examination. Final grades will be calculated using the weights shown in the table below.

Item	Weight	Date
Assignments (8 total)	15%	Roughly every two weeks
Laboratories (8 total)	20%	Roughly every two weeks
REEF Questions & Quizzes	5%	Every lecture
Fall midterm test	10%	Mid October (TBA)
Fall examination	20%	December exam period
Winter midterm test	10%	Mid-February (TBA)
Winter examination	20%	April exam period

At the end of the course, the lowest assignment mark and the lowest lab mark will be dropped. Additionally, only the best 80% of REEF question scores will count toward the final grade.

The midterm tests will consist of both multiple-choice and short-answer questions. The end-of-term exams will involve only multiple-choice questions.

In order to be consistent and fair to the entire class "extra credit" assignments are not provided at any point during or after the course. If you have concerns about an assignment or test grade please contact the course director with specific information (eg. question number and why you think your answer was correct), and **only** after you have consulted the published solutions.

You are strongly encouraged to do all the work asked of you. In the past, many a student has failed simply because work during the term was neglected (it all adds up). Note that the end-of-term examinations will be scheduled by the University. **It is your responsibility to be available to write the exams at any time during the official examination periods.** So it is recommended that students delay making any travel plans until after the examination schedule has been published (usually in early November & March).

Course Materials

The textbook for the course is **Living in the Environment, 4th Canadian Edition** by Miller, Hackett, and Wolfe. The text is available from the campus bookstore. Copies of the textbook will be placed on reserve in the Steacie Science Library. Because of significant differences between editions and since we will be following the textbook closely, **the purchase of a used copy of the 3rd edition is not recommended**.

Readings relevant to each lecture will be announced on Moodle in advance. Additional resources may be placed on reserve and will be announced in class and on Moodle.

Laboratory/Tutorial

The laboratory component of NATS 1840B is intended to reinforce some of the fundamental concepts encountered, but in a more hands-on manner. The laboratory activities have been designed to deepen students' understanding of the scientific approach and to illustrate selected principles and topics. Some lab activities will be of the traditional hands-on style, while others will be virtual or group-oriented.

Which day/time you attend the lab is determined by the lab section for which you registered. Lab groups meet very roughly once every two weeks for a total of 8 meetings (4 per term). The detailed laboratory schedule will be posted on Moodle shortly after the start of the course. All laboratory sessions will take place in PSE 208. Note that lab sessions will not begin until roughly the third week of September.

Because the course's lab component is new this year, individual lab instructions will become available to students on an ongoing basis as the course progresses. Students should refer to these instructions for further information about the laboratories themselves. Please note that all lab work, including the preparation and submission of a report, must be completed witihin the two hour lab period.

Course Content and Format

The course is mainly lecture-based, with one 120-minute lecture and one 60 minute lecture each week. Students will be expected to have completed assigned readings prior to every lecture.

The first half of the course is concerned with the basic scientific principles underlying environmental issues while the second half is focussed on technologies and their impacts, resource use, and possible solutions. The table below provides a rough outline of the topics to be covered in the first and second terms. (This list is preliminary and is subject to later adjustment.)

Fall Term	Winter Term
The Nature of Science	Agriculture
Matter and Energy	Water Resources and Pollution
The Ecosphere	Energy Sources and Needs
Life: Evolution, Diversity, Extinction	Air Pollution
The Human Population	Climate Change
Evaluating Technologies	Ozone Depletion

Attendance at lectures is highly recommended because the professor greatly enhances the material covered in the

text book, and often covers material which is not in the text book. Neither the textbook nor notes alone substitute for the learning enabled by the interplay between professor and students in the classroom. In particular, students will frequently use the REEF classroom response system to participate in in-class polling and quizzes. Details about this app will be provided during the first lecture.

Math Content

Minimal amount of descriptive math; interpretation of data presented in tabular and graphical form; modest calculations; scientific notation. Facility with basic arithmetical operations is expected and required (e.g. multiplication and division). Students should also be able to work with percentages.

Course Policies

Questions and Concerns

- Questions about lab marks should be directed first to the relevant TA. All other questions or concerns arising from the course (including about marked assignments and tests) should be directed to the course director. If you are uncomfortable approaching the course director with your concern, then consider going through your class representative. (See NATS-AID below.)

Missed Tests

- In the event that a student misses a test they are expected to notify the course director in writing (by email) within 48 hours of the original test time. Notification in advance (if possible) is preferred.
- Students may be allowed to make-up a test missed because of illness of self or of a family member, funeral attendance, or other similar legitimate circumstances. Employment conflicts, family vacations, and other personal endeavours are not considered legitimate reasons for missing a test.
- Legitimate reasons must be backed up with suitable documentation in the form of a completed Attending Physician Statement, a letter from the funeral director, boarding passes with plane tickets, etc. Contact the Professor if you are unsure of the kind of documents needed.
- All documentation is to be provided within one week of the missed test unless otherwise requested by the Professor.

Late Assignments

- Students who miss an assignment deadline because of legitimate reasons may submit their assignment late with the professor's approval; all other late assignments will be subject to a late penalty of 10% per day.
- No late assignments will be accepted after the solutions have been posted.
- All late assignment should be submitted to the course director personally or left in the course drop box outside the NATS office. If a late assignment is left in the drop box it is the student's responsibility to notify the Professor that it is there.

Missed Labs

- Students are not permitted to attend a lab in which they are not registered unless they have approval from the Professor in advance. There will be no excuse for missing a lab because a student 'forgot' his/her group was meeting during a given week.
- Students who miss their lab section's meeting for a legitimate reason, or who arrive to the lab more than 30 minutes late, should contact the Professor as soon as possible to make alternate arrangements.
- In some cases students will have to wait until the end of the term when a special "make-up" lab session may be held. There will be only one such session per term and the date will be chosen by the Course Director.

Requests for Reappraisal

- Students who, upon review of the posted solutions, disagree with the mark they receive on a test or assignment must submit their request to the Course Director along with a written statement that explains exactly what aspect they disagree with and why.
- This request must be based on academic merit and can make reference to the posted solutions, to the textbook, or to other legitimate sources to justify the request for reappraisal. But "I worked really hard" will not be considered valid grounds for reappraisal.

Copyright and Intellectual Property

Any lecture notes, slides, exercises, assignments, and recordings distributed in class are for students' personal use only and are not to be redistributed. In particular, students are not to upload intellectual property they do not own to "course note" websites. Such uploading could constitute a violation of copyright.

University Policies

Important Sessional Dates

Includes sessional start and end dates, drop deadlines, and withdrawal dates.

See the Office of the Registrar website at http://www.registrar.yorku.ca/enrol/dates/

Academic Honesty and Integrity

Academic honesty requires that persons do not falsely claim credit for the ideas, writing or other intellectual property of others, either by presenting such works as their own or through impersonation. Similarly, academic honesty requires that persons do not cheat (attempt to gain an improper advantage in an academic evaluation), nor attempt or actually alter, suppress, falsify or fabricate any research data or results, official academic record, application or document. Finally, academic honesty requires that persons do not aid or abet others to commit an offence of academic dishonesty, including intentional acts to disrupt academic activities.

Suspected breaches of academic honesty will be investigated and charges shall be laid if reasonable and probable grounds exist.

Academic Honesty and electronic devices during assessments (*e.g.* exams)

- Internet capable and personal storage devices of all kinds must be turned off, including vibrate. These and any other unauthorized material must be placed under the student's chair and should not be accessed at any point during the exam. Failure to comply with directive may be considered a break of academic honesty.
- See http://registrar.yorku.ca/exams/tipsheet

Please familiarize yourself with the full Senate Policy on Academic Honesty, found at http://secretariat-policies.info.yorku.ca/policies/academic-honesty-senate-policy-on/

Please also familiarize yourself with the SPARK Academic Honesty tutorial found at https://spark.library.yorku.ca/academic-integrity-what-is-academic-integrity/

Academic Accommodation for Students with Disabilities

York University shall make reasonable and appropriate accommodations and adaptations in order to promote the ability of students with disabilities to fulfill the academic requirements of their programs.

The nature and extent of accommodations shall be consistent with and supportive of the integrity of the curriculum and of the academic standards of programs or courses.

Please familiarize yourself with the full Senate Policy on Academic Accommodations for Students with Disabilities, found at http://secretariat-policies.info.yorku.ca/policies/academic-accommodation-for-students-with-disabilities-policy/

Note: Students should submit accommodation letters from Counseling and Disability Services (CDS) to the course instructor within the first two weeks of the course or as soon as issued.

Counseling and Disability Services - http://cds.info.yorku.ca/

York Accessibility Hub - http://accessibilityhub.info.yorku.ca/

Note: A student registered with CDS, and choosing to write with Alternate Exams, is responsible for making the appropriate writing arrangements within the timeframes outlined by Alternate Exams.

Alternate Exams - http://altexams.students.yorku.ca/

Religious Observance Accommodation

York University is committed to respecting the religious beliefs and practices of all members of the community, and making accommodations for observances of special significance to adherents.

https://w2prod.sis.yorku.ca/Apps/WebObjects/cdm.woa/15/wo/kmHGekTpzKLX6XYKBXYc8M/0.3.4.62.0

Note: Students who will have an academic conflict as a result of a religious observance, at any point in the term, should make the instructor aware of such at least three weeks prior to the conflict.

For conflicts occurring during an official examination period, please complete the Examination Accommodation Form available at http://www.registrar.yorku.ca/pdf/exam_accommodation.pdf and submit to your instructor at least three weeks prior to the final exam.

Student Conduct in Academic Situations

Students and instructors are expected to maintain a professional relationship characterized by courtesy and mutual respect and to refrain from actions disruptive to such a relationship. Moreover, it is the responsibility of the instructor to maintain an appropriate academic atmosphere in the classroom and the responsibility of the student to cooperate in that endeavour. Further, the instructor is the best person to decide, in the first instance, whether such an atmosphere is present in the class. A statement of the policy and procedures regarding disruptive and/or harassing behaviour by students in academic situations is available on the website of the University Secretariat (http://secretariat.info.yorku.ca/).

Division of Natural Science Resources

NATS-AID

Free peer tutoring for students enrolled in Natural Science Courses.
See http://natsci.info.yorku.ca/nats-aid/

M-AID in NATS (Math Aid)

Free math help for students enrolled in Natural Science Courses (TA tutors)
See http://natsci.info.yorku.ca/m-aid-in-nats/

Other Resources

Learning Commons

The Learning Commons brings together key supports for your learning: writing, research, learning skills and career services. http://www.library.yorku.ca/cms/learning-commons/

goSAFE

goSAFE is a complimentary service provided to the York Community. At the Keele campus, goSAFE has two routes: North Route & South Route which will safely transport community members by vehicle from one specified hub to another on campus. goSAFE operates seven days a week, all year round, including University closures (with the exception at Glendon during the Christmas holiday closure).

Call the goSAFE office at 416-736-5454 or extension 55454 during hours of operation. Please give your name, location and destination. http://www.yorku.ca/goSAFE/

Mental Health and Wellness at York University

Outlines a variety of resources available to support mental health and wellness
http://mhw.info.yorku.ca/resources/resources-at-york/students/

Good2Talk

Post-Secondary Student 24 hour Helpline
http://www.good2talk.ca/ 1-866-925-5454