ENG SCI 4498F – Engineering Ethics, Sustainable Development and the Law

Syllabus Fall 2020

Objectives

This course introduces students to the principles of professional engineering practice, ethical conduct, applicable laws, sustainable development and workplace equity. Upon completion, students should be able to:

- Identify, analyse and solve ethical dilemmas in accordance with the Engineers Code of Ethics;
- Develop an awareness of good ethical and professional practices, and appreciate professional responsibility issues while working individually or functioning on a team;
- Apply knowledge of environmental guidelines to the appraisal of engineering projects and analysis of engineering cases;
- Present a professional viewpoint on ethical and sustainability development issues in an organized manner;
- Demonstrate awareness of equity and professional responsibility in the workplace;
- Recognize the importance of life-long learning to keep abreast of ethical, legal, sustainability and equity standards and practices;
- Demonstrate insights on resolving the ethical implications of emerging and innovative technologies.

Prerequisites

- Completion of third year of the Engineering program.

Instructors

- Per Undergraduate Timetable https://studentservices.uwo.ca/secure/Timetables/mastertt/ttindex.cfm.
- Course contacts: llockin@uwo.ca sasantey@uwo.ca

Contact Hours

- Three hours per week, 0.5 course.
    - 90 min asynchronous lesson on OWL; 90 min online tutorial
    - Fall term: classes begin September 14. No classes October 12 - 16, November 2 - 6.

Required Textbooks (e-book versions available at UWO Book Store)

- Andrews, Shaw and McPhee: **Canadian Professional Engineering and Geoscience - Practice and Ethics, 6th Edition**. Toronto: Nelson, 2019
- Marston: **Law for Professional Engineers, 5th edition.** Toronto: McGraw-Hill Education, 2019.
- Other essential readings are provided in OWL: Engineers Canada Policies, PEO Practice Guidelines, cases etc.

General learning objectives

Problem Analysis		Team Work		Ethics and Equity	E
Investigation		Communication	E	Economics, Project Mgmt	
Design		Professionalism	E	Life-Long Learning	E
Engineering Tools		Impact on Society	E	Knowledge Base	T

Topics

FOUNDATIONS:

Professionalism, History, Ethical Principles, The Law - Regulation and Enforcement

- **Module 1:** Professionalism, and the practice of engineering; Principles of ethics, morality and justice; Ethical decision making.
- **Module 2:** The Canadian Legal System and Environmental Law; The Professional Engineers Act and the Code of Ethics. Definition of negligence, misconduct and incompetence.
- **Module 3:** Professional Engineers Ontario Regulation, Licencing and Discipline; Professional and ethical issues in consulting; Enforcement Cases.

APPLICATIONS:

Law & Ethics in the Workplace and Environment, Sustainable Development, Equity, Diversity and Inclusion, Risk Management and Ethical Issues in Emerging Technologies

- **Module 4:** Professional ethics and conflicts in the workplace.
- **Module 5:** Guest Speaker
- **Module 6:** Tort law principles; business and the engineer's liability; product safety; workplace safety; liability cases and intellectual property. Tort law cases.
- **Module 7:** Contract law principles; contract discharge, interpretation, and remedies; Contract law cases.
- **Module 8:** Sustainable development, social and economic justice. Cases.
- **Module 9:** Risk assessment; risk and crisis management & related cases.
- **Module 10:** Ethical issues in emerging technologies.
- **Module 11:** Environmental laws and ethics; climate change. Cases.
- **Module 12:** Equity, diversity & inclusion in hiring and in the workplace.

Evaluation

Evaluation consists of an individual written report and final report; mid-term exam, individual contributions, and a team presentation.

Code of Ethics Research Paper, 25%, individual written report

- Critically analyze the Code of Ethics, as defined in the Ontario Professional Engineers Act, Regulation 941. Discuss the validity and practical implementation.
- As justification for your position, cite examples of past cases, and include external research sources.

In Class Presentation, 15%, team project

- Research and create a presentation, to offer in-class, on an instructor-assigned topic relevant to engineering ethics, sustainability and the law.
- Due: starting Module 4, schedule to be determined after the first class.

In Class Contribution, 15%, individual

- Prepare for tutorials. Provide relevant and original insights during tutorials and in online discussion forums. Offer your perspective in a professional and respectful manner. Evaluated in Modules 1-12.

Mid Term Test, 20%, individual

- Multiple-choice, online 45-minute test. Includes all content in Modules 1-6.

Reflective Paper on Ethics of Emerging Technology and Life-long learning, 25%, individual

- I. Select an emerging technology. Write a reflective paper identifying the ethical issues that need to be addressed, including issues surrounding equity, potential liability, and risk mitigation.
- II. Discuss the importance of life-long learning as it relates to both your own career and the future of engineering.
- Required passing grade: 50% or higher.

Grading Standards

General expectations

Student's work and class contributions are evaluated on what would reasonably be expected of a 4th year Undergraduate student according to the Ontario Qualifications Framework http://www.tcu.gov.on.ca/pepg/programs/oqf/certificate11.html. University-wide grade descriptors for Undergraduate students are provided in Western's Academic Calendar.
A detailed rubric for reports, presentations and in-class contributions is provided in OWL.

Team Project grades

- When working on team projects, all individuals will normally receive the same grade.
- In the event students feel that another team member is not a positive contributor, students are requested to professionally and respectfully resolve matters with the team member. If after drawing someone's attention to their ineffective contribution and their behaviour continues, students may discuss concerns with the instructor.
- After consulting with the concerned students and considering any impact of a student's behaviour on the team's performance, the instructor may adjust course grades for any or all individuals in the team.

Penalties - written reports and presentations

- Late reports or presentations are subject to penalties of 25% of assignment grade weight per business day. Reports or presentations which are five business days late or more, may receive a zero grade.
- Penalties are waived for legitimate and documented reasons such as illness.

Penalties - contributions

- Interactions with others must be respectful and professional, or the student's contribution grade may be reduced.
- There is no penalty for disagreement or difference of opinion.
- In order to receive a contribution grade in a tutorial, students must attend and participate. Students who advise the instructor in advance of any planned absence may, at the instructor's discretion, receive credit for the attendance portion of the grade.
- Students with legitimate unplanned absences, and who provide supporting documentation afterwards, may also receive credit for the attendance portion of the grade.

Scholastic Offences

Scholastic offences are taken seriously, and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at the following Web site: https://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf.

Plagiarism

University policy states that plagiarism, defined as the "act or an instance of copying or stealing another's words or ideas and attributing them as one's own." (excerpted from Black's Law Dictionary, West Group, 1999, 7th ed., p. 1170) is a scholastic offence. In submitting any written work as part of the coursework requirements for this course students must ensure that this work is written in their own words. Whenever students take an idea or a passage of text from another author, they must acknowledge their debt both by using quotation marks where appropriate and by proper referencing such as footnotes or citations.

All required papers may be subject to submission for textual similarity review to the commercial plagiarism-detection software under license to the University for the detection of plagiarism. All papers submitted for such checking will be included as source documents in the reference database for the purpose of detecting plagiarism of papers subsequently submitted to the system. Use of the service is subject to the licensing agreement, currently between The University of Western Ontario and Turnitin.com (http://www.turnitin.com).

Any student who is suspected of a scholastic offence in respect of any work submitted as part of the coursework requirements for this course will be dealt with according to the University policies. For the purposes of this course, the University official for handling the case will be the Director, Centre of Engineering Leadership and Innovation. A common penalty for a first-time offence is a grade of zero in the relevant assignment. A serious incident or repeated offences (at any time at Western) may result in suspension or expulsion from the University.

Attendance

Any student who, in the opinion of the instructor, is absent too frequently from tutorial periods will be reported to the Dean (after due warning has been given). On the recommendation of the Department concerned, and with the permission of the Dean, the student will be debarred from taking the regular final assessment in the course.

Accessibility

Please contact the course instructor if you require material in an alternate format or if any other arrangements can make this course more accessible to you. You may also wish to contact Services for Students with Disabilities (SSD) at 661-2111 x 82147 for any specific question regarding an accommodation.

Conduct

Students are expected to review module readings and activities in advance of the weekly tutorial. Students are expected to arrive at tutorials on time, and to conduct themselves in a professional and respectful manner that is not disruptive to others. **Professionalism and respect are expected in all course forums, tutorial discussions and presentations.**

On the premises of the University, at a University-sponsored program or online educational program, students must abide by the Student Code of Conduct:
http://www.uwo.ca/univsec/board/code.pdf

Sickness and Other Problems

Students should immediately consult with the Instructor or Department Chair if they have any problems that could affect their performance in the course. Where appropriate, the problems should be documented (see link). The student should seek advice from the Instructor or Department Chair regarding how best to deal with the problem. Failure to notify the Instructor or Department Chair immediately (or as soon as possible thereafter) will have a negative effect on any appeal.

For more information concerning medical accommodations, please see:
http://www.uwo.ca/univsec/handbook/appeals/accommodation_medical.pdf

Notice

Students are responsible for regularly checking their email, and the course OWL site for notices related to the course.