

## ENG SCI 4498 G - Engineering Ethics, Sustainable Development and the Law

### Syllabus Winter 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;
- Improve communication skills by presenting a professional viewpoint on ethical and sustainability development issues in a professional and logical manner;
- Develop awareness of equity issues in the workplace, and appreciate professional responsibility issues;
- Recognize the need for life-long learning to keep abreast of applicable ethical, legal sustainability and equity standards and practices;
- Develop 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: [sasantey@uwo.ca](mailto:sasantey@uwo.ca) [kmcgui5@uwo.ca](mailto:kmcgui5@uwo.ca) [dsumpton@uwo.ca](mailto:dsumpton@uwo.ca) [duffen@uwo.ca](mailto:duffen@uwo.ca)

#### Contact Hours

- Three lecture hours per week, 0.5 course.
  - Winter term: classes begin January 6. No classes February 17 – 21, March 30 – April 3.

#### Required Textbooks

- 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 at no charge: 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

### Professionalism, Regulation and Enforcement, Ethics in the Workplace

- **Module 1:** Course introduction; professionalism; practice of engineering; introduction to Code of Ethics; future of engineering.
- **Module 2:** Ethical decision making; principles of ethics and justice; Professional Engineers Act and Ontario Regulations.
- **Module 3:** Definition of negligence, misconduct, and incompetence; regulation and licensing; discipline and enforcement cases.
- **Module 4:** Professional and ethical Issues for engineers in employment; innovation & intellectual property.
- **Module 5:** Professional and ethical Issues for engineers in management, hiring and dismissal; professional and ethical issues for engineers in private practice and consulting; employment law.

### The Law

- **Module 6:** Canadian legal system; tort law principles; business and the engineer's liability; product safety; workplace safety; liability cases.
- **Module 7:** Tort law cases. Risk assessment, risk & crisis management; related cases.
- **Module 8:** Introduction to contract law; contract discharge, interpretation, & remedies; contract cases.

### Environment and Sustainable Development

- **Module 9:** Environmental laws and ethics; climate change. Engineers Canada guidelines. Cases.
- **Module 10:** Sustainable development, challenge, & implementation. Cases.

### Equity

- **Module 11:** Social justice & challenge, racism; workplace equity; Indigenous topics; Diversity & Inclusion.

## Evaluation

Evaluation consists of an individual written report, plus mid-term and final exams; plus in-class activities, including 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.
- Due: In Class, Module 5; week of February 3.

### **In Class Presentation, 10%, 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 3, schedule to be determined after the first class.

### **In Class Contribution, 15%, individual**

- Attend class. Prepare beforehand. Provide relevant & original insights on the topics of the day.
- Offer new perspectives and spark discussion.
- Evaluated in modules 2-11.

### **Mid Term Test, 20%, individual**

- Multiple-choice, 90 minute test, closed book. Includes all content, Modules 1-6.
- Due: end of Module 7, all sections. Friday February 28, 18:30.

### **Final Exam, 30%, individual**

- Multiple-choice questions, closed book, 3 hour exam. Date to be confirmed.
- Required passing grade: 50% or higher.
- “Self-reported absence” policy does not apply to final exams.
- ES 4498 is a required course for degree completion. Therefore:
  - Students who achieve a final exam grade of at least 40%, AND who also achieve a course grade of at least 60% (including the final exam), may be eligible to write a Supplemental Examination.
  - <https://www.eng.uwo.ca/files/undergraduate/forms/supplemental-examinations-eng.pdf>

## Grading Standards

### General expectations

Student's work and class contributions are evaluated on what would reasonably be expected of a 4<sup>th</sup> year Undergraduate student who, upon graduation from their program, would demonstrate the skills shown in 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 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 the students concerned and considering whether a student's behaviour likely affected a 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 professional, or the student's contribution grade may be reduced.
- There is no penalty for disagreement or difference of opinion.
- Students who do not attend a particular class, will not receive the contribution grade for that class; however, 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](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 class, laboratory, or 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 examination 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 arrive at lectures on time, and to conduct themselves during class in a professional and respectful manner that is not disruptive to others. Late comers may be asked to wait outside the classroom until being invited in by the Instructor. Please turn off your cell phone before coming to a class, tutorial, quiz or exam.

On the premises of the University or at a University-sponsored 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 attached). 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](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.