

# **Syllabus**

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## **ELI 4110 Summer 2023 Syllabus**

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#### **“THE ETHICAL ENGINEER”**

#### **Engineering Ethics, Sustainable Development, and the Law**

Engineering students develop the principles of professional engineering practice, ethical conduct, applicable legislation, sustainable development, and workplace equity. This course helps students to develop an awareness of their own character and values. Leadership skills and professionalism are developed through analysis of cases, sustainable development projects and a review of emerging technologies. Upon completion, students should be able to:

1. Effectively demonstrate awareness of good ethical and professional practices, and appreciate professional responsibility issues while working individually or functioning on a team; **[PR1, PR2, PR3, EE1, EE2, EE3, EPM3]**
2. Present a compelling plan that demonstrates the importance of lifelong learning, particularly ethical, legal, sustainability and equity standards and practices; **[LL2]**
3. Effectively identify, analyse, and solve ethical dilemmas in accordance with the Engineers Code of Ethics; **[PR1, PR2, PR3, EE1, EE2, EE3]**
4. Constructively apply knowledge of environmental and sustainability guidelines to the appraisal of engineering projects; **[IESE1, IESE2, IESE3]**
5. Effectively prepare and present a professional viewpoint on ethical and sustainable development issues in an organized manner; **[CS2, CS3, PR2]**
6. Demonstrate sound understanding of equity issues in the workplace and professional responsibility issues; **[EE4]**
7. Effectively identify insights on resolving the ethical implications of emerging and innovative technologies; **[EE4, EPM3]**
8. Convincingly demonstrate an understanding of the legal framework used to regulate the practice of engineering.

#### **Prerequisites**

- Completion of third year of the Engineering program

#### **Course Instructor**

- Dr. Solomon Asantey, P.Eng. (asantey@uwo.ca)

Per Undergraduate Timetable <https://studentservices.uwo.ca/secure/Timetables/mastertt/ttindex.cfm>

## Contact Hours

- Six hours per week, 0.5 course

## Materials

Required readings (including selected chapters from the resources listed below) **are provided in OWL.**

*The following optional materials may be purchased from the UWO Book Store to augment required readings:*

- 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.

## Graduate Attributes

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

## Topics

### FOUNDATIONS:

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

- **Module 1:** Professionalism and Engineering; Principles of ethics, character and decision making.
- **Module 2:** The Canadian Legal System and Environmental Law; The Professional Engineers Act and the Code of Ethics; Lifelong Learning.
- **Module 3:** Licensing and Discipline; Professional and ethical issues in consulting; Enforcement.

### APPLICATIONS:

#### Law, Ethics and Equity Issues in the Workplace, the Environment and Emerging Technologies

- **Module 4:** Tort law principles; business and the engineer's liability; product safety; workplace safety; liability cases and intellectual property.
- **Module 5:** Contract law principles; contract discharge, interpretation, and remedies.
- **Module 6:** Ethics and conflicts in the workplace.
- **Module 7:** Ethics of emerging technologies: transparency, safety, security, privacy.
- **Module 8:** Sustainable development, social and economic justice.

- **Module 9:** Environmental ethics; climate change.
- **Module 10:** Equity, diversity & inclusion in hiring and in the workplace.

**Evaluation** – Refer to **OWL** for Detailed Assessments and Due Dates

**Formative, Individual Lifelong Learning Plan, 5% (To be submitted to both Gradescope and OWL)**

- Demonstrate the importance of life-long learning as it relates to your own career and create a plan for staying updated on ethical, legal, sustainability and equity standards and practices. Due in Module 3.

### **Code of Ethics Research Paper, Individual, 20% (To be submitted to both Gradescope and OWL)**

- Critically analyze the Code of Ethics, as defined in the Ontario Professional Engineers Act, Reg. 941, using 2 selected PEO Discipline Hearings.
- Interview a Professional Engineer or someone in the industry with an understanding of the Code of Ethics.

### **Team Presentation/Debate, 15%**

- Research and create a presentation, to offer in-class, on an instructor-assigned topic relevant to engineering ethics, sustainability, and the law.
- Due: starting in Module 5, presentation schedule available in OWL under Assignments.

### **Individual Contribution, 20%**

- Prepare for class. Provide relevant and original insights to class discussion and in online discussion forums. Offer your perspective in a professional and respectful manner. Also based on peer/self evaluation.

### **Mid Term Test, Individual, 10% on Friday June 9, 7pm-8pm**

- Online, linear multiple-choice test. Includes all content in Modules 1-5.
- If you are unable to attend the Mid Term due to illness or personal circumstances, then the alternative assessment will be at the discretion of the instructor.

### **Sustainable Development Quiz, 5%**

### **Summative, Individual, 25% (To be submitted to both Gradescope and OWL)**

- Select an emerging technology. Identify the ethical issues and equity issues that need to be addressed.
- Select a sustainable development project. Explain how this project satisfies the Brundtland Report's definition of Sustainable Development and discuss how it relates to sustainability principles.
- **50% grade on the Summative is REQUIRED to pass the Course**

## **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 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 - grading**

All individuals on a team will normally receive the same grade. If students feel that another team member is not a positive contributor, students are requested to resolve matters professionally and respectfully. If ineffective contribution behaviour continues, students may discuss concerns with the instructor. After consulting with the

students and considering any impact of a student's behaviour on the team's performance, the instructor may adjust grades for any or all individuals on the team.

**Written reports - grading**

- Penalties are waived for legitimate reasons such as illness.
- Late reports or presentations are subject to penalties of 5% per day of assignment mark.
- Reports which are more than 4 days late will receive a grade of zero.

## **Contribution - grading**

- To receive a contribution grade in a class, 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, may also receive credit for the attendance portion of the grade.
- Interactions with others must be respectful and professional, or the student's contribution grade may be reduced.
- Open discussion is encouraged. There is no penalty for disagreement or difference of opinion.

## **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 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 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 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 in-person class 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 may be debarred from taking the regular final assessment in the course, and this will result in a failing course grade.

## 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 class.** Students are expected to arrive at class 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, class 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 Concerns

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 manage their participation in the course. 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 Western email, and the course OWL site for notices related to the course.