Western University
Faculty of Engineering
John M. Thompson Centre for
Engineering Leadership and Innovation

ELI 9400 – Engineering Leadership

COURSE OUTLINE Winter 2023

DESCRIPTION

This course develop graduate students' leadership character, skills, and knowledge in the areas of: personal leadership, team and organizational leadership, and technology impact. Topics include: character development, leading through crises, coaching, managing performance, developing organizational culture, ethics of emerging technologies, philosophy of engineering and design, and special topics based on the student needs and current issues. Students will engage in case studies, class discussions in person and online, presentations, reflective writing, and a team project.

ENROLLMENT RESTRICTIONS

Enrollment in this course is restricted to graduate students in the Graduate Diploma in Engineering Leadership and Innovation.

INSTRUCTOR CONTACT INFORMATION

Course instructor: Minha R. Ha
Email address: mha4@uwo.ca
Office: ACEB 2410B
Office hours: By appointment
Classroom: WL 258
Lecture hours: Mondays at 1:30-4:30pm

COURSE FORMAT

The format of this course will be in-person.

TOPICS

- **First class – January 9th**
- **Spring Reading Week & Family Day – February 20th**
- **Last class – April 3rd**

Tentative Schedule

(Instructor reserves the right to adjust the details based on class progress/needs)

Week*	Description
1	Introduction: Defining engineering leadership Current challenges for engineering leadership
2	Science vs. Technology vs. Engineering Ways of knowing in engineering practice Design-Management relations in the business settings
3	Personality, Character, and Personhood Reductionism vs. Holistic view Implications for conflict management and employment practices
4	Mini-Presentations: Case studies and personal reflections
5	History of technology development Technology and culture Sociotechnical systems
6	Ethics of emerging technologies Impact evaluation Project topic development
7	Institutionalization of Engineering Canadian self-regulatory model Licensing and discipline Addressing cross-cultural issues in engineering leadership
8	Law vs. ethics vs. values Tort law and risk liability Project: Problem analysis development
9	Problem Analysis presentations
10	Communication, feedback, and managing performance Peer recognition
11	Final Project Presentations Wrap Up

*Not including Spring Reading Week

SPECIFIC LEARNING OUTCOMES

Degree Level Expectation	Approximate Weight	Assessment Tools	Outcomes
Depth & Breadth of Knowledge	30%	• Participation in in-class, workshop, and case-study discussions • Reflective Journal Entries • Final Project Reports	• Identify leadership in engineering context, and describe the differences between leadership and management. • Understand aspects of social psychology relevant to engineering leadership
Research & Scholarship	10%	• Reflective Journal Entries • Final Project Reports	• Able to analyze and characterize leadership practices used in an engineering context
Level of Application of Knowledge	30%	• Participation in in-class, workshop, and case-study discussions • Reflective Journal Entries • Final Project Reports	• Apply knowledge of leading and motivating to a real-world situation example • Identify and explain leadership challenges in organizations and develop appropriate solutions
Professional Capacity / Autonomy	5%	• Participation in in-class, workshop, and case-study discussions • Team Final Project Presentation and Report	• Understand ethical principles applicable to engineering practice. • Identify, analyze, interpret, and generate potential solutions to issues that arise in organizations with regards to ethical and professional practices
Level of Communication Skills	10%	• Participation in class discussion and exercises • Team project presentation • Final Project Report • Reflective Journal Entries	• Demonstrate effective verbal communication in class and case discussions • Demonstrate effective verbal and visual communication in group project, with oral presentation component, analyzing practical leadership problem • Demonstrate effective written communication in individual written assignments
Awareness of Limits of Knowledge	15%	• Participation in in-class discussion and exercises • Reflective Journal Entries • Final Project Report	• Understand and explain limitations of human decision-making in engineering practice, e.g., due to biases • Understand and explain challenges associated with cultural and individual behaviours that limit generalizability of best practices.

ASSESSMENTS

Assessment Type	Material Covered	Tentative Due Date	Weight
Participation in/Contribution to class activities, including mini-presentations on readings for discussion	All	Throughout	15%
Participation in Online Forums	All	Throughout	10%
Mini-Quizzes at the end of each class	Weeks 1-8	Weeks 1-8	15%
Team Project Problem Analysis Presentation (one)	Student-selected leadership case from recent events	Week 9	5%
Final Team Project Presentation (one)		Week 11	20%
Individual Final Report, including periodic reflection writings	All	2 Weeks after Term	35%

Activities in which collaboration is permitted:

- Case/Reading mini-presentations – students are expected to work in small teams or individually to analyze cases/readings and to provide verbal synopses in class
- Class discussion and exercises – students are expected to contribute to class discussion, including commenting on contributions of other students, and to participate in small group exercises in class.
- Group project – students are expected to work in pre-assigned teams to analyze a leadership scenario and to make a joint in-class presentation

Activities in which students must work alone (collaboration is not permitted):

- Mini-quizzes at the end of selected classes
- Individual written submissions, including Final Report

REQUIRED READINGS

- Ivey Publishing case studies as assigned
- Selected chapters or articles from available library resources, including:
    - Van de Poel, Ibo & Goldberg, David. Philosophy and Engineering – An emerging agenda. Springer, 2010.
    - Andrews, Gordon C., Shaw, Patricia & McPhee, John. Canadian Professional Engineering and Geoscience: Practice and ethics, 6th ed. Nelson Education, 2019.
    - Marston, Donald L. Law for Professional Engineers, 4th ed. McGraw-Hill, 2008.
- Other required readings will be posted on OWL and discussed in class.

OPTIONAL COURSE READINGS

Any optional readings will be posted on OWL and discussed in class.

CHEATING, PLAGIARISM/ACADEMIC OFFENCES

Academic integrity is an essential component of learning activities. Students must have a clear understanding of the course activities in which they are expected to work alone (and what working alone implies) and the activities in which they can collaborate or seek help; see information above and ask instructor for clarification if needed. Any unauthorized forms of help-seeking or collaboration will be considered an academic offense. University policy states that cheating is an academic offence. If you are caught cheating, there will be no second warning. Students must write their essays and assignments 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. Plagiarism is a major academic offence. Academic offences are taken seriously and attended by academic penalties which may include expulsion from the program. Students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence at the following website:
https://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_grad.pdf

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).

CONDUCT

Students are expected to follow proper etiquette to maintain an appropriate and respectful academic environment. Any student who, in the opinion of the instructor, is not appropriately participating in course activities and/or is not following the rules and responsibilities associated with the course activities, will be reported to the Associate Dean (Graduate) (after due warning has been given). On the recommendation of the Department concerned, and with the permission of the Associate Dean (Graduate), the student could be debarred from completing the assessment activities in the course as appropriate.

HEALTH/WELLNESS SERVICES

As part of a successful graduate student experience at Western, we encourage students to make their health and wellness a priority. Western provides several health and wellness related services to help you achieve optimum health and engage in healthy living while pursuing your graduate degree. Information regarding health- and wellness-related services available to students may be found at http://www.health.uwo.ca/.

Students seeking help regarding mental health concerns are advised to speak to someone they feel comfortable confiding in, such as their faculty supervisor, their program director (graduate chair), or other relevant administrators in their unit. Faculty of Engineering has a Student Wellness Counsellor. To schedule an appointment with the counsellor, contact Kristen Edwards (khunt29@uwo.ca) via confidential email and you will be contacted by our intake office within 48 hours to schedule an appointment.

Students who are in emotional/mental distress should refer to Mental Health@Western: http://www.uwo.ca/uwocom/mentalhealth/ for a complete list of options about how to obtain help.

SICKNESS

Students should immediately consult with the Instructor (for a particular course) or Associate Chair (Graduate) (for a range of courses) if they have problems that could affect their performance. The student should seek advice from the Instructor or Associate Chair (Graduate) regarding how best to deal with the problem. Failure to notify the Instructor or the Associate Chair (Graduate) immediately (or as soon as possible thereafter) will have a negative effect on any appeal. Obtaining appropriate documentation (e.g., a note from the doctor) is valuable when asking for accommodation due to illness.

Students who are not able to meet certain academic responsibilities due to medical, compassionate or other legitimate reason(s), could request for academic consideration. The Graduate Academic Accommodation Policy and Procedure details are available at:
https://www.eng.uwo.ca/graduate/current-students/academic-support-and-accommodations/index.html

ACCESSIBLE EDUCATION WESTERN (AEW)

Western is committed to achieving barrier-free accessibility for all its members, including graduate students. As part of this commitment, Western provides a variety of services devoted to promoting, advocating, and accommodating persons with disabilities in their respective graduate program. Graduate students with disabilities (for example, chronic illnesses, mental health conditions, mobility impairments) are strongly encouraged to register with Accessible Education Western (AEW): http://academicsupport.uwo.ca/accessible_education/index.html

AEW is a confidential service designed to support graduate and undergraduate students through their academic program. With the appropriate documentation, the student will work with both AEW and their graduate programs (normally their Graduate Chair and/or Course instructor) to ensure that appropriate academic accommodations to program requirements are arranged. These accommodations include individual counselling, alternative formatted literature, accessible campus transportation, learning strategy instruction, writing exams and assistive technology instruction.