ELI 4100F– Engineering Leadership

Course Outline Fall 2025

Instructor:

John M. Thompson Centre for Engineering Leadership and Innovation

LECTURES:	Section 001: Tuesdays 1:30-3:30 pm & Friday 1:30-2:30 pm Section 002: Monday 12:30-2:30 pm & Fridays 11:30-12:30 pm Location available on westernu.brightspace.com
ANTIREQUISITE(s):	Former Engineering Science 4480A/B.
PREREQUISITE(s):	Enrolment in year 3 or above in Engineering
CEAB Academic Units:	Complementary Studies 100%
TEXT / Course Resources / References	Optional reading available through Western Libraries, full list available on OWL.
DESCRIPTION This course addresses topics unique to engineering leadership: technology impact, challenges of interdisciplinarity, factors and outcomes related to engineering design and the disruption of existing norms. Students engage in case studies; reflective, analytic, synthesis writing and presentations throughout the term; and a mini-inquiry project to explore a topic of choice.	

Course Learning Objectives	CEAB Graduate Attributes
1. Provide a working definition of leadership[1] in and through engineering, challenging reductionistic views of technology, people, and engineering impact	IESE1, LL1, CS3
Understanding Self and Others	
2a. Identify one's own strengths and limitations in engineer leader competencies and leader character; develop an awareness of the factors behind one's own actions and responses	ITW1
2b. Identify the influence of, and ways to work well with, diversity in personality traits as they bear upon communication, conflict management and performance	ITW3
2c. Determine action strategies to enhance one's capability[2] for engineering leadership, building on greater awareness of self and others	EE2, LL2
Organizational Aspect of Engineering Leadership	
3a. Describe how leader character impacts leadership approaches and decision making during crisis situations and in driving change	IESE1, CS2
3b. Select and adapt leadership approach or strategies appropriate to particular situations, appropriately addressing the visible and hidden aspects of organizational culture[3]	EE2, LL2, CS2, CS3

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[1] Leadership can be connected to, but is distinct from, supervision and management

[2] Includes character, competencies, and qualities of multiple modalities

[3] Includes organizational structure and processes, hidden/visible norms, discourses, paradigms/worldviews, behaviours and decision making

Modules

- **Welcome and Introduction (Week 0):**
- **Module 1: Multi-Modal Framework to Replace Reductionism in Knowledge and Personhood (Weeks 1-3)**
  - o Quiz 1 & Reflection Essay
- **Module 2: Leader Character, Discourse, and Sociotechnical Systems Lens to Organizational Leadership (Weeks 4-6)**
  - o Quiz 2 & Case Study Presentation (group)
- **Module 3: Competing Paradigms Regarding Technology and Their Implications for Engineering Leadership (Weeks 7-10)** o Quiz 3 & Engineering Leadership Philosophy Statement
  - o Reading Week:
- **Module 4: Conceptual Integration, Original Insights (Weeks 11-13)**
  - o Quiz 4 & 3-Minute Presentations (and peer activity)

Undergraduate Degree Expectations: Canadian Engineering Accreditation Board's (CEAB) Graduate Attributes

Knowledge Base		Engineering Tools		Impact on Society	D
Problem Analysis		Individual & Teamwork	A	Ethics and Equity	I-D
Investigation		Communication	D-A	Economics and Project Mgmt.	
Design		Professionalism	D	Life-Long Learning	A

Rating: I – The instructor will introduce the topic at the level required. It is not necessary for the student to have seen the material before. D – There may be a reminder or review, but the student is expected to have seen and been tested on the material before taking the course. A – It is expected that the student can apply the knowledge without prompting (e. g. no review).

Course Assessments

Name	% of Final Grade	Due Dates	Learning Outcomes
Quizzes (best 3 of 4)	18%	Weeks 2, 5, 8, 11 (in-class)	1, 3a, 3b
Module 1: Reflection Essay	15%	Week 3	1, 2a
Module 2: Case Study Presentation (group)	15%	Week 7	3a, 3b
Module 3: Engineering Leadership Philosophy Statement	20%	Week 10 (after Reading Week)	1, 1b
Module 4: 3-Minute Presentation + Collective Insight/Feedback Activity	20%	Week 12-13	1b, 2b, 2c, 3a
Participation and Contributions	12%	Throughout, attendance & contribution	2b, 2c
Total	100%		

In-Class Quizzes: After learning new concepts in each module, there will be discussions and/or practice questions to help you clarify understanding and apply them in your development as engineer leaders. Then there will be an in-class quiz, conducted on Brightspace or on paper, including multiple-choice, fill-in-the-blank, open-ended questions. In your final grade, three best scores of four quizzes will be included. Each quiz will contribute 6% towards your final grade. It is possible that you might perform significantly lower in one quiz compared to others. You are welcome to seek instructor help by making an appointment, to be directed to resources and/or help address misconceptions. The same concepts will be repeatedly used in your remaining assessments, and there is no reason for your performance to not improve significantly.

Reflection Essay (2000 words): Several prompts will be given for you to reflect on your learning, growth, and experiences relevant to engineering leadership. You will be prompted to use the concepts learned in Module 1. Reflections are NOT to be a passive summary of what you learned or experienced, but rather an ACTIVE utilization of insights to inform your decisions and intended actions.

Engineering Leadership Philosophy Statement (2000 words): There will be assigned prompts for you to answer, that aim to help you consolidate the learning outcomes from this course and develop a compelling narrative of your development journey in engineering leadership. Prompts will help you develop and structure your engineering leadership philosophy statement (approx. 800 words). It is often more difficult to make the statement concise while capturing precise examples and clear use of learned concepts from the course. This will be an important writing skill to develop, to make efficient use of words after having developed, articulated, and structured your thoughts clearly. The statement will be followed by additional written reflections, answering specific prompts (approx. 1200 words).

Case Study Presentation: In assigned groups, you will read a case study and analyze the behavioural, perceptive, structural and cultural aspects of an organization that gave rise to the situations in the case. Your group will apply the analytic frameworks and concepts from the course, and conduct additional research (e.g. conflict resolution model, behavioural factors) in order to determine the most appropriate responses and plans of action to be tested. Based on the root cause analysis, long-term plans for organizational leadership will also be addressed. You will apply multi-modal criteria for personal, engineering and organizational leadership success. You will deliver a presentation during class, and exchange feedback with peers.

3-Minute Presentation: In consultation with the instructor, you will choose a conceptual topic of meaningful interest. Past student topics included (paraphrased): 'autonomy vs. responsibility distribution in human-machine networks,' 'problematic discourses that limit risk perception and responsible debates on policy decisions,' 'appropriate boundaries in human empathy towards machines that alter the roles of technology,' 'identification of appropriate criteria for design communication and requirements to minimize unethical disruption of medical stakeholder relations,' and many others. You will apply concepts from the course to analyze your selection of cases

in specific contexts, and their counter-evidence cases, with the input of the instructor to guide your inquiry. There will be prompts and instructions to help you process your reflections towards yielding meaningful, actionable insights to share with the class. You will individually record a three-minute video to submit, and to show your assigned peers during class. During class, you will be in learning groups to watch each member's video, then submit answers to the instructor's questions collectively as a group. Both the individual video and group responses will contribute to your final grade (combined total of 20% of final grade). You will demonstrate your ability to present analyses, synthesis, reflections and recommendations effectively and concisely, in written, spoken and multi-media formats.

In-Class Participation: Discussion is an integral aspect of deepening learning and improving clarity; collective intelligence requires co-creating knowledge or insights through mutually synergistic learning engagement. Students in this course bring diverse work experiences, disciplinary studies, and other meaningful knowledge and perspectives. You will enjoy learning from peers as well as contributing your own perspective, experiences, and insights to your shared discussions with peers. While you might not be speaking to the entire class every week, it is expected that your contributions (whether individually or through collective work in groups) be made meaningfully visible for the class at least once in each module.

Extra Course Information

1. The instructor reserves the right to adjust individual marks on group assessments based on (a) team documentation, and (b) collective observations of student contributions to group assignments and participation in class.
2. The instructor reserves the right to adjust course content, due dates and/or delivery if required to meet Faculty, program and course academic objectives or to respond to unanticipated events.

Course-Specific Policies

1. LATE PENALTIES. **In ELI 4100F, all submissions** except quizzes and presentations **will have a grace period of 48 hours from the original due date. This accounts for academic consideration circumstances; <u>no</u> separate Academic Consideration Requests will be accepted.** After the grace period, late submissions will be penalized per the list below.
   a. Up to 24 hrs late after grace period: 20% Penalty
   b. Beyond 24 hrs late after grace period: Submissions will not be accepted; score of 0 will be assigned

2. MISSED IN-CLASS ASSESSMENTS. Presentations must be given on the assigned dates, and quizzes must be completed on the assigned dates. Any **academic consideration requests** for these **synchronous** assessments must be **accompanied by documentation** and submitted to the UGSO (via Academic Consideration Request Form). If approved, <u>the student must contact the instructor(s) to initiate</u> alternate arrangements as early as possible.

3. REQUIRED FOR COURSE CREDIT (Essential Assessments). **A student will not earn the course credit for ELI 4100F without a passing grade** (after any necessary adjustments) **in at least one essay assignment, and at least two quizzes.** Failure to satisfy these essential course assessments will result in students receiving a final grade that does NOT exceed 48%.
   a. For approved accommodation circumstances, see policy 6b below.

4. **In ELI 4100F, the use of GenAI is strongly discouraged for fact-finding, and prohibited for generating any textual content of the written submissions.** Appropriate use of GenAI may be useful in initial stages of researching a new topic (followed by fact-checking), and in learning to effectively structure communication materials.

5. ACADEMIC CONSIDERATIONS. In general, students missing a test/assignment/lab or examination due to <u>unforeseen, temporary interruptions or emergencies,</u> must report the absence by submitting *Academic Consideration* Request Form through <u>STUDENT ABSENCE PORTAL</u>.

    a. Students must request academic consideration as soon as possible and no later than 48 hours after the missed assessment.

    b. Requests for academic consideration must include the following components:

        i. Indication of the course(s) and assessment(s) affected by the request

        ii. Medical note, and

        iii. Additional supporting documentation as relevant.

    c. Once the request and supporting documents have been received and reviewed, appropriate academic consideration, if granted, shall be determined by the instructor in consultation with the academic advisor, in a manner consistent with the course outline.

    d. Academic consideration may include extension of deadlines, waiver of attendance requirements for classes/labs/tutorials, or re-weighting of course requirements. Some forms of academic consideration, such as arranging Special Examinations, assigning a grade of Incomplete, or granting late withdrawals without academic penalty, may only be granted by the Academic Advising office of the Faculty of Registration.

6. ACADEMIC CONSIDERATIONS: Limits

    a. Requests for academic consideration without a medical note or other supporting documentation may be accepted once per term, per course, on any course activity **except** (i) those assigned as "designated assessment" for always-required documentation, (ii) those with flexibility already built-in (e.g. grade periods), and (iii) <u>examinations</u> scheduled by the Office of the Registrar during official examination periods (including take-home final exams and December mid-year exams for full courses) and practical laboratory and performance tests typically scheduled in the last week of the term.

    b. An instructor may deny academic consideration for any assessment that is not required in the calculation of the final grade.

    1. An instructor may deny academic consideration relating to extended deadlines where there is already flexibility in the submission timeframe (e.g., 72-hour submission window). This assessment flexibility must be indicated on the course outline.

7. ACCOMMODATIONS. Students dealing with <u>longer duration of circumstances</u> (whether expected or unexpected) that affect their ability to complete any course activity, should seek formal *accommodations* (not *Academic Consideration)* through Accessible Education. There can be various provisions made in order to support your successful course completion.

    a. Documentation is mandatory, handled through the UGSO and/or Accessible Education. Note: Forged notes and certificates will be dealt with severely. To submit a forged document is a scholastic offence (see below).

    b. For cases in which you are unable to complete an essential course assessment (i.e. required for course credit) by the set due date, <u>with an approved accommodation,</u> alternate arrangements will be made. Course credit and final grade may be withheld until make-up activities are completed for essential course assessments. Extensions beyond the end of classes must have the consent of the instructor, the Director Integrated Engineering, and the Associate Dean, Undergraduate Studies.

II. Religious Accommodation

When scheduling unavoidably conflicts with religious holidays, which (a) require an absence from the University or (b) prohibit or require certain activities (i.e., activities that would make it impossible for the student to satisfy the academic requirements scheduled on the day(s) involved), no student will be

penalized for absence because of religious reasons, and alternative means will be sought for satisfying the academic requirements involved. If a suitable arrangement cannot be worked out between the student and instructor involved, they should consult the appropriate Department Chair and, if necessary, the student's Dean.

It is the responsibility of such students to inform themselves concerning the work done in classes from which they are absent and to take appropriate action.

III. Academic Integrity

In the Faculty of Engineering, we encourage students to create a culture of honesty, trust, fairness, respect, responsibility, and courage, befitting the professional degree you are pursuing.

Please visit Academic Integrity Western Engineering for more information.

IV. Academic Offences

Plagiarism means using another's work without giving credit. The university has rules against plagiarism and other scholastic offences. Western Engineering has a zero-tolerance policy on plagiarism. The minimum penalty is zero on the course work and a repeat offence will earn you zero on the course. A third offence may lead to expulsion from the university.
Scholastic Discipline for Undergraduate Students & Cheating, Plagiarism and Unauthorized Collaboration: What Students Need to Know

Students must write their reports, essays and assignments in their own words. Whenever students take an idea or a passage from another author, they must acknowledge their debt both by using quotation marks where appropriate and by proper referencing such as footnotes or citations. University policy states that cheating, including plagiarism, is a scholastic offence. The commission of a scholastic offence is attended by academic penalties, which might include expulsion from the program. If you are caught cheating, there will be no second warning.

All required papers may be subject to submission for textual similarity review to commercial plagiarism detection software under license to the University for the detection of plagiarism. All papers submitted will be included as source documents on 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). Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, in the relevant section of the Academic Handbook: http://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf

V. Faculty of Engineering AI Policy

The use of generative Artificial intelligence (GenAI) tools won't be discouraged in the Faculty of Engineering. As we pride ourselves on building the future we can't hide from the use of GenAI tools to contribute to the understanding of the course materials. However, the use of GenAI tools in any assignment or contribution during the course will have to be disclosed, as a resource. GenAI tools have strengths and weaknesses depending on the purpose of use and the context of application. Students are expected to critically evaluate and determine when GenAI tools are/are not appropriate, and clearly document how they were used if relevant.

GenAI tools use won't be permitted in any type of examination or other assessments where the faculty have prohibited their use. If use of GenAI tools is detected by the instructor in these instances, academic offences penalties might be imposed against the student.

VI.   Use of English Policy

In accordance with Senate and Faculty Policy, students may be penalized up to 10% of the marks on all assignments, tests, and examinations for improper use of English. Additionally, poorly written work except for the final examination may be returned without grading. If resubmission of the work is permitted, it may be graded with marks deducted for poor English and/or late submission.

VII.   Recordings

The course intellectual content belongs to the instructors and/or the Faculty of Engineering. Participants in this course are not permitted to record sessions, except where recording is an approved accommodation, or the participant has the prior written permission of the instructor. Students are not allowed to disclose any recordings or their content to anyone not participating in the course without written authorization from the instructor.

Recordings made with the instructor's permission are strictly limited for use in study for this course and may not be shared without express permission.

For any recording of course activities taken by course instructors, students will be notified and will only be used to improve course delivery, instructional content or feedback to students. This may include, but is not limited to, a) videos of student presentations for presentation skills feedback, b) pictures of project displays or deliverables for instructional feedback, and c) pictures or videos of Lecture activities for illustrating future instructional material. Images of students (i.e. photos or videos) will not be recorded without prior consent.

Photos and videos may be taken at major course events to promote public engagement at future events, in promoting Western Engineering programs, and to improve instructional materials for future course iterations. Students wishing to discuss the collection and use of recordings during course activities should contact the course coordinator.

VIII.   Accessibility

Western is committed to achieving barrier free accessibility for persons with disabilities studying, visiting and working at Western. As part of this commitment, there are a variety of services, groups and committees on campus devoted to promoting accessibility and to ensuring that individuals have equitable access to services and facilities. To help provide the best experience to all members of the campus community, please visit the Accessibility Western University for information on accessibility-related resources available at Western.

Students with disabilities may arrange for academic accommodation at Western. For a more detailed explanation, please visit Academic Support & Engagement -Academic Accommodation.

IX.   Inclusivity, Diversity, and Respect

The Faculty of Engineering at Western University is committed to creating equitable and inclusive learning environments that value diverse perspectives and experiences. We recognize that university courses often marginalize students based on social identity characteristics such as, but not limited to, Indigeneity, race, ethnicity, nationality, ability, gender identity, gender expression, sexuality, age, language, religion, and socioeconomic status. Understanding this, we strive to facilitate equitable experiences and inclusion within the classroom by respecting and integrating multiple ways of knowing, being, and doing. Please visit the Office of Equity, Diversity and Inclusion.

X.   Health and Well-Being

- Health & Wellness Services – Students - Offers appointment-based medical clinic for all registered part-time and full-time students.
- Mental Health Support - Provides professional and confidential services, free of charge, to students needing assistance to meet their personal, social and academic goals. Services include consultation, referral, groups and workshops, as well as brief, change-oriented psychotherapy.

- Crisis Support - For immediate assistant, please visit Thames Hall Room 2170 or call 519-661-3030. The crisis clinic operates between 11:00 am - 4:30 pm. For after-hours crisis support, click here.
- Gender-Based Violence and Survivor Support - Western is committed to reducing incidents of gender-based and sexual violence and providing compassionate support to anyone who has gone through these traumatic events. If you have experienced gender-based or sexual violence (either recently or in the past), you will find information about support services for survivors, including emergency contacts, here. To connect with a case manager or set up an appointment, please contact support@uwo.ca.

Important Contacts

John M. Thompson Centre for Engineering Leadership and Innovation (home of Integrated Engineering, ES 1050, ELI 4110F/G, and the Engineering Leadership and Innovation Certificate/Graduate Diploma)	ACEB 2410	519-661-2111	tceli@uwo.ca
Engineering Undergraduate Services (UGSO)	SEB 2097	519-661-2130	engugrad@uwo.ca
Office of the Registrar/Student Central	WSSB 1120	519-661-2100	

Important Links

- IMPORTANT DATES AND DEADLINES & WESTERN ACADEMIC CALENDAR – official program and course descriptions
- SCHEDULING OF ASSIGNMENTS, TESTS, AND EXAMINATIONS
- RETENTION OF ELECTRONIC VERSION OF COURSE OUTLINES (SYLLABI)
- ENGINEERING PROGRESSION REQUIREMENTS AND ACADEMIC REGULATIONS – includes details on supplemental exams, failed year policies, etc.
- UNIVERSITY STUDENTS' COUNCIL (USC) - SERVICES & Undergraduate Engineering Society
- ACADEMIC RIGHTS AND RESPONSIBILITIES, ACADEMIC CONSIDERATION FOR MEDICAL ILLNESS & Student Code of Conduct - includes complaint procedures)
- STUDENT FORMS & STUDENT ABSENCE PORTAL (Graduate students must contact their home department)
- Accessible Education (for prolonged impact on academic performance, includes registration link) & ACCOMMODATIONS FOR RELIGIOUS HOLIDAYS
- ACADEMIC APPEALS – this may be needed for some situations falling outside academic consideration & accommodations (consult the UGSO or your graduate home department)