

Western University
Faculty of Engineering
Department of Mechanical & Materials Engineering

ES 9670 – Engineering Communications

COURSE OUTLINE – Summer 2017

INSTRUCTOR: Lucas Thung
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OFFICE HOURS: Thursdays, 4 pm to 5:30 pm

DESCRIPTION: In this course, students will learn how to interpret and communicate engineering innovations through professional writing and persuasive oral presentation using both “traditional” and “modern” mediums. Emphasis will be on developing the practical business skills expected of an engineer holding a graduate degree. Upon completing this course, students should be able to persuasively and dynamically display their expertise to a wide variety of audiences. Students will also learn to critically assess professional and public discourse relevant to the engineering profession and gain an awareness of the social contexts and implications of engineering advancements.

CONTACT HOURS: Classroom Locations ([see below](#))

Sec 1: Mon (10 to 1 in SSC 3028), Wed (10 to 12 in SSC 3028), and Thu (10 to 2 in SSC 3028)

Week #	Date	Section #1
		Class Time
1	(First Class) Thu, May 11	See above
2	Mon, May 15; Wed, May 17; Thu, May 18	See above
3	Wed, May 24; Thu, May 25	See above
4	Mon, May 29; Wed, May 31; Thu, June 1	See above
5	Mon, June 5; Wed, June 7; Thu, June 8	See above
6	Mon, June 12; Wed, June 14; Thu, June 15	See above

Sec 2: Mon (10 to 1 in SSC 2020), Wed (10 to 12 in SSC 2020), and Thu (10 to 2 in SSC 2020)

Week #	Date	Section #2
		Class Time
1	(First Class) Thu, July 6	See above
2	Mon, July 10; Wed, July 12; Thu, July 13	See above
3	Mon, July 17; Wed, July 19; Thu, July 20	See above
4	Mon, July 24; Wed, July 26; Thu, July 27	See above
5	Mon, July 31; Wed, Aug 2; Thu, Aug 3	See above
6	Wed, Aug 9; Thu, Aug 10	See above

PREREQUISITES: Graduate student standing in MME or permission from the instructor.

ANTIREQUISITES: None.

- TOPICS:**
1. Types of technical communication
 - a. Research papers and theses
 - b. Engineering Reports
 - c. Proposals
 - d. Technical presentations
 - e. Memos, letters
 2. Communicating to different audiences
 - a. The public
 - b. Policy makers
 - c. Technical experts
 - d. Researchers
 3. Review of writing basics
 - a. Common grammatical errors
 - b. Sentence and paragraph development
 - c. Structure and organization (i.e. sections, chapters, etc)
 4. Style
 - a. Appropriate language and tone
 - b. Formal versus information communication
 - c. Appropriate use of jargon
 - d. Avoiding “bafflegab”
 5. The writing process
 - a. Identifying a key idea or thesis statement
 - b. Developing a rough outline
 - c. Writing a draft
 - d. Reorganizing, editing, and revising
 - e. Proof-reading
 6. Information gathering
 - a. Identifying sources of information
 - b. Assessing the quality of information
 - c. Summarizing information
 - d. Citing information with proper references
 7. Critical thinking
 - a. Compare and contrast information from different sources
 - b. Synthesize new ideas and concepts
 - c. Present new ideas clearly and concisely
 8. Plagiarism
 - a. Understanding and avoiding plagiarism
 9. Document formatting
 - a. Chapters, sections, subsections
 - b. Margins, page numbering
 - c. Table of contents, table of figures
 - d. Formatting equations
 - e. Figure numbering and captions
 - f. Footnotes and endnotes
 - g. Referencing
 10. Bibliographies
 - a. Citing references in the body
 - b. Listing references using an accepted bibliographic style
 - c. Using bibliography management software
 11. Graphical communication

- a. Figures and diagrams; Graphs and charts
- b. Photographic images
12. Technical graphics
 - a. Engineering drawings
 - b. Schematics and engineering diagrams
13. Oral communication and presentations
14. Digital communication tools
 - a. Effective use of various software
 - b. Digital editing and revision; Use of outliners
 - c. Embedding multimedia, table of contents, list of figures, references, etc.
15. Collaborative authoring
 - a. Effective processes and workflows
 - b. Digital collaboration tools; Group authoring tools
 - c. Revision management
16. Multimedia communication
 - a. Audio, Video, Photographs, Animations
17. Computer-based communication
 - a. Web, Blogs, twitter, discussion forums, wiki, Email
18. Career strategies
 - a. Resume and cover letter
 - b. Salary negotiations
 - c. Communication skills for effective leaders and managers

Note: The depth and coverage of the above topics will vary.

***SPECIFIC
OBJECTIVES:***

By the end of the course, students should be able to compile, assess, and communicate technical information clearly and concisely.

In particular, by the end of the course students should:

- Recognize and avoid common grammatical errors.
- Be able to express technical information and ideas clearly and concisely, both orally and in writing.
- Be able to structure and logically organize ideas and concepts in a written report or presentation.
- Be able to effectively revise and edit drafts to improve clarity and organization.
- Understand and avoid plagiarism.
- Be able to recognize and find good sources of information.
- Be able to understand, summarize, synthesize, compare and contrast information from different sources.
- Be able to synthesize, organize and present ideas in your own words, without plagiarism, excessive direct quotes, or paraphrasing from other sources.
- Be able to present a clearly, logical and well-reasoned argument.
- Be able to use graphics and diagrams effectively.
- Be able to communicate using technical graphics.
- Be able to cite information sources using an accepted bibliographic style.
- Be able to format a document to a professional standard.
- Understand and use standard styles for mathematics in a document.
- Understand and use multimedia, including video and photographs, to effectively communicate technical information.
- Use effective processes and tools to collaboratively author report and presentations as part of a team.
- Be able to leverage course tools to elevate their communication skills and future career prospects.

TEXTBOOK: None!

- REFERENCES:**
- 1) Carnegie, D. (1998). How to Win Friends and Influence People. Gallery Books
 - 2) Covey, R. (2013). The 7 Habits of Highly Effective People: Powerful Lessons in Personal Change. Simon & Schuster
 - 3) Fetherstonhaugh, B (2016). The Long View: Career Strategies to Start Strong, Reach High, and Go Far. Diversion Publishing
 - 4) Guffy, M., Rhodes, K., Rogin, P. (2010). Business Communication. Nelson
 - 5) Harvard Business Review (2014). Presentations (HBR 20-Minute Manager Series). HBR Press
 - 6) MacRae, P. (2015). Business and Professional Writing. Broadview Press

EVALUATION:

1) Class Contribution	15%	(Due Date: Ongoing)
2) Persuasive Presentations	15%	(Due Date: End of Week #2)
3) Job Application Assignment	20%	(Due Date: End of Week #3)
4) Communicating Changes Assignment	20%	(Due Date: End of Week #4)
5) Group Field Project	30%	(Due Date: End of Week #6)

- All assignments must be submitted to Turnitin via OWL.

LATE ASSIGNMENTS: 10% late penalty / day (i.e. including weekend and statutory holiday) will apply.

1) Class Contribution

In-class and/or Online (via OWL's Forums).
- Emphasis is on "quality" and not "quantity" of contributions.

2) Persuasive Presentations

For this assignment, students will work individually.

Tasks:

- i. Select 1 published journal / peer-reviewed article on "engineering innovations".
- ii. Present "key points" to a "technical" (i.e. engineers, scientist, etc) audience in class.
- iii. Present "key points" to a "non-technical" (i.e. HR, sales, etc) audience online.
 - o Submit a video (playing time of 2 to 3 minutes) to YouTube (www.youtube.com).
 - "Fancy" graphics / visual effects are not necessary.
 - The rationale behind recording your presentation is to see if you have presentation "tendencies" (i.e. level of enthusiasm, eye contact, projecting voice, clarity, etc) that could be improved upon.

3) Job Application Assignment

For this assignment, students will work **individually**.

Submit an application to a “live” job advertisement in both “traditional” and “modern” formats.

Deliverables:

- i. A copy of the job posting that you are submitting your application to.
 - a. **Note:** This must be a "live" job posting (i.e. applications are still accepted).
The rationale behind this requirement is to provide students with the option to submit their videos as part of their job applications (i.e. if they wish to apply for the actual jobs!).
- ii. Cover letter and CV tailored to the job posting.
- iii. Completed professional LinkedIn profile (www.linkedin.com) tailored to the job posting.
 - a. Based on "best-practices" found from their research.
- iv. “Job Pitch” video to be uploaded to YouTube (www.youtube.com).
 - a. A video (playing time of 2 to 3 minutes) outlining your key qualifications and how you meet (or exceed) the job requirements. i.e. "Why should they hire you?"

4) Communicating Changes Assignment

For this assignment, students will work in **pairs**, as randomly assigned by the instructor.

Tasks:

- i. Describe a fictitious **but** realistic case scenario, one that is "highly sensitive and possibly disastrous". In this situation, you (as the protagonist) are tasked with communicating one or more sensitive change(s) / announcement(s) (i.e. layoffs, lost of lives, politically charged, racially divisive, religious issues, etc) in order to prevent, reduce, transfer, or ameliorate the possible negative impacts.
- ii. Solve your case scenario using well researched "best practices".
 - i.e. explain the rationale behind your actions.

5) Group Field Project

Students will work in **groups** to conduct a field project by contacting and interviewing three (3) senior executives from **different** organizations.

The purpose of the field project is to provide students with the opportunity to communicate and gain insights (i.e. communication practices within different organizations, "best practices" learned from senior executives' professional experiences, etc) directly from industry experts.

Literature review will be conducted in order to compare similarities and differences between "industry practices" and "theoretical perspectives". i.e. surprises, uncommon findings, common knowledge, challenges, etc.

This field project is a great opportunity to network with different executives that may help students secure future internships and full-time employments.

The instructor will randomly assign students into different groups to:

- Allow ample time for each group to present their projects followed by a “Questions and Answers (Q&A)” session.
- Simulate a realistic work situation since employees rarely have the option of selecting their group members. Students will be challenged with the task of working with other individuals whom they may not normally work with.

ATTENDANCE: Any student who, in the opinion of the instructor, is absent too frequently from class 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), said student will be barred from completing the course.

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.

HEALTH / WELLNESS: As part of a successful graduate student experience at Western, we encourage students to make their health and wellness a priority. Western provides several on campus health-related services to help you achieve optimum health and engage in healthy living while pursuing your graduate degree. For example, to support physical activity, all students, as part of their registration, receive membership in Western's Campus Recreation Centre. Numerous cultural events are offered throughout the year. Please check out the Faculty of Music web page <http://www.music.uwo.ca/>, and our own McIntosh Gallery <http://www.mcintoshgallery.ca/>. 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. Campus mental health resources may be found at http://www.health.uwo.ca/mental_health/resources.html.

To help you learn more about mental health, Western has developed an interactive mental health learning module, found here: http://www.health.uwo.ca/mental_health/module.html. This module is 30 minutes in length and provides participants with a basic understanding of mental health issues and of available campus and community resources. Topics include stress, anxiety, depression, suicide and eating disorders. After successful completion of the module, participants receive a certificate confirming their participation.

SICKNESS: Students should immediately consult with the instructor or Associate Chair (Graduate) if they have problems that could affect their performance in the course. 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.

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 519-661-2111 x 82147 for any specific question regarding an accommodation.

**COMMUNICATION
POLICY:**

- 1) Use your Western University issued email address (i.e. @uwo.ca).
- 2) Include "ES 9670" in the subject line.

PLAGIARISM /

ACADEMIC OFFENCES: 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. Scholastic 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 (see Western's scholastic discipline regulations for graduate students).

NOTICES: Students are responsible for regularly checking their [@uwo.ca](mailto:uwo.ca) Western University email **and** notices posted on **OWL** course website.

NOTE: The above topics and outline are subject to adjustments and changes as needed.

Learning Outcomes (ES 9670)

Degree Level Expectation	Weight	Assessment Tools	Outcomes
Depth and breadth of knowledge		•	<ul style="list-style-type: none"> • Understands advanced concepts and theories • Aware of important current problems in the field of study • Understands computational and/or empirical methodologies to solve related problems
Research & scholarship		•	<ul style="list-style-type: none"> • Able to conduct critical evaluation of current advancements in the field of specialization • Able to conduct coherent and thorough analyses of complex problems using established techniques/principles and judgment
Application of knowledge		•	<ul style="list-style-type: none"> • Able to apply knowledge in a rational way to analyze a particular problem • Able to use coherent approach to design a particular engineering system using existing design tools
Professional capacity / autonomy	30%	<ul style="list-style-type: none"> • Assignments • Oral Presentations 	<ul style="list-style-type: none"> • Aware of academic integrity • Implements established procedures and practices in the coursework • Defends own ideas and conclusions • Integrates reflection into his/her learning process
Communication skills	70%	<ul style="list-style-type: none"> • Assignments • Oral Presentations 	<ul style="list-style-type: none"> • Communicates (oral and/or written) ideas, issues, results and conclusions clearly and effectively
Awareness of limits of knowledge		•	<ul style="list-style-type: none"> • Aware of the need of assumptions in complex scientific analyses and their consequences • Understands the difference between theoretical and empirical approaches • Acknowledges analytical limitation due to complexity of practical problems