About ILead

Our aim in this course is to transform the way you think about communication particularly as it relates to engineering leadership. It is part of a suite of courses offered by the Institute for Leadership Education in Engineering (ILead). Learn about other opportunities at ilead.engineering.utoronto.ca. Our vision: *Engineers leading change to build a better world.*

Syllabus

APS1027 Engineering Presentations

Instructors
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Description

Communication skill can be a critical success factor in engineering and technology. Engineering and scientific know-how are given added power when communicated with clarity and simplicity in presentations that are thoughtfully planned and effectively executed. This is a theoretically based hands-on course. Each student will make a large number of short presentations to sharpen their skills and increase their confidence. Students will grapple with capturing the essence of complex technical subjects and expressing it through key words, data and images. Students will be able to develop a wide range of skills: visual representation of data, systems and mechanisms; structuring and sequencing a talk; managing the tools, equipment and physical and psychological aspects of presentations; delivering speeches with vivid voice and body language; and finally, skills in connecting with an audience and achieving the desired impact.

Learning Outcomes

On completing the course the student will be able to:

1. Formulate a purpose statement for a presentation in the context of the situation, audience and intended results.
2. Structure a presentation with suitable opening, contextual framing, overarching themes, narrative flow, content selection and sequencing, and closing.
3. Select simple words and phrases free of jargon. Where appropriate, use vivid key words and phrases.
4. Use their voice as an effective tool through appropriate control and modulation of volume, projection, pitch, pace and pausing.
5. Use body language and control and modulate small- and large-scale gestures and movements to improve presentation effectiveness.
6. Use presentation hardware and physical aids such as laser pointers, projectors, microphones, handouts, samples, and objects to suit diverse situations.

7. Assess the physical environment of a presentation such as room lighting, room sound, external distractions, and audience distractions and take steps to mitigate distractions and minimize obstacles to audience engagement.
8. Design the visual features of a presentation, the "look," and the visual representations of key concepts with illustrations, photographs, animations etc.
9. Create graphs and tables to represent data with clarity and simplicity (and ultimately with elegance). (basic MS Word and Excel competency are assumed).
10. Use PowerPoint to assemble visual elements to support speech. (basic PowerPoint competency is assumed).
11. Analyze great/historic speeches to articulate the methods used in writing/delivering
12. Evaluate a presentation and assess its effectiveness (including self-evaluation)
13. Formulate and deliver feedback to a presenter (including self-feedback).
14. Devise a methodology for preparation of a presentation including planning content and all elements of form, practicing and previewing.
15. Appreciate the challenges and importance of cross-cultural communication.
16. Listen to questions from an audience and respond directly.
17. Ask questions of a presenter in a manner that adds to the collective knowledge of all listeners.

Teaching Methods

1. Prepared short speeches on engineering and other subjects, illustrated and not, informative and persuasive, and in various forms such as: a technical talk, an elevator pitch, a chalk talk, a toast, and an introduction
2. Very short speeches for practicing basic skills: voice, pace, gestures, body language, etc.
3. Video recording and review of speeches. These recordings will only be used for class purposes.
4. Exercises and Homework such as readings, video viewing, speech analysis and preparation of speeches
5. Viewing, reading, analyzing and re-delivering great/historic speeches
6. Exercises and homework preparing graphs, tables and diagrams - hand drawn and computer drawn
7. Self- and peer-evaluation of, and feedback on, presentations
8. Workshops using participatory techniques such as Pictionary and improvisation
9. Written assignments such as: analysis of a speech, a speech for a formal occasion, a speech for a personal occasion, a reflection on the challenges of presentations
10. Extemporaneous speeches
11. Lectures and in-class discussions

Assignments

Students will be required to prepare presentation materials, present them and, in most cases, submit them for assessment, feedback and grading. In each case assume a professional audience (the class).

1. A Short Technical Talk – A speech delivered without written text or visual aids
2. One-minute Introduction – A written speech introducing yourself
3. Hand-drawn Illustration or Diagram – Students must prepare a diagrammatic drawing of a process, a device, or a piece of engineering equipment – hand-drawn on paper.

4. XY Graph of Data – Students must prepare an XY graph representing a prescribed data set. The graph should be computer generated and made into a PowerPoint slide.
5. A PowerPoint Illustration or Diagram – Students must prepare a diagrammatic drawing of a process, a device, or a piece of engineering equipment – using PowerPoint (Note: Downloading drawings or diagrams is not acceptable.)
6. One-minute Technical Talk – A technical talk about an aspect of engineering that you think is important.
7. A Chalk Talk – A talk about a technical subject that you illustrate (with chalk on a chalk board) as you tell your audience about it.
8. One-minute Toast – A written speech for special occasion by which you honour and recognize the accomplishments or special character of a person, organization, group, etc. (In this case you may choose another type of audience: family, friends, etc.)
9. A three-minute, three-slide presentation about an aspect of engineering that you think is important.
10. Two written reflections on the process of preparing and delivering a presentation to influence others.

Reference Materials

Books

- *Slide Rules – Design, Build and Archive Presentations in the Engineering and Technical Fields* by Traci Nathans-Kelly and Christine G. Nicometo (available as an ebook in the uni library
- *Made to Stick: Why Some Ideas Survive and Others Die* by Chip Heath and Dan Heath, 2008 Website: heathbrothers.com
- *Engineering Communication: From Principles to Practice* by Robert Irish and Peter Eliot Weiss, 2009
- *Canadian Public Speaking* by Melanie Novis, Pearson/Prentice Hall, 2004
- *The Oxford Dictionary of Quotations* edited by Elizabeth Knowles, 7th Edition, 2009
- *Lend Me Your Ears – Great Speeches in History* selected and introduced by William Safire, 2004

Websites

- The Three-minute Thesis - The original started by the University of Queensland: http://threeminutethesis.org/
- The Ontario3MT Competition: http://3mt.mcmaster.ca/
- The Alan Alda Institute for Communicating Science - The Flame Challenge - http://www.centerforcommunicatingscience.org/flame-challenge-2015/

Instructor Biographies

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Dr. Reeve is a professor in the Department of Chemical Engineering and Applied Chemistry, University of Toronto, and served as Chair from 2001-2011. He is founding Director of the Institute for Leadership Education in Engineering (ILead) at the University of Toronto. For over thirty years he has been a staunch advocate of excellence in technical communication, teaching public speaking and presentation skills to engineering students, and mentoring engineering professionals. Professor Reeve has worked with industry for many years as a consultant frequently in international assignments. He has created and led professional development short courses for industry on over 50 occasions reaching over 5000 attendees. His contributions to the profession and to research have been recognized by numerous awards. He is a registered Professional Engineer.

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Christina Heidorn is a trained engineer and formed documentary filmmaker who makes her living bridging the gap between academic researchers in engineering or science and the general public. As External Relations and Student Life Liaison for one of the most active university chemical engineering departments in Canada, she spends much of her time crafting engaging stories about complex technical research. Her background is multidisciplinary, with a B.A.Sc. in Engineering Science and M.Sc. in Ecology from the University of Toronto, and 7 years of experience as a science communicator in television documentary production. She has worked as a writer, researcher, associate producer and producer on programs for Discovery Canada, National Geographic Channel, CBC Television, TVO and other broadcasters. She has a wealth of experience in crafting simple, engaging visuals for different audiences.