



MECH 496: Engineering Management

University of British Columbia

Department of Mechanical Engineering

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Course Instructor:

Bill Rawlings
e. brawlings@mech.ubc.ca
o. 604-827-6417 (email preferred)
CEME 2053A (Meetings by appointment)

Teaching Assistant(s):

Maxine Chen
e. maxine.chen@ubc.ca

Class Meeting Time and Location

Class Time: Tuesday and Thursdays from 7 – 8:30pm
Location: CEME 1204

UBC's Point Grey Campus is located on the traditional, ancestral, and unceded territory of the xwm̓əθkwəy̓əm (Musqueam) people.

Course Structure

The course will be delivered during the lecture periods and instructional resources will be provided on Canvas. Course-related announcements and due dates will be delivered in-class and posted to Canvas. Student participation is required and will be evaluated based on in-class engagement, peer evaluation, and submission of lecture reflections/assignments.

Learning Outcomes or Objectives:

Mechanical Engineering 496 introduces students to the general principles and practices of engineering leadership and management. During this course students will:

- Examine the basic management functions (Leading, Planning, Organizing and Controlling) within the context of an engineering organization;
- Learn the core principles and tools of project management;
- Obtain insight into the supporting functions of finance and accounting, and interfacing with marketing and sales experts;
- Use case studies to experience a practical approach to learning engineering management.



Course Schedule and Topics

The following course schedule is subject to change with notice. All dates for course deliverables will be confirmed in class and on Canvas.

<u>Week</u>	<u>Lecture #</u>	<u>Date</u>	<u>Topic</u>
Week 01	1	7-Jan	Course Introduction; Introduction to Engineering Management & History of Engineering Management
	2	9-Jan	Leading Technical People
Week 02	3	14-Jan	Planning and Forecasting
	4	16-Jan	Planning & Forecasting -- Decision Making
Week 03	5	21-Jan	Organizing
	6	23-Jan	Organizing -- Human Aspects
Week 04	7	28-Jan	Controlling
	8	30-Jan	Class Case Study (Tesla Motors Inc., 2015)
Week 05	9	4-Feb	Project Management
	10	6-Feb	Project Management
Week 06	11	11-Feb	Project Management
	12	13-Feb	Project Management (Tentative: Guest Lecture)
Week 07		18-Feb	<i>Reading Week</i>
		20-Feb	<i>Reading Week</i>
Week 08	13	25-Feb	Marketing (Tentative: Guest Lecture)
	14	27-Feb	Marketing
Week 09	15	3-Mar	Case Study Presentations and Discussion (2 teams)
	16	5-Mar	Case Study Presentations and Discussion (2 teams)
Week 10	17	10-Mar	Accounting & Financial Management
	18	12-Mar	Case Study Presentations and Discussion (2 teams)
Week 11	19	17-Mar	Case Study Presentations and Discussion (2 teams)
	20	19-Mar	Financial Management
Week 12	21	24-Mar	Case Study Presentations and Discussion (2 teams)
	22	26-Mar	Case Study Presentations and Discussion (2 teams)
Week 13	23	31-Mar	Case Study Presentations and Discussion (2 teams)
	24	2-Apr	Managing Your Engineering Career
Week 14	25	7-Apr	Managing Your Engineering Career



Learning Activities

Students will engage in the following activities as part of the course:

- Participation in class discussions;
- Completion of participation activities based on readings and lecture material;
- Completion of a research paper (topic to be taken from a provided list);
- Completion of a group case study assignment;
- Completion of a group business simulation.

Learning Materials

Course Textbook

Title: *Managing Engineering and Technology, 7th Edition*
 Authors: Lucy C. Morse; Daniel L. Babcock; William L. Schell
 Publisher: Pearson (Copyright year 2020)
 Link: <https://www.vitalsource.com/en-ca/products/managing-engineering-and-technology-lucy-c-morse-daniel-l-v9780134875736>
 Cost: Rent is \$62.49 CAD + tax; Buy is \$99.99 CAD + tax

Case Study Materials

Students will be required to purchase 8 case studies (est. \$6 ea. + tax) and one guide (est. \$13 + tax) per the coursepack link to be provided. These documents include:

Title	Author & Publication Date
The Student Guide to the Case Method	Busuttill and Van Weelden, 2018
Applied Research Technologies Inc.: Global Innovation's Challenge	Bartlett and Beckham, 2010
Curled Metal Inc. – Engineered Products Division	Shapiro and Cespedes, 2011
Lisa Thomas at Lamont Engineering	Groysberg and Blair, 2019
Sun Hydraulics: Leading in Tough Times (A)	Hill and Suesse, 2003
Technology Transfer at a Defense Contractor	Elias, 1988
Tesla Motors Inc.	Rothaermel and King, 2015
The Lumen and Absorb Teams at Crutchfield Chemical Engineering	Amabile and Schatzel, 2007
Wind to Energy: W2E	Mark and Mitchell, 2004 (rev. 2009)

Business Simulation

Pending final confirmation, I intend to run a business simulation through the Harvard Business School related to business fundamentals in the context of starting a bicycle company using 3D printed carbon fibre frames (Cost \$40 USD + tax). A coursepack link to this simulation will be provided. **Note:** Purchase of coursepack materials requires making an account with a US-based website (Harvard Business Publishing).



If anyone has concerns about providing personal information to an entity outside of Canada, please contact the instructor to consider alternatives.

Assessment, Evaluation, and Grading

Grade distributions are at the discretion of the instructor and will not be negotiated under any circumstances:

Research Paper	
Proposal	5%
Paper	20%
Participation	15%
In-Class + Assignments	
Peer Evaluation	
Case Study	
Team Presentation	15%
Team Written Report	25%
Business Simulation	
Team Submission	20%
Total =	100%

Submission deadlines for assigned items will be provided in class. If a student is unable to attend and participate in class or to complete assigned work by the specified deadline, the student must have a legitimate reason (e.g. medical, career related, etc.) and must contact the instructor before or immediately after the scheduled date and time. Documentation explaining the absence or inability to meet the deadline may be required. Students are expected to work either individually or as groups according to the instructions provided for each assigned item.

Academic Misconduct

Academic honesty is a fundamental requirement of your studies. It is your obligation to inform yourself of the applicable standards. More information is available at <http://calendar.ubc.ca/vancouver/index.cfm?tree=3,54,111,0>.

Policies and Resources to Support Student Success

UBC provides resources to support student learning and to maintain healthy lifestyles but recognizes that sometimes crises arise and so there are additional resources to access including those for survivors of sexual violence. UBC values respect for the person and ideas of all members of the academic community. Harassment and discrimination are not tolerated nor is suppression of academic freedom. UBC provides appropriate accommodation for students with disabilities and for religious and cultural observances. UBC values academic honesty and students are expected to acknowledge the ideas generated by others and to uphold the highest academic standards in all of their actions. Details of the policies and how to access support are available at <https://senate.ubc.ca/policies-resources-support-student-success>. Mechanical



Engineering also has a Student Services Office (students@mech.ubc.ca), located in CEME 2205, where there are staff who can provide support and refer students to the appropriate resources.

Inclusive Environment

The Department of Mechanical Engineering is committed to providing an inclusive learning experience, and affirms the UBC Statement on Respectful Environment (<https://www.hr.ubc.ca/respectful-environment/files/UBC-Statement-on-Respectful-Environment-2014.pdf>). You are encouraged to contact their instructor should situations arise that are not consistent with this expectation. You are also invited to advise the instructor if you wish to be addressed by or referred to with particular pronouns.