

**ECOR3800 - A
Engineering Economics
Summer 2019**

Teaching Team

Instructor: Karim Ismail, Ph.D., P.Eng.

Office hours:

Office hours for TAs are to be announced

Office hours for instructor (ME3362): Mondays: 9:30 AM—11:15 PM

Recommended Textbook:

Engineering Economic Analysis, Third Canadian Edition. D. Newnan, J. Whittaker, T. Eschenbach, J. Lavelle. Oxford University Press.

Course Evaluation

Assignments: 4 Assignments x 5% each = 20%

Mid Term Examination: 30% (to be held outside lecture time on May 28th)

Final Examination: 50% (to be held according to the University final examination schedule)

Course Topics

1. Introduction to Engineering Economic Analysis.
2. Introduction to Ethics in Engineering Practice.
3. Time value of money. Types of compounding. Types of interest rates. Rate of return. Cash flow and cash flow diagrams. Concept of equivalencies.
4. Comparison of independent alternatives: Present-worth technique. Equivalent annual-worth techniques. Future-worth technique. Rate of return techniques. Incremental analysis.
5. Analysis of mutually exclusive alternatives. Alternatives with unequal lives.
6. Replacement Analysis: Replacement studies. Replacement due to deterioration, obsolescence or inadequacy. Cyclic replacements.
7. Analysis of Public Projects: Benefit/cost analysis. Classification and quantification of benefits & costs. Selecting a discount rate question.
8. Accounting for Inflation: Causes of inflation. Measures of inflation rate. Impact on project evaluation. Impact on taxes.
9. Depreciation and Income Tax Considerations: Depreciation concepts. Analytical models of depreciation. Capital cost allowance. Corporate income taxes. After-tax economic comparisons.
10. Project Management: project management lifecycle, project management tools, Gannt charts, critical path method.
11. Sensitivity Analysis: Sensitivity analysis of a single proposal. Sensitivity of alternatives.
12. Break-Even Analysis: Linear & non-linear break-even analyse.
13. Risk Analysis: Decision making under risk & uncertainty.

Course Rules

- On-time attendance is very important. Students whose late arrival is deemed by the Instructor to be distracting to the class will not be allowed in.
- Lectures and course materials, including presentations, outlines, and similar materials, are protected by copyright. You may not and may not allow others to reproduce or distribute lecture notes and course materials publicly without the Instructor's express written consent.
- Assignments: Assignments should be deposited to the course designated dropbox. The location of the dropbox is the Filing cabinet near the entrance to the Civil and Environmental Engineering wing (Mackenzie building). The cabinet located to the right of room 3424 ME. Assignments will be collected at 4:00 pm on the due date. Assignments are to be collected from TAs during their office hours.
- Late or misplaced assignments will not be accepted.
- Assignments misplaced in a dropbox different from the course designated dropbox will be treated as submitted on the same day of their recovery from the wrong dropbox.
- Plagiarism is strictly not tolerated.

Missing Midterm:

The midterm location, time, and covered topics will be posted on CULearn.

If for unavoidable causes the student is unable to write the midterm examination on time, the student must request permission to be absent from the midterm examination without forfeiting its mark. The student must submit this request by email before the midterm. The student must provide a proof of an unavoidable cause, e.g., a formal medical report. This proof must be submitted no later than one week after the scheduled time of the midterm examination. No Replacement is to be held.

The student is responsible for following all course-related announcements on CULearn. These announcements include, but not limited to, assignments, deadlines, and examination instructions.

University Regulations:

The student must follow all regulations by the University related to this course. The student is responsible to review and follow the regulations.

Course-related University Rules and Services:

[1] *Accommodations:* You may need special arrangements to meet your academic obligations during the term. For an accommodation request the processes are as follows: **Pregnancy obligation:** write to me with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details visit the Equity Services website: <http://www.carleton.ca/equity/>

Religious obligation: write to me with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details visit the Equity Services website: <http://www.carleton.ca/equity/>

Academic Accommodations for Students with Disabilities: The **Paul Menton Centre** for Students with Disabilities (PMC) provides services to students with Learning Disabilities (LD), psychiatric/mental health disabilities, Attention Deficit Hyperactivity Disorder (ADHD), Autism Spectrum Disorders (ASD), chronic medical conditions, and impairments in mobility, hearing, and vision. If you have a disability requiring academic accommodations in this course, please contact PMC at 613-520-6608 or pmc@carleton.ca for a formal evaluation. If you are already registered with the PMC, contact your PMC coordinator to send me your **Letter of Accommodation** at the beginning of the term, and no later than two weeks before the first in-class scheduled test or exam requiring accommodation (*if applicable*). After requesting accommodation from PMC, meet with me to ensure accommodation arrangements are made. Please consult the PMC website for the deadline to request accommodations for the formally-scheduled exam (*if applicable*) at <http://www.carleton.ca/pmc/new-and-current-students/dates-and-deadlines/>

You can visit the Equity Services website to view the policies and to obtain more detailed information on academic accommodation at <http://www.carleton.ca/equity/>

[2] Plagiarism: Student Affairs website: <http://www2.carleton.ca/studentaffairs/academic-integrity>

[3] Emergencies or Unsuitable Exam Times: Exam Deferrals: <http://www2.carleton.ca/exams/deferred-exams/>