COURSE INSTRUCTOR

Section D

Prof. Ahmed Hassan
Department of Civil and Env. Engineering
Email: ahmed.hassan@carleton.ca

COURSE SCHEDULE

Lectures:
Tuesdays and Thursdays: 8:35 am – 9:55 pm
SA THB

Office hours:
Tuesdays and Thursdays: 10:30 am – 11 am
ME 3440

COURSE WEBSITE AND COMMUNICATION

All course information, assignments, and problem sets will be available through Brightspace. All students are responsible for ensuring that they are correctly registered through Brightspace and that they are receiving messages properly through their official university email address. Students are responsible for checking the Brightspace course management site and their official email account frequently.

COURSE DESCRIPTION AND OBJECTIVES

Calendar Description: Introduction to engineering economics; cash flow calculations; methods of comparison of alternatives; structural analysis; replacement analysis; public projects; depreciation and income tax; effects of inflation; sensitivity analysis; break-even analysis; decision-making under risk and uncertainty.

By the end of the course, successful students will be able to:

- Develop cash flow engineering-economic models of costs and benefits of projects
- Compare the costs and benefits of alternative and mutually exclusive projects using time value of money approaches, including present worth, annual worth, payback period, and Internal Rate of Return (IRR)
- Assess the effect of inflation and taxation on costs and benefits of projects, as well as developing numerical methods to account for their impact
- Assess the elements which may affect the decision-making process for public sector projects
- Develop a strategy to account for uncertainty and risk through the use of sensitivity analysis and probability distribution

COURSE DELIVERY

This course will be delivered fully in-person, this class is not catered towards online students or students who cannot access campus. Lectures will take place during the times stated above. Lecture slides from the lecture will be posted the day of the lecture. I will also be holding office hours in which you would have the opportunity to ask any further questions. All assessments will be in-person (except for assignments).

COURSE COMMUNICATION

I will be using the announcement function in Brightspace to send out any updates with important information related to the course. Using the announcement function is helpful because it keeps all
communication from me about this course in one place instead of searching through your email every time you need to find a previous communication.

TEXTBOOK

It is highly recommended, although not mandatory, that students own a copy of the course textbook titled: “Engineering Economics: Financial Decision Making for Engineers” 7th edition by Fraser, Jewkes, Pirnia, and Schmitt. The material for this course is heavily adopted from that textbook including the course’s lecture slides.

COURSE OUTLINE (SUBJECT TO CHANGE)

<table>
<thead>
<tr>
<th>DATE</th>
<th>LECTURE</th>
<th>TOPIC</th>
<th>TEXTBOOK SECTION</th>
<th>ASSIGNMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan 10 &amp; 12</td>
<td>Lect. #1</td>
<td>Time Value of Money</td>
<td>Ch 2.1-2.7</td>
<td>Assign. 1</td>
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<tr>
<td>Jan 17 &amp; 19</td>
<td>Lect. #2</td>
<td>Cashflow Analysis</td>
<td>Ch 3.1-3.6</td>
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<tr>
<td>Jan 24 &amp; 26</td>
<td>Lect. #3</td>
<td>Comparison Methods I</td>
<td>Ch 4.1-4.5</td>
<td>Assign 2</td>
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<tr>
<td>Jan 31 &amp; Feb 2</td>
<td>Lect. #4</td>
<td>Comparison Methods II</td>
<td>Ch 5.1-5.8</td>
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<tr>
<td>Feb 7 &amp; 9</td>
<td>Lect. #5</td>
<td>Replacement Decisions</td>
<td>Ch 7.1-7.8</td>
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<tr>
<td>Feb 16</td>
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<td>Midterm Exam</td>
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<td>Assign 3</td>
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<tr>
<td>Feb 28 &amp; Mar 2</td>
<td>Lect. #6</td>
<td>Taxes</td>
<td>Ch 8.1-8.10</td>
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<tr>
<td>Mar 7 &amp; 9</td>
<td>Lect. #7</td>
<td>Inflation</td>
<td>Ch 9.1-9.4</td>
<td>Assign 4</td>
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<tr>
<td>Mar 14 &amp; 16</td>
<td>Lect. #8</td>
<td>Project Management</td>
<td>Ch 11.1-11.4</td>
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<tr>
<td>Mar 21 &amp; 23</td>
<td>Lect. #9</td>
<td>Dealing with Risk</td>
<td>Ch 12.1-12.3</td>
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<tr>
<td>Mar 28 &amp; 30</td>
<td>Lect. #10</td>
<td>Public Projects</td>
<td>Ch 10.1-10.4</td>
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<tr>
<td>Apr 4 &amp; Apr 6</td>
<td>Lect. #11</td>
<td>Financial Accounting</td>
<td>Ch 6.1-6.2</td>
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COURSE WORK AND ASSESSMENT

Assignments (4 Total) .................. 20% (5% each)
Midterm ................................ 30%
Final Exam .............................. 50%

Assignments

There will be a total of 4 assignments posted and due on the following dates.

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Posted</th>
<th>Due</th>
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<tbody>
<tr>
<td>Assignment #1</td>
<td>January 19th</td>
<td>January 26th</td>
</tr>
<tr>
<td>Assignment #2</td>
<td>February 2nd</td>
<td>February 9th</td>
</tr>
<tr>
<td>Assignment #3</td>
<td>March 2nd</td>
<td>March 9th</td>
</tr>
<tr>
<td>Assignment #4</td>
<td>March 23rd</td>
<td>March 30th</td>
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Example questions will be solved during the lecture. Assignments will be similar to the examples solved in the lecture. Submission of the assignment will be done through an “assignment” submission form on Brightspace. **It is absolutely crucial that assignments are completed individually.** It is okay to discuss the assignment with colleagues to enhance understanding, but attempting assignments individually is the only way to have an opportunity to test your understanding and practice for the midterm and the final exam.
Midterm Exam

Midterm exam will be scheduled on Thursday, February 16th during class times to ensure no conflict. The midterm will cover all the material from lectures 1 through 5 (Chapters 2 through 5), inclusive. Midterm exam is a closed book exam, you are not allowed to bring any notes. An equation sheet provided by the instructor will be attached to the exam paper. There will be no deferred midterm for this course. In case you miss the midterm, the weight will be moved to the final exam.

Final Exam

The final exam has not yet been scheduled. You will be notified through the university once SES makes the exam schedule available. Final exam is a closed book exam, you are not allowed to bring any notes. An equation sheet provided by the instructor will be attached to the exam paper.

Appeals

All appeals of marks assigned in this course must be made within 7 calendar days of the grade being made available. Appeals of grade can result in either a reduction or an increase in grade.

Graduate Attribute data collection

The Canadian Engineering Accreditation Board (CEAB) requires the faculty to collect data on graduate attributes and use that data to improve our program. The aggregate data is used for accreditation purposes and to guide program improvements only and have no impact on individual student progression or evaluation. Data is collected in many courses across the faculty. The following GAs will be assessed in this course:

- 11.2 - Engineering Economics
- 11.4 - Risk and Change management
- 11.5 - Project definition and Management techniques

COURSE POLICIES

Academic Integrity:

Academic integrity is essential to the pursuit of learning and scholarship in a university, and to ensure that a degree from Carleton University is a strong signal of each student's individual academic achievement. As a result, the University treats cases of cheating and plagiarism very seriously. Carleton University’s Policy on Academic Integrity (http://www.carleton.ca/studentaffairs/academic-integrity) outlines the behaviours that constitute academic dishonesty and the processes for addressing academic offences. It is your responsibility to be familiar with these policies. Any students who do not act with

Any late assignments will be deducted 25% (even if late by one minute) and will receive a grade of zero if late by 24 hours or more.

Forgetting or making a mistake in submission is not an acceptable excuse for late assignments. Make sure to note down assignment deadlines in your calendar and double checking to make sure the assignment has been submitted correctly. It is your responsibility to ensure submissions are made properly and punctually.
academic integrity will face severe consequences including immediate referral to Associate Dean of Student Affairs.

Email Policy

The instructor is more than happy to answer questions related to administration via email. **For course content questions please use the office hours.** Effort will be made to reply to emails as soon as possible, but please expect a possible delay of up to 48 hours for a response (especially during weekends). Emails must come from official Carleton University email addresses or through Brightspace. The instructor will not respond to emails from external addresses.

Extension and absences

In the interest of fairness for all students, requests for extensions will only be granted for situations that are truly out of a student’s control. Extensions cannot be granted more than 48 hours after assignment deadlines. Notification of absence from a midterm cannot be accommodated more than 24 hours after the midterm end time. As stated earlier, there is **no deferred midterm for this course**, missed midterms with approved excused absences will be accommodated by moving the weight to the final exam.

Course Material Copyright

Classroom teaching and learning activities, including lectures, discussions, presentations, etc., are copy protected and remain the intellectual property of the instructor. All course materials, including PowerPoint presentations, outlines, and other materials, are also protected by copyright and remain the intellectual property of the instructor.

Students registered in the course may take notes and make copies of course materials for their own educational use only. Students are not permitted to reproduce or distribute lecture notes and course materials publicly for commercial or non-commercial purposes without express written consent from the copyright holder(s). Students are not permitted to upload these copyrighted course materials to any online repositories.

Academic Accommodation

**Students with diverse learning styles and needs are welcome in this course.**

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 please review the [Student Guide to Academic Accommodation](#).

**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 please review the [Student Guide to Academic Accommodation](#).
Academic Accommodations for Students with Disabilities: If you have a documented disability requiring academic accommodations in this course, please contact the Paul Menton Centre for Students with Disabilities (PMC) at 613-520-6608 or pmc@carleton.ca for a formal evaluation or contact your PMC coordinator to send your instructor your Letter of Accommodation at the beginning of the term. You must also contact the PMC 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 your instructor as soon as possible to ensure accommodation arrangements are made. For more details, visit the Paul Menton Centre website.

Survivors of Sexual Violence: As a community, Carleton University is committed to maintaining a positive learning, working and living environment where sexual violence will not be tolerated, and where survivors are supported through academic accommodations as per Carleton’s Sexual Violence Policy. For more information about the services available at the university and to obtain information about sexual violence and/or support, visit the Equity and Inclusive Communities website.

Accommodation for Student Activities: Carleton University recognizes the substantial benefits, both to the individual student and for the university, that result from a student participating in activities beyond the classroom experience. Reasonable accommodation must be provided to students who compete or perform at the national or international level. Please contact your instructor 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, see the Senate Policy on Accommodation for Student Activities (PDF, 25KB).