

# Introduction to Principles of Microeconomics and Financial Project Evaluation

## SUMMER 2020 COURSE OUTLINE

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<b>Pronouns</b>	They/Them or He/Him
<b>Lectures</b>	2:30 – 4:20 MWTh, Zoom
<b>Office Hours</b>	2:00 – 4:00 Tue, IRC
<b>Course Site</b>	<a href="https://coursespaces.uvic.ca/">https://coursespaces.uvic.ca/</a>

## Table of Contents

<b>SUMMER 2020 COURSE OUTLINE .....</b>	<b>1</b>
University Policy on Inclusivity and Diversity .....	2
Course objectives .....	2
Essential Course Rules .....	2
University Policy on Accessibility .....	3
Regarding Punctuality and Courtesy .....	3
University Policy on Attendance .....	3
Lectures .....	4
Online Office Hours .....	4
Why IRC? .....	5
How Grading Works this Term .....	5
Relationship between letter grades and number grades .....	5
Expectations .....	6
<b>PRELIMINARY LECTURE AND PROJECT SCHEDULE .....</b>	<b>7</b>
Evaluation and Assessment .....	8
Assignments .....	8
Projects .....	8
Required Textbooks and Software .....	8
Engineering Economics: Financial Decision Making for Engineers (6 <sup>th</sup> edition) .....	9
Stand-Up Economics: The Micro Textbook <i>with Calculus</i> .....	9
Microeconomics, by Besanko and Braeutigam, 2 <sup>nd</sup> edition .....	9
Optional Text .....	9
On Plagiarism and Academic Integrity .....	10
UVic Policy on Plagiarism .....	10
How can I get help? .....	13

## University Policy on Inclusivity and Diversity

The University of Victoria is committed to promoting, providing and protecting a positive, supportive and safe learning and working environment for all its members.

**Instructor addendum:** *While I expect most of you will treat your peers with the traditional BC kindness and respect, I'd like to take a moment to remind you all in writing that this course and its associated web site and meeting space are intended to be a safe and comfortable place for everyone to learn in. Systematic disrespect or other ill treatment of a person or group of people will not be tolerated.*

## Course objectives

### "Why do engineers need to learn economics?"

*Well the first obvious reason, because you want to graduate. ... But, as a practicing bridge engineer, I can tell you that the ability to use money wisely is a skill sorely needed in the field."*

*-Stuart Nielsen*

The purpose of this course is to teach you skills and alternate ways of looking at the world that will help you in your careers as engineers. Just as you've been taught to analyze the structure, stresses and composition of physical constructs, ECON 180 will teach you to do the same for the inevitable economic aspects of your projects.

By the end of the course, you should be able to spot structural weaknesses in the financial fabric of your task and be able to strengthen those spots through selection of the most appropriate economic measures. In addition, you will be able to compare vastly different projects and decide, in a rigorous fashion, which are most worth pursuing.

## Essential Course Rules

- *"Be excellent to each other."* –Bill & Ted
- Give credit where credit is due
- Give all course components an honest try
- Don't keep concerns bottled up
- Ask for help if you need it

## University Policy on Accessibility

Are you a student with a learning disability, ADHD, mental health issue or long-term recurring physical or sensory disability? Do you have chronic health issues? If you do, and you need support with accessing your courses, or need academic accommodations to address barriers to your education, you need to register with the [Center for Accessible Learning \(CAL\)](#). After you register, the CAL office will work with you, your instructors and others to create learning environments that are equitable, inclusive and usable.

**Instructor addendum:** *I've had to deal with a number of disabilities myself. If you are a student who needs this sort of accommodation, don't hesitate to contact me personally. Once you do, I'll work with you one-on-one and do my best to come up with a custom plan that will hopefully let you get the most benefit possible from this course.*

## Regarding Punctuality and Courtesy

### University Policy on Attendance

Students are expected to attend all classes in which they are enrolled. Students who do not attend classes must not assume that they have been dropped from a course by a department or an instructor. Courses that are not formally dropped will be given a failing grade, students may be required to withdraw, and will be required to pay the tuition fee for the course.

An instructor may refuse a student admission to a lecture or laboratory because of lateness, misconduct, inattention or failure to meet the responsibilities of the course. Students who neglect their academic work, including assignments, may be refused permission to write the final examination in a course.

Instructors must inform students at the beginning of term, in writing, of the minimum attendance required at lectures and in laboratories in order to qualify to write examinations.

Students who are absent because of illness, an accident or family affliction should report to their instructors upon their return to classes.

**Instructor note:** Much of the above does not apply this term (Summer 2020), as lectures are online and recordings will be made available.

## Lectures

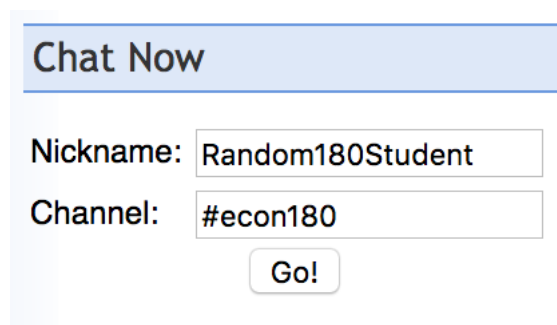
Lectures officially begin at 2:30, on Zoom. Zoom meeting URLs will be made available on Coursespaces. Please do NOT share these URLs, to prevent 'Zoom-bombing'. You are encouraged to attend the live lectures, but this is not a requirement. If you miss the live lectures, I expect you to catch up via the recordings no later than three days after the original lecture date. Full lecture notes in PowerPoint and PDF form, and recordings of the lectures, will be available via Coursespaces.

**Please note that lectures are recorded, and that these recordings are made available as videos or MP3s on Coursespaces. If you speak during class, this will be audible on the recording. If you are uncomfortable with having your voice (and possibly your face, in Zoom) recorded and shared, you may wish to view the recordings instead of attending the live lecture. I will do my best to make video recordings of the Zoom lectures available on Coursespaces. If for whatever reason this is not possible, I will upload audio files, instead.**

## Online Office Hours

Online office hours will be held on Tuesdays, from 2:00 to 4:00 PM, in the #econ180 channel on dal.net. IRC, or Interactive Relay Chat, is a plaintext protocol created in 1988 and remains a popular 'chat room' protocol. It IS a plaintext protocol, which means it is **NOT encrypted**, so **do not reveal any private information**, and **do not use your real name as your nickname**. Pick a creative nickname to minimize the chances of its being in use.

There are many ways to connect. If you haven't used IRC before, the easiest is probably to point your browser to <https://www.dal.net> and on the 'Chat Now' box on the right, enter your preferred nickname and #econ180 as the chat room and click 'Go'. You do NOT need to create an account or log in. The image below shows an example of how to set up the session.



Chat Now

Nickname:

Channel:

If you HAVE used IRC before, or if you're feeling adventurous, or if you're having trouble with the browser interface, there are hundreds of free solutions that will connect you. (Make sure you connect to irc.dal.net on the default IRC port, 6667/TCP.)

**Why IRC?** I've found students are often shy about asking questions when the instructor or their peers can identify them. IRC is anonymous, so students can feel free to ask questions without this source of anxiety. Being an entirely text-based medium, it's also very well suited to answering engineering economics questions in a group setting. I can post formulas, links, give step by step explanations, add incoming questions to the queue while answering other questions, etc. It's also trivial to save IRC logs for later use (since it's text, this can be done even by copy-pasting into a document editor).

I've used IRC for ECON 180 office hours many times in the past, and it's proven very popular with students. I expect that will also be the case this term, but if there is enough demand, I will consider holding at least some of the office hours via Zoom.

## How Grading Works this Term

As detailed in later section, there are no midterms or finals in this course. All you have are multiple-choice assignments, and four small projects, each of which is expected to have three to six questions. Multiple-choice questions will be marked in the usual fashion. To make it possible to mark your projects in a timely fashion, project questions will be marked rather coarsely. Each project question will receive only one of the following grades: 0, 58, 68, 78, 88, 100.

Relationship between letter grades and number grades									
A+	A	A-	B+	B	B-	C+	C	D	F or N
90-100	85-89	80-84	77-79	73-76	70-72	65-69	60-64	50-59	0-49

From the [UVic Undergraduate Grading Scale](#):

- 0 (F): Unacceptable or missing work.
- 58 (D): Shows "minimal command of the course materials".
- 68 (C+): This is "earned by work that indicates an adequate comprehension of the course material and [...] indicates the student has met the basic requirements for completing assigned work."
- 78 (B+): "earned by work that indicates a good comprehension of the course material, a good command of the skills needed to work with the course material, and the student's full engagement with the course requirements and activities. A B+ represents a more complex understanding and/or application of the course material." **The mark earned by 'good' work.**
- 88 (A): This is "earned by work which is technically superior [and] shows mastery of the subject matter". I will typically include a 'challenge' condition for each project question that takes some of the training wheels off and allows you to show mastery (and earn an 88) **if done well.**
- 100 (A+): For work that "offers original insight and/or goes beyond course expectations." I expect very few students will get 100 on questions, due to the extra work involved relative to the benefit.

## Expectations

The required readings, live lectures, assignments and posted lecture notes are explicitly designed as complements, not substitutes. Students are expected to engage with all components of the course in a timely manner. **Neglecting any one of these aspects has historically led to significantly lower marks for ECON 180 students.**

Basic knowledge of calculus and algebra is a pre-requisite for ECON 180, and this pre-requisite is taken seriously. The course assumes that students are familiar with derivatives, power functions and solving systems of equations (N equations, N unknowns). One of the course textbooks (Stand-Up Microeconomics) includes a 'boot camp' for students who may need a refresher, or who are unfamiliar with the concept of partial derivatives.

As an ECON 180 student, you are expected to:

- **Attend all lectures or keep up with the recordings.**
- **Complete all required reading** within a week of the relevant lecture and **understand all required reading** in such a way that you would be able to explain the basic concepts to an intelligent high schooler, without using math.
- **Understand the basic principles and intuition behind course concepts.** This is orders of magnitude more important than being able to get the algebra exactly right. (In this course, **memorizing equations** and working your way back to basic concepts **is generally a very bad idea.**)
- **Work individually on multiple choice assignments**, and complete at least one attempt within a week of the relevant lecture.
- **Complete optional readings** to obtain greater familiarity with the course material, **if necessary** (for example, if the required readings aren't enough to clear up a concept).
- **Complete practice questions as needed** to gain familiarity with course concepts and material.
- **Ask questions i during office hours and via e-mail** to clear up course material and concepts.
- **Ask the instructor for additional help** with course material and concepts, if the student encounters difficulties not cleared up via required and optional readings, practice problems or talking with fellow students.
- **Bring any constructive criticism and feedback to the instructor's attention before the end of the course**, so that the course may be adjusted if necessary.

**PRELIMINARY LECTURE AND PROJECT SCHEDULE****For information only – Schedule is subject to change**

Month	Date	Day	Lecture	Topic	Textbook	Project Due
May	11	M	1	Intro, Benefit-Cost Analysis	10.3.4	
	13	W	2	Time Value of Money	2.1 - 2.5, 4.3	
	14	T	3	Present, Future, Annual Flows	2.6, 3.1 - 3.5, 3.9	
	20	W	4	Cash Flow Gradients	3.6 - 3.8	1
	21	T	5	Present Worth, Annual Worth	4.2, 4.4	
	25	M	6	Replacement Decisions	7	
	27	W	7	Internal Rate of Return	5.1 - 5.3.3	
	28	T	8	External Rate of Return	5.3.4 - 5.4	
June	1	M	9	Supply & Demand	BB2, SU 11	
	3	W	10	Elasticity & Measuring Inflation	SU 17, 9.2, 9A	2
	4	T	11	Accounting for Inflation	9.5	
	8	M	12	Payback Period & Misc.	4.5	
	10	W	13	Sensitivity Analysis I	12.1-12.3	
	11	T	14	Sensitivity Analysis II	12.4-12.5	
	15	M	15	Tax Basics	8.1 - 8.7	3
	17	W	16	Capital Cost Allowances	2.7.4, 8.8	
	18	T	17	Financial Statements	6.1 - 6.2.4	
	22	M	18	WBS/Gantt Charts	11.3.1, 11.3.2	
	23	W	19	Critical Path Management	11.3.3	
	25	T	20	Multipliers	TBA	4

BB = Besanko/Braeutigam, SU = Stand-Up Economics, Otherwise = Engineering Economics

See [the section on required textbooks](#) for details.

## Evaluation and Assessment

Item	Weight	Due Date <sup>1</sup>
Assignments	15%	June 26
Project 1	10%	May 20
Project 2	25%	June 3
Project 3	25%	June 15
Project 4	25%	June 25

## Assignments

Your assignment mark is the average mark across all assignments.

Assignments are in the form of lecture-specific [Coursespaces](#) quizzes that draw three random multiple-choice questions from a test bank curated by the instructor. **These assignments are open until 11:59 PM on the last day of term, June 26.** You may re-attempt the assignments as many times as you wish, and the mark for each assignment is equal to your highest mark on any attempt. (I expect most students will get 100% on this component.)

Why is it done this way? **To allow you to work at your own pace, to reward reviewing material, and to (hopefully!) reduce the incentive to cheat.** These online assignments have proved popular with past ECON 180 students, who found them very useful for learning the material.

## Projects

The projects will ask you to use what you have learned in class, in something close to a real-world setting that is relevant to you. You will be investigating a stylized version of the choice between living in Vancouver and living in Victoria while pursuing an engineering degree at UVic, assuming that some pandemic restrictions – such as having all courses be online courses – stayed in place during the entire degree. These projects are submitted via Coursespaces, and your submissions **must be in PDF and/or Microsoft Office format (Excel, Word, Powerpoint).**

## Required Textbooks and Software

Course files will be distributed via Coursespaces in **PDF and Microsoft Office** form (Excel, Powerpoint, Word). You will need to be able to open these files. These are also the file formats that you are required to submit your projects in. You are also encouraged to install Zoom to attend live lectures.

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<sup>1</sup> Preliminary and subject to change. See Coursespaces for accurate due dates.



There are three required textbooks. Two of them are free.

### Engineering Economics: Financial Decision Making for Engineers (6<sup>th</sup> edition)

- By Niall M. Fraser and Elizabeth M. Jewkes
- ISBN 978-0-13-340553-8
- Other editions are not supported by the course. Page/problem references will not match, and some material may differ (especially in the 4<sup>th</sup> edition).
- Either an electronic (e.g. Kindle) or a print copy is fine. **The course assumes you can access this text at will.** As long as that's the case, it doesn't matter what format your copy of the textbook is in.

### Stand-Up Economics: The Micro Textbook *with Calculus*

- By Yoram Bauman
- Available for free at the author's site:
- <http://standupeconomist.com/stand-up-economics-the-micro-textbook/>
- We will be using the version with calculus.

### Microeconomics, by Besanko and Braeutigam, 2<sup>nd</sup> edition

- The publisher has made the first 8 chapters of this textbook available online for free:
- <http://bcs.wiley.com/he-bcs/Books?action=index&bcsId=2164&itemId=0471457698>
- We will be using at least Chapters 2, 6, 7 and 8.
- Since this is an old textbook, used copies are available very cheaply (a few cents plus shipping, in many cases). A print copy is not required, but some students may find one useful.

Another useful, online-only 'textbook' is 'Project Management for Construction', by Chris Hendrickson, available at <http://pmbook.ce.cmu.edu/> . Chapter 6 in particular provides a whirlwind tour of most of the project evaluation methods we'll look at throughout the course, and chapters 10 and 11 discuss some of the more challenging project management techniques (critical path, etc.) in detail.

**Optional Text:** In the past, students have also found the following book helpful. It's available only via Kindle, but it costs only \$2.07 and is written by a practicing civil engineer who occasionally teaches Engineering Economics. It's a collection of problems solved in a very 'no-nonsense' style by someone who wants to share knowledge they find useful in their field: [Stuart Nielsen's Engineering Economics: the Basics](https://www.amazon.ca/Engineering-Economics-Basics-Stuart-Nielsen-ebook/dp/B00ED714HE/): <https://www.amazon.ca/Engineering-Economics-Basics-Stuart-Nielsen-ebook/dp/B00ED714HE/>

## On Plagiarism and Academic Integrity

### UVic Policy on Plagiarism

"A student commits plagiarism when he or she:

- submits the work of another person as original work
- gives inadequate attribution to an author or creator whose work is incorporated into the student's work, including failing to indicate clearly (through accepted practices within the discipline, such as footnotes, internal references and the crediting of all verbatim passages through indentations of longer passages or the use of quotation marks) the inclusion of another individual's work
- paraphrases material from a source without sufficient acknowledgement as described above

The University reserves the right to use plagiarism detection software programs to detect plagiarism in essays, term papers and other assignments."

"Single or multiple instances of inadequate attribution of sources should result in a failing grade for the work. A largely or fully plagiarized piece of work should result in a grade of F for the course." (Emphasis mine.)

(Source: [UVic Academic Calendar May 2020](#) )

**All ECON 180 students are required to read and become familiar with the Policy on Academic Integrity detailed at the URL cited in the box above. A brief summary is at**

**<http://www.uvic.ca/library/research/citation/plagiarism/index.php> .**

**A breach of academic integrity will result in a non-droppable mark of zero on the assignment, quiz or final exam in which it is detected. Additional penalties may also apply.**

*What about my classmates? Can I work with them on assignment questions?*

To a degree, absolutely, but there are limits. All of you are here to learn, and as the instructor I'd like to avoid a situation where a small number of people do all the work and everyone else just 'adapts' it.

Engineering Economics is a practical discipline. You're required to take this course because it provides skills that are crucial to your success as a practicing engineer. It's essential that you learn to solve these problems on your own, so that you may apply what you've learned in your future career without having to constantly refer back to your old textbook.

This doesn't mean that you can't study together, or help each other out with assignments – it just means that such collaboration should stop short of something that would absolutely require citation, such as a direct quote or a duplicate, non-obvious solution method.

**Good idea:**

You: "Hey, Sam. I'm stuck on Question 6. I tried using the method in the lecture notes, but my answer's too small and the sign is wrong."

Sam: "Did you convert all the costs to annual values? I got the same mistake until I did that."

You: (several minutes later) "You're right! That fixed it. Thanks, Sam."

**Bad idea:**

You: "Hey, Sam. I'm stuck on Question 6. I tried using the method in the lecture notes, but my answer's too small and the sign is wrong."

Sam: (hands over a paper) "Here, take a look at my answer. I had that mistake, too, but then I fixed it."

You: (after going over Sam's solution line by line, you cross out your old answer and write a new one using the same method) "Thanks, Sam. That worked. You can have your assignment back."

### UVic Statement on the Course Experience Survey

I value your feedback on this course. Towards the end of term you will have the opportunity to complete a confidential course experience survey (CES) regarding your learning experience.

The survey is vital to providing feedback to me regarding the course and my teaching, as well as to help the department improve the overall program for students in the future. When it is time for you to complete the survey, you will receive an email inviting you to do so. If you do not receive an email invitation, you can go directly to <http://ces.uvic.ca>.

You will need to use your UVic NetLink ID to access the survey, which can be done on your laptop, tablet or mobile device. I will remind you nearer the time, but please be thinking about this important activity, especially the following three questions, during the course.

1. What strengths did your instructor demonstrate that helped you learn in this course?
2. Please provide specific suggestions as to how the instructor could have helped you learn more effectively.
3. Please provide specific suggestions as to how this course could be improved.

## How can I get help?

### I'm stressed and overloaded!

I'm always happy to engage with students regarding their concerns. **ECON 180 is just a course – your health, including mental health, comes first.** You may send me an e-mail at [willmore@uvic.ca](mailto:willmore@uvic.ca), pm me during office hours or schedule a private Zoom appointment by e-mail.

You don't have to go through this alone. I'm here to help, and I care about making sure that your course experience is healthy and productive. If you contact me, I'll listen carefully to what you have to say, and work with you to find a solution.

If you don't feel comfortable talking to the instructor about your situation, that's okay! The university has a number of resources available to help students who are stressed. You may find a list of them here: <https://www.uvic.ca/mentalhealth/undergraduate/finding-help/index.php>

### If you're having difficulty with lecture materials, assignments or projects...

- Try the relevant solved problems for each lecture
- Read the required readings, and carefully go through the examples in them
- Read optional readings cited in lecture notes
- Ask questions during online office hours
- E-mail the instructor ( [willmore@uvic.ca](mailto:willmore@uvic.ca) ) with your questions
- E-mail the instructor ( [willmore@uvic.ca](mailto:willmore@uvic.ca) ) to schedule a private Zoom or IRC session

Passing ECON 180 is important for your degree, and probably for your plans for the future, but remember: **Your time is valuable. Your perspective is unique. No one else has lived your life. You matter more than any course.**

I've kept that very much in mind while designing this course – since I *am* taking up some of that time, I want to make sure that it's well spent, and I've worked hard to make the course as relevant, useful and engaging as possible.

It is also, however, important for *students* to remember this. In my experience, it's all too easy when bogged down with projects and deadlines to lose track of other things that matter.