

# Syllabus – ENGIN 120

## Principles of Engineering Economics Spring 2021

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Industrial Engineering and Operations Research Department

Note: The syllabus and schedule are subject to change as the semester progresses. I will do my best to communicate any such changes in advance.

It is your responsibility to ensure that you read and understand the syllabus. If you have any questions, concerns, or are unclear about something please let me know.

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### Basic Information

Instructor: Daniel Pirutinsky (he/him)

[dpirutinsky@berkeley.edu](mailto:dpirutinsky@berkeley.edu)

GSI: Cristobal Escobar

[cristobal\\_escobar@mba.berkeley.edu](mailto:cristobal_escobar@mba.berkeley.edu)

GSI: Ruijie “Jerry” Zhou

[ruijie@berkeley.edu](mailto:ruijie@berkeley.edu)

### Meetings

Lecture: M/W 8:00 AM - 9:00 AM

Discussion 101: F 1:00 PM - 2:00 PM

Discussion 102: F 2:00 PM - 3:00 PM

### Office Hours

Daniel Pirutinsky: M/W 10:00 AM and by appointment

Jerry Zhou: TBA

Cristobal Escobar: TBA

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## Course Description

### Prerequisites

There are no prerequisites for this course. Students with a strong background in finance will find most of the material straightforward. Students with little background may expect to spend more time and will find some of the material quite difficult.

### Course Overview

Economic analysis for engineering decision making: Capital flows, effect of time and interest rate. Different methods of evaluation of alternatives. Minimum-cost life and replacement analysis. Depreciation and taxes. Uncertainty; preference under risk; decision analysis. Capital sources and their effects. Economic studies.

### Methods of Instruction

**Live Lectures (Zoom):** During regularly scheduled class time I will hold live lectures over Zoom. The purpose of the lecture is to motivate the material, give insight and intuition, and to engage you with the material itself. Students are strongly encouraged to attend these and participate by responding to my questions or asking their own. These will be recorded and posted to bCourses for review or for students who are unable to attend due to the exceptional nature of this remote semester. Lecture is **not** intended to cover all the material required. You will be responsible for all the material in the Chapters and sections listed.

**Discussion Sections (Zoom):** During regularly scheduled discussion section time, your GSI will hold live sections over Zoom. The purpose of the discussion section is to briefly review the material and provide an opportunity to ask more detailed questions. Students are strongly encouraged to attend these. These will be recorded and posted to bCourses for review or for students who are unable to attend due to the exceptional nature of this remote semester.

**Additional Material:** When appropriate and available, I will post copies of any slides, notes, practice exams, practice problems, etc.

## Course Materials

This course will rely heavily on resources available through the required textbook. Course instruction, slides, homework, exams, practice problems, dynamic study modules, and more will all be accessible with a MyLab Finance access code.

### Required Textbook

[Corporate Finance, 5<sup>th</sup> Edition](#), Jonathan Berk and Peter DeMarzo via MyLab Finance (ISBN-13: 9780135161029)

### MyLab Finance

You will need an access code for MyLab Finance for the textbook and for assignments. For more information see the files and the direct link on bCourses.

### Computer Technology

Access to a computer with Microsoft Excel for completing problem sets is also required. Financial calculators are not required for this class.

## Communication Technology

### bCourses

Announcements, lecture materials, assignments, Zoom, Piazza, MyLab Finance, recorded lectures, and all other course materials will be available through the bCourses site. bCourses will be your main source of information about this course.

### Piazza and Communication Policy

This term we will be using Piazza for class discussion and part of your participation grade will be based on your use of Piazza.

Find it on bCourses or at <https://piazza.com/berkeley/spring2021/engin120> and use access code: dTfS

We will use Piazza as the main electronic communication method for the course. The system is highly catered to getting you help fast and efficiently from classmates, the GSIs, and myself. Rather than emailing questions to the teaching staff, I encourage you to post your questions on Piazza.

If you have a question or concern that is private in nature, please use a private post on Piazza so that only the course instructor and GSIs can see your message. You are

encouraged to use public posts in situations where other students may benefit from the discussion. In the exceptional circumstances where your message should be kept confidential from the GSIs, please email the course instructor and begin the subject line with “[ENGIN 120 Urgent]”.

In summary, you should observe the following priority list for course related communications:

1. Make a public post on Piazza
2. Make a private post on Piazza that is for only the course instructor and GSIs
3. In exceptional circumstances, send an email to the course instructor using “[ENGIN 120 Urgent]” to start the subject line.

We ask that you also please observe the following etiquette on Piazza:

1. Do not post answers: Please do not post any answers or your current results on Piazza. Instead, you should explain the key points of your question in a way that allows other students to figure out the essence of the problem on their own. Post problem spoilers after the due date. If you think that your post might give out too much information about the problem solution, then make it private and let the course staff know.
2. No pre-grading: We will not answer any questions of the form “Is this the correct way to solve Homework X, Problem Y?”
3. Aim for public posts: Other students may have the same question, so please try to make your posts public.
4. Formatting: Please format code using the code button and format mathematical equations using the  $_{equation}$  button.
5. Piazza is not office hours: If a question is too broad or would require a long time to explain in person, etc. You may be asked to come to office hours to get it answered.
6. Discussion and collaboration: We encourage you to answer or comment on your fellow students’ posts if you know the answer or would like to discuss. In fact, your participation in asking and answering questions will be part of your final grade.

## Zoom

All Zoom meetings will be linked to in the Zoom section of the bCourses website. This includes recurring lecture, discussion, and office hours. If a private Zoom meeting is necessary, you will receive an email with a Zoom link.

## Synchronous and Asynchronous

Lectures will be recorded and available to students. Attendance and participation in live synchronous lectures are strongly encouraged but not required. If a student is unable to participate in that way, they will be expected to view the recorded lecture and participate

in group discussions asynchronously. Throughout the semester there may be times when students are **required** to attend synchronously (e.g. exams).

## Grading (tentative)

The grading policy here is tentative and subject to change at my discretion.

### Grade Calculation

Participation	5%
Homework	25%
Midterm 1 Exam	15%
Midterm 2 Exam	25%
Final Exam	30%

### Grade Bins

90–100	A
80–89	B
70–79	C
60–69	D
<60	F

### Non-Negotiability

Your final grade is not subject to negotiation. If you feel I have made an error, submit your written argument to me within one week of receiving your final grade. Clarify the precise error I made and provide all due supporting documentation. If I have made an error, I will gladly correct it. But I will adjust grades only if I have made an error. I cannot and will not adjust grades based on consequences, such as hurt pride, lost scholarships, lost tuition reimbursement, lost job opportunities, or dismissals. Do not ask me to do so. It is dishonest to attempt to influence faculty in an effort to obtain a grade that you did not earn, and it will not work.

### Participation

Your participation grade will be based on your participation during live lectures and on Piazza.

### Homework

There will be weekly homework assignments posted on MyLab Finance based on the material covered that week in lecture.

### Exams

All exams will be synchronous, cumulative, and (as of now) will be timed and taken using MyLab Finance. You will be expected to be able to take the exam as soon as it is

released. If you anticipate a scheduling conflict, notify course staff at least two weeks prior. Documented emergencies will be dealt with on a case-by-case basis.

An Exam Demo is available on MyLab Finance so you can familiarize yourself with the process prior to taking exams. Make sure you understand how to take exams this way.

The first Midterm will be released on **8AM February 17<sup>th</sup>**. You will have 70 minutes to complete it.

The second Midterm will be on **8AM March 17<sup>th</sup>**. You will have 70 minutes to complete it.

The Final exam will be on **8AM May 10<sup>th</sup>**. You will have 180 minutes to complete it.

## Course Content

You will be responsible for Chapters 1 through 12 of the textbook. There will not be enough time during lecture to discuss all the material. It is highly recommended that you read the **complete** chapters prior to lecture to better understand the material in context. In the notes below I list the sections to which you should pay particularly close attention.

## Course Schedule (tentative)

Date	Topic	Notes
<b>Week 1</b> 01/20	Course Overview & Introduction	
<b>Week 2</b> 01/25 01/27	Types of Firms, Ownership Intro to Financial Statements	<b>Chapter 1 and 2</b> Sections: 1.1 - 1.3 Sections: 2.1 - 2.4
<b>Week 3</b> 02/01 02/03	Financial Decision Making Arbitrage and The Law of One Price	<b>Chapter 3</b> Sections: 3.1 - 3.3 Sections: 3.4 - 3.5
<b>Week 4</b> 02/08 02/10	Time Value of Money NPV Calculations	<b>Chapter 4</b> Sections: 4.1 - 4.3 Sections: 4.4 - 4.9

Date	Topic	Notes
<b>Week 5</b> 02/15 02/17	<b>No Lecture (Presidents' Day)</b> <b>Midterm 1 Exam</b>	<b>Covers Chapters 1-4</b>
<b>Week 6</b> 02/22 02/24	Interest Rates and Inflation Taxes	<b>Chapter 5</b> Sections: 5.1 - 5.3 Sections: 5.4 - 5.5
<b>Week 7</b> 03/01 03/03	Bond Pricing I Bond Pricing II	<b>Chapter 6 (+ Appendix)</b> Sections: 6.1 - 6.3 Sections: 6.4 - 6.5
<b>Week 8</b> 03/08 03/10	Forward Interest Rates Investment Decision Rules I	<b>Chapter 7</b> Chapter 6 Appendix Sections: 7.1 - 7.3
<b>Week 9</b> 03/15 03/17	Investment Decision Rules II <b>Midterm 2 Exam</b>	Sections: 7.4 - 7.5 <b>Covers Chapters 1-7</b>
<b>Week 10</b> 03/22 03/24	<b>No Lecture (Spring Recess)</b> <b>No Lecture (Spring Recess)</b>	
<b>Week 11</b> 03/29 03/31	Capital Budgeting	<b>Chapter 8</b> Sections: 8.1 - 8.3 Sections: 8.4 - 8.5
<b>Week 12</b> 04/05 04/07	Stock Valuation	<b>Chapter 9</b> Sections: 9.1 – 9.3 Sections: 9.4 – 9.5
<b>Week 13</b> 04/12 04/14	Stock, Bonds, and Risk Diversification	<b>Chapter 10</b> Sections: 10.1 – 10.5 Sections: 10.6 – 10.8
<b>Week 14</b> 04/19 04/21	Optimal Portfolio Choice Capital Asset Pricing Model	<b>Chapter 11</b> Sections: 11.1 -11.6 Sections: 11-7 -11.8
<b>Week 15</b> 04/26 04/28	Estimating the Cost of Capital	<b>Chapter 12</b> Sections: 12.1 – 12.4 Sections: 12.4 – 12.7

Date	Topic	Notes
Final Exam 05/10	Final Exam	

## Evaluation of Course

I strongly value students continued feedback, both positive and negative, throughout the semester. To that aim, there will be a form that will remain open throughout the semester where you can provide feedback directly to me while remaining anonymous. You can submit feedback at <https://forms.gle/9ue3fbnAVwmsV8rk8>. I will read every submission and take it into consideration. You can also post feedback on Piazza for me and the GSIs to see (it will not be anonymous to us).

There will also be an opportunity to provide formal feedback and evaluate the course at the end of the semester.

## Course Policies

### Inclusion

We are committed to creating a learning environment welcoming of all students that supports a diversity of thoughts, perspectives and experiences, and respects your identities and backgrounds (including race/ethnicity, nationality, gender identity, socioeconomic class, sexual orientation, language, religion, ability, etc.) To help accomplish this:

If you have a name and/or set of pronouns that differ from those that appear in your official records, please let us know.

If you feel like your performance in the class is being impacted by your experiences outside of class (e.g., family matters, current events), please do not hesitate to come and talk with us. We want to be resources for you.

We (like many people) are still in the process of learning about diverse perspectives and identities. If something was said in class (by anyone) that made you feel uncomfortable, please talk to us about it. You may also contact the IEOR department's Faculty Equity Advisor, Prof. Candace Yano ([candiyano@berkeley.edu](mailto:candiyano@berkeley.edu)).

As a participant in this class, recognize that you can be proactive about making other students feel included and respected.

## Berkeley honor code

Everyone in this class is expected to adhere to this code: “As a member of the UC Berkeley community, I act with honesty, integrity, and respect for others.”

## Academic honesty

You are encouraged to form study groups and work together to understand course material, but all submitted work (unless explicitly exempted) should be your own. You may not copy other students’ work. Academic integrity and ethical conduct are of utmost importance in the College of Engineering and at U.C. Berkeley.

## Accommodation policy

I honor and respect the different learning needs of my students and am committed to ensuring you have the resources you need to succeed in this class. If you need religious or disability-related accommodations, if you have emergency medical information you wish to share with me, or if you need special arrangements in case the building must be evacuated, please share this information with me as soon as possible.

The purpose of academic accommodations is to ensure that all students have a fair chance at academic success. Disability, or hardships such as basic needs insecurity, uncertain documentation and immigration status, medical and mental health concerns, pregnancy and parenting, significant familial distress, and experiencing sexual violence or harassment, can affect a student’s ability to satisfy particular course requirements. Students have the right to reasonable academic accommodations, without having to disclose personal information to instructors. For more see the Support Services and Resources section below.

## Support Services and Resources

I welcome the opportunity to work with you to ensure your learning experience is as effective as possible. If you anticipate or experience any barriers to learning in this course, regardless of their cause, please reach out to me to discuss your concerns. I will do my best to develop an implementation plan together with you.

The [Academic Accommodations Hub](#) is the campus-wide portal for support resources and academic policies, including key accommodation information and links to mental health resources, resources for survivors of sexual violence and sexual harassment, and more. For College of Engineering specific information see [Engineering Student Resources](#).

Below is a (non-comprehensive) list of various resources available to you which includes advising, tutoring, counseling, and financial aid, among many others. This will assist me achieve my goal of ensuring that my courses are Diverse, Equitable and Inclusive.

Note: Some of these services may have modified procedures due to the impact of Covid-19.

## Disabled Students' Program (DSP)

If you have a disability, or think you may have a disability, you can work with the Disabled Students' Program (DSP) (260 César Chávez Student Center #4250; 510-642-0518; <http://dsp.berkeley.edu>) to request an official accommodation. Services are individually designed and based on the specific needs of each student as identified by DSP's Specialists. If you have already been approved for accommodations through DSP, please contact me so we can develop an implementation plan together.

## Religious and Cultural Holidays

For religious and cultural holidays in which students may need academic accommodations, the Academic Accommodations Hub provides useful information; see [Accommodation of Religious Creed](#).

## Technical Equipment

Students in need of technical equipment for classes are strongly encouraged to apply for the Student Technology Equity Program ([technology.berkeley.edu/STEP](http://technology.berkeley.edu/STEP)). The program provides free loaner laptops, Wi-Fi hotspots with paid data plans, web cameras, noise-cancelling headphones and other technology to students in need.

## Center for Access to Engineering Excellence (CAEE)

The Center for Access to Engineering Excellence (227 Bechtel Engineering Center; <https://engineering.berkeley.edu/student-services/academic-support>) is an inclusive center that offers study spaces, nutritious snacks, and tutoring in >50 courses for Berkeley engineers and other majors across campus. The Center also offers a wide range of professional development, leadership, and wellness programs, and loans iclickers, laptops, and professional attire for interviews.

## Counseling and Psychological Services

The main University Health Services Counseling and Psychological Services staff is located at the Tang Center (<http://uhs.berkeley.edu>; 2222 Bancroft Way; 642-9494) and provides confidential assistance to students managing problems that can emerge from illness such as financial, academic, legal, family concerns, and more.

To improve access for engineering students, a licensed psychologist from the Tang Center also holds walk-in appointments for confidential counseling in 241 Bechtel Engineering Center (check here for schedule: <https://engineering.berkeley.edu/student-services/advising-counseling>).

## The Care Line (PATH to Care Center)

The Care Line (510-643-2005; <https://care.berkeley.edu/care-line/>) is a 24/7, confidential, free, campus-based resource for urgent support around sexual assault, sexual harassment, interpersonal violence, stalking, and invasion of sexual privacy. The

Care Line will connect you with a confidential advocate for trauma-informed crisis support including time-sensitive information, securing urgent safety resources, and accompaniment to medical care or reporting.

Note that I am a Responsible Employee, which means that if you tell me about sexual violence or sexual harassment that you or another student experienced, I need to share that information with the [Office for the Prevention of Harassment and Discrimination](#). Additional confidential resources for survivors are available at <https://svsh.berkeley.edu/support/support-survivors>.

### Ombudsperson for Students

The Ombudsperson for Students (102 Sproul Hall; 642-5754; <http://students.berkeley.edu/Ombuds>) provides a confidential service for students involved in a University-related problem (academic or administrative), acting as a neutral complaint resolver and not as an advocate for any of the parties involved in a dispute. The Ombudsman can provide information on policies and procedures affecting students, facilitate students' contact with services able to assist in resolving the problem, and assist students in complaints concerning improper application of University policies or procedures. All matters referred to this office are held in strict confidence. The only exceptions, at the sole discretion of the Ombudsman, are cases where there appears to be imminent threat of serious harm.

### UC Berkeley Food Pantry

The UC Berkeley Food Pantry (#68 Martin Luther King Student Union; <https://pantry.berkeley.edu>) aims to reduce food insecurity among students and staff at UC Berkeley, especially the lack of nutritious food. Students and staff can visit the pantry as many times as they need and take as much as they need while being mindful that it is a shared resource. The pantry operates on a self-assessed need basis; there are no eligibility requirements. The pantry is not for students and staff who need supplemental snacking food, but rather, core food support.