

Description	The application of the principles of economics to the problems of engineering is the main focus of this course. During the semester, the student will be introduced to the mathematical and conceptual basis on which project analysis is built. The techniques and tools necessary for making informed financial decisions in the engineering practice will be discussed. Topics such as time value of money, interest, equivalence, cost-benefit analysis, depreciation, taxes, cash flow, and financial risk will be discussed.		
Instructor	Alejandro Gutiérrez, Ph.D. Email: agutierrez78@ucmerced.edu, Phone: (628) 444-9492 Office Location: COB-372 Office Hours: Tuesdays 11:30-13:30		
T.A.	Julia Burmistrova Email: jburmistrova@ucmerced.edu Office Location: SE1 Atrium (second floor) Office Hours: Mondays 14:00-16:00		
T.A.	Jordyn Brinkley Email: jbrinkley@ucmerced.edu Office Location: SE1 Atrium (second floor) Office Hours: Thursdays 14:00-16:00		
Lectures	Mondays & Wednesdays, 12:00-13:15. COB2-140		
Textbook	Chan S. Park, <i>Fundamentals of Engineering Economics</i> . Third Edition, Pearson 2013.		
Grading	Participation	5%	
	Homeworks (4)	10%	
	Midterm	25%	
	Final	25%	
	Project	35%	
	A+ = 95%-100%; A = 93%-94%; A- = 90%-92%; B+ = 87%-89%; B = 83%-86%; B- = 80%-82%; C+ = 77%-79%; C = 73%-76%; C- = 70%-72%; D+ = 67%-69%; D = 63%-66%; D- = 60%-62%; F = 0%-59%.		

Policies

- You must attend class on time, but attendance DOES NOT equal participation. In order to achieve your participation grade you must intervene in class and/or answer questions.
- All homework, reports, etc. must be submitted in hard copy unless otherwise indicated. Late homework or reports will not be accepted unless in case of a medical emergency for which evidence has been presented to the instructor.
- Exams may not be missed for any reason except a medical emergency for which evidence has been presented to the instructor.
- Catcourses will be the principal means of official communication between the instructor and the students, so be sure to check your inbox often.

Learning outcomes

By the conclusion of this course, students will be able to:

- Apply the basic theory and concepts of economics to the analysis of engineering projects.
- Systematically make informed, practical, and consistent decisions when evaluating engineering projects that contain uncertainties.
- Demonstrate critical thinking when evaluating the economic aspects of different alternatives within an engineering project.
- Communicate effectively their thought process and final decisions to an audience outside of their field as well as to their peers.
- Proficiently use the mathematical tools available within MS Excel for the analysis of the economic factors of an engineering project.

Academic Integrity

- Each student in this course is expected to abide by the University of California Merced's Academic Honesty Policy. Any work submitted by a student in this course for academic credit will be the student's own work.
- You are encouraged to study together and to discuss information and concepts covered in class with other students. You can give "consulting" help to or receive "consulting" help from such students. However, this permissible cooperation should never involve one student having possession of a copy of all or part of work done by someone else, in the form of an e-mail, an e-mail attachment file, other electronic file, or a hard copy. Should copying occur, both the student who copied work from another student and the student who gave material to be copied will automatically receive a zero for the assignment. Penalty for violation of this Policy can also be extended to include failure of the course and University disciplinary action.

- During examinations, you must do your own work. Talking or discussion is not permitted during the examinations, nor may you compare papers, copy from others, or collaborate in any way. Any collaborative behavior during the examinations will result in failure of the exam, and may lead to failure of the course and University disciplinary action.

Students with disabilities

The University of California Merced is committed to ensuring equal academic opportunities and inclusion for students with disabilities based on the principles of independent living, accessible universal design and diversity. The instructor is available to discuss appropriate academic accommodations that may be required for student with disabilities. Requests for academic accommodations are to be made during the first three weeks of the semester, except for unusual circumstances. Students are encouraged to register with Disability Services Center to verify their eligibility for appropriate accommodations.

Diversity and inclusion

This class is conducted in accordance to the UC Merced Principles of Community¹, which include the recognition and celebration of all identities, values, and beliefs. Discrimination on the basis of race, religion, sex, sexual orientation, gender identity, national origin, citizenship, documented status, or any other social identity will not be tolerated. All students are invited to discuss any situation they perceive as harmful or threatening with the instructor in class or during office hours.

¹<http://www.ucmerced.edu/principles-of-community>

Course schedule

Week	Topic	Comments
1	Introduction	Acknowledge syllabus
2	Overview and strategies for engineering economic decisions. Time value of money. Economic equivalence	Read chapter 1
3	Simple and compound interest. Payment series.	Read chapter 2. First homework assigned.
4	Money management. Interest rate and yield. Effective interest rate. Debt management.	Read chapter 3. Project guidelines presented.
5	Inflation. Equivalence under inflation. Actual vs. constant money.	Read chapter 4. <i>First homework due on Wednesday</i>
6	Present-worth analysis. Screening methods. Comparing mutually exclusive projects.	Read chapter 5. Second homework assigned. <i>Students present project proposal</i>
7	Annual equivalence analysis. First review.	Read chapter 6.
8	Rate of return analysis. Internal rate of return.	<i>First exam on October 11. Second homework due on Wednesday</i>
9	Benefit-cost analysis.	Read chapter 8. Third homework assigned.
10	Depreciation and taxes	Read chapter 9
11	Cash-flow analysis. Incremental cash flow. Effects of inflation.	Read chapter 10. <i>Third homework due on Wednesday</i>
12	Project uncertainty. Project risk. Probability analysis.	Read chapter 11.
13	Replacement decisions. Economic service life.	Read chapter 12. Fourth homework assigned.
14	Economic analysis project.	Project discussion.
15	Economic analysis project.	Project discussion. <i>Fourth homework due on Wednesday</i>
16	Second review.	<i>Project due on 12/04</i>
17	Final exam.	<i>12/15 as scheduled by the registrar</i>