

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: AOA-143 Office Hours: Wednesdays 11:30-13:30										
Lectures	Tuesdays & Thursdays, 10:30-11:45. COB-116										
Textbook	Chan S. Park, <i>Fundamentals of Engineering Economics</i> . Third Edition, Pearson 2013.										
Grading	<table> <tr> <td>Participation</td> <td>5%</td> </tr> <tr> <td>Homeworks (5)</td> <td>10%</td> </tr> <tr> <td>Midterm</td> <td>25%</td> </tr> <tr> <td>Final</td> <td>25%</td> </tr> <tr> <td>Project</td> <td>35%</td> </tr> </table> <p>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%.</p>	Participation	5%	Homeworks (5)	10%	Midterm	25%	Final	25%	Project	35%
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Policies	<p>You must attend to class on time. Late arrivals disrupt the lecturing process and distract your peers.</p> <p>Attendance DOES NOT equal participation. In order to achieve your participation grade you must intervene in class and/or answer questions.</p> <p>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 a medical emergency for which evidence has been presented to the instructor.</p> <p>Exams may not be missed for any reason except a medical emergency for which evidence has been presented to the instructor.</p> <p>Catcourses will be the principal means of official communication between the instructor and the students, so be sure to check your inbox often.</p>										

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.

Course schedule

Week	Topic	Comments
1	Introduction	Acknowledging syllabus.
2	Chapters 1-2: Overview and strategies for engineering economic decisions. Time value of money. Economic equivalence.	Read Ch. 1 before class.
3	Chapter 2: Simple and compound interest. Payment series.	Read Ch. 2 before class. First homework assigned.
4	Chapter 3: Money management. Interest rates and yields. Effective interest rates. Debt management.	Read Ch. 3 before class. Project guidelines presented
5	Chapter 4: Inflation. Equivalence under inflation. Actual vs. constant money.	Read Ch. 4 before class. <i>First homework due on Thursday</i>
6	Chapter 5: Present-worth analysis. Screening methods. Comparing mutually exclusive projects.	Read Ch. 5 before class. Second homework assigned. <i>Students present project proposal</i>
7	Chapter 6: Annual equivalence analysis. Mid-term review.	Read Ch. 6 before class.
8	Chapter 7: Rate of return analysis. Internal rate of return.	<i>Mid-term on March 07.</i> Read Ch. 7 before class. <i>Second homework due on Thursday</i> Project proposals finalized.
9	Chapter 8: Benefit-cost analysis. Probability index.	Read Ch. 8 before class. Third homework assigned.
10	Chapter 9: Depreciation and Taxes.	Read Ch. 9 before class.
11	Chapter 10: Cash-flow analysis. Incremental cash flow. Effects of inflation.	Read Ch. 10 before class. Fourth homework assigned. <i>Third homework due on Thursday</i>
12	Chapter 11: Project uncertainty. Project risk. Probabilistic analysis.	Read Ch. 11 before class.
13	Chapter 12: Replacement decisions. Economic service life. Overall review.	Read Ch. 12 before class. Fifth homework assigned. <i>Fourth homework due on Thursday</i>
14	Economic analysis project.	Preliminary project presentation.
15	Economic analysis project.	<i>Fifth homework due on Thursday</i>
16	Final review.	<i>Project reports due on 05/04.</i>
17	Final exam	<i>05/06 at 15:00 as scheduled by Office of the Registrar.</i>