

MSE304-05 /// Engineering Economy Analysis (3 units)

CSUN – Fall 2024, Ticket 16556, Tue./Thu. 2:30 p.m. – 3:45 p.m., Room: JD-3510

Instructor Ghassan “Gus” H. Elias: BS/MS; Industrial/Manufacturing Systems Engineering.
-Expertise: Engineering Consulting, Decision-Making/Risk Analysis and Facility Planning. Industrial Safety & Material Control - global certification programs for commissioning electronic & pneumatic devices in General (Non-Hazardous) Locations, Hazardous ‘Classified’ Areas & Potentially Explosive Atmospheres.
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TEXTBOOK: ‘Engineering Economy’ – **9th Edition**

Authors: Leland T. Blank & Anthony J. Tarquin. McGraw-Hill /// ISBN 978-1-264-15809-6

C.S.U.N. CATALOG - COURSE DESCRIPTION:

- ***Prerequisite:*** a passing grade in **Math 150B**.
- ***Material:*** The systematic evaluation of the economic benefits and costs of projects involving engineering design and analysis. Economic decision-making in an environment of limited resources and uncertainty. Present economy, the economy of multi-year projects, selection among competing alternatives, sensitivity of outcomes to input parameters, before-and after-tax analysis, replacement economy, inflation, and estimation of future events.

COURSE OBJECTIVES:

This course is designed to enhance the student’s knowledge of and ability to apply:

1. Identification, formulating and solving engineering problems.
2. Time-money relationships, cash flow, and effects of inflation.
3. Present worth (PW) method, annual worth (AW) method, rate of return (ROR) method, benefit/cost ratio (B/C) method, and incremental rate of return analysis.
4. Depreciation schedules, replacement analysis, and after-tax analysis.
5. Engineering economy principles in conjunction with the Fundamentals of Professional Engineering Examination and Registration Process.

This course syllabus is your contract with the CECS, MSEM and the instructor. Students must read the syllabus thoroughly and adhere fully to ALL of the stated terms and listed guidelines. No Exceptions!

NOTE #1: Activate **and** use **solely** your CSUN email address for ALL academic correspondences. Do not use your personal email address to communicate with the instructor. Messages from non-CSUN email addresses will **NOT** be acknowledged. Instructor will only utilize SOLAR’s email database to communicate with class members.

NOTE #2: Failure to formally drop a course within the allotted time frame by CSUN will result in the issuance of a “WU” grade which is equivalent to “F”, thus detrimentally affecting your GPA.

**** IMPORTANT NOTE: Plagiarism will NOT be tolerated whatsoever!**

STANDARD OPERATING PROCEDURES:

1. Class members are expected to maintain personal and professional standards consistent with the Code of Ethics of the national Society of Professional Engineers, the Preamble and Fundamental Canons of which are as follows:

Engineering is an important and learned profession. As members of this profession, engineers are expected to exhibit the highest standards of honesty and integrity. Engineering has a direct and vital impact on the quality of life for all people. Accordingly, the services provided by engineers require honesty, impartiality, fairness and equity, and must be dedicated to the protection of the public health, safety, and welfare. Engineers must perform under a standard of professional behavior that requires adherence to the highest principles of ethical conduct. Engineers, in the fulfillment of their professional duties, shall:

- *Hold paramount the safety, health and welfare of the public.*
 - *Perform services only in areas of their competence.*
 - *Issue public statements only in an objective and truthful manner.*
 - *Act for each employer or client as faithful agents or trustees.*
 - *Avoid deceptive acts.*
 - *Conduct themselves honorably, responsibly, ethically, and lawfully so as to enhance the honor, reputation, and usefulness of the profession.*
2. Students must take **ORIGINAL NOTES** and submit **ORIGINAL WORK** only.
 3. Class members are expected to **attend ALL class sessions, promptly & entirely.**
 4. Class members are **responsible** for the course material, reading assignments, class presentations, discussions, and practice problems.
 5. ***Tardy/Late submissions are unacceptable.....NO EXCEPTIONS!***
 6. Class members **will** always be **considerate & respectful** to their colleagues.
 7. Pagers, Cellular Phones, Alarms, etc...***MUST BE TURNED OFF*** during class.
 8. **IMPORTANT:** **The use of PC laptops, mobile phones, video recorders, cameras and/or internet-ready devices during the exams, quizzes and class lecture sessions is strictly prohibited. The exchange of notes, calculators and/or textbooks during the exams and quizzes is also prohibited. Violation of this policy will result in the student's dismissal from the class and the issuance of an "F" grade for the course. No EXCEPTIONS !!**

EVALUATION & GRADING: (plus/minus grading will be used – Refer to Page 6)

- 17.5%** - Exam #1: Chapters 1-4, open book & ORIGINAL notes, calculator.
- 17.5%** - Exam #2: Chapters 5-7 & 9, open book & ORIGINAL notes, calculator.
- 20%** - Random Weekly Quizzes (15-20 minutes) - a combination of open & closed book & notes given at the **beginning of the lecture.** **No make-up quizzes!**
- 45%** - Final Exam (***Comprehensive***): open book / open notes, calculator.
ONLY ORIGINAL WORK/NOTES ARE ALLOWED!

Letter-Grade Scale – “NO CURVING!”:

A ≥ 90	88 ≤ A- < 90	85 ≤ B+ < 88
80 ≤ B < 85	78 ≤ B- < 80	75 ≤ C+ < 78
70 ≤ C < 75	60 ≤ D < 70	F < 60

COURSE SCHEDULE

This is a **TENTATIVE** syllabus. Depending on the progress of the course material, the syllabus (dates, topics, assignments & exams) **may change** if deemed necessary. Sample problems will be solved during lectures. Assigned H.W. problems are due the following week.

Solution to H.W. problems will be provided on the date of submittal.

Note 1: Several random quizzes will be given throughout the semester.

Make-up attempts will **NOT** be granted for missed quizzes. You miss it, you lose it!

Note 2: The PowerPoint presentations for each chapter are available on my CSUN web-page:
<http://www.csun.edu/~ghe59995/>

So that you take “helpful” notes during the class lectures, please print the assigned modules and have the slides handy during the lecture session throughout the semester.

Date	Topics	Chapters	Homework Assignments (TBA)
Wk. 1	Course Introduction / Basics	1	(TBA)
Wk. 2	Factors	2	(TBA)
Wk. 3	Combining Factors	3	(TBA)
Wk. 4	Nominal & Effective Interest Rates	4	(TBA)
Wk. 5	Solution to Chapter 4 H.W. Problems	&	Exam #1 Review
	Exam #1: Chapters 1-4 (open book & notes), worth 17.5% of the course grade.		
Wk. 6	Exam #1 Graded & Returned Present Worth Analysis	5	Review Test Solution (TBA)
Wk. 7	Annual Worth Analysis	6	(TBA)
Wk. 8	Single Rate of Return Analysis	7	(TBA)
Wk. 9	Benefit/Cost Ratio Analysis	9	(TBA)
Wk. 10	Solution to Chapter 9 H.W. Problems	&	Exam #2 Review
	Exam #2: Chapters 5-7,9 (open book & notes), worth 17.5% of the course grade.		
Wk. 11	Exam #2 Graded & Returned Replacement Analysis	11	Review Test Solution (TBA)
Wk. 12	Solution to Chapter 11 H.W. Effects of Inflation	14	(TBA)
Wk. 13	Depreciation	16	(TBA)
Wk. 14	After-Tax Analysis	17	(TBA)
Wk. 15	Solution to Chapter 17 H.W. problems		Course Review & Wrap-up Final Exam Review
Wk. 16	FINAL EXAM (45% - <u>COMPREHENSIVE</u>) <u>OPEN BOOK/NOTES</u>		Tuesday, Dec 12th, 3:00 pm - 5:00 pm

HOMEWORK GUIDELINES & ASSIGNMENTS:

H.W. solutions should be typed (MS-Word). Hand-written submittals are accepted when using 8.5"x11" **light-green 'engineering' paper**. No spiral notebook fringes. Use only single side of paper and staple pages together in upper-left-hand corner. Note the name and course number on each page. Write **legibly** and show all procedures & the methodology used in solving the problems. **Numerate** all the problems and present them sequentially. Indicate the beginning and the end of each problem. Limit of **2-3 problems maximum** per page. All problems assigned from the same chapter are graded equally. Homework is collected at the **start** of the session due. **Late submission is not allowed!** **Students who are not doing the H.W. assignment may be asked to leave the class & miss the lecture. H.W. must be taken very seriously!!!**

Submissions that do not conform to the above format will not be accepted.

Academic Dishonesty:

Academic dishonesty is a completely unacceptable mode of conduct and will not be tolerated in any form at California State University Northridge. All students involved in academic dishonesty will be disciplined in accordance with university regulations and procedures. Discipline may include suspension and/or expulsion from the University. "Cheating or plagiarism in connection with an academic program at a CSU campus is listed in Section 41301, Title 5, California Code of Regulations as an offense for which a student may be expelled, suspended or given a less severe disciplinary sanction. Academic dishonesty is an especially serious offense and diminishes the quality of scholarship and defrauds those who depend on the integrity of the University's programs." Please consult university policy regarding plagiarism and the consequences:

<https://catalog.csun.edu/policies/academic-dishonesty/>

Any student caught cheating or plagiarizing in this class will receive a zero for the assignment and may be referred to the dean's office for additional consequences. Academic dishonesty includes, but is not limited to, cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or in part to another person. The instructor reserves the right to submit your papers to [turnitin.com](https://www.turnitin.com) for identifying papers containing unoriginal material.



The use of mobile phones is prohibited during lectures & exams. No Exceptions!!!

For Your Information: Grade Evaluation Criterion

* 'A' grade range (A to A-) is reserved for work that is exceptional. This means that it (1) is professional and reflects the writer's/s' careful consideration of audience and purpose; (2) shows perfect to near-perfect understanding of the necessary concepts and analytical tasks; (3) where appropriate, it shows the capacity to think creatively or to see implications beyond the immediate scope of the question; (4) contains all necessary information (invention); (5) is arranged in a logical manner (6), is memorable; (7) delivery is visually appealing; and (8) is free of mechanical errors and is formatted as specified. Work must be flawless to attain an A/A-. Work with minor flaws that is nonetheless excellent in other ways will earn an A-.

* A grade in the B range means that the work is acceptable at the graduate level (B- range) to very good (B/B+). This work satisfies all (B+) or most (B/B-) of the requirements of the question & research tasks, shows the capability to think beyond the task by relating it to other areas of knowledge in or outside of the course; is neatly presented and shows above-average use of academic English. If the work is decently written, is formatted basically correctly, and covers most of the required content, but has several minor flaws or one major flaw, the grade is B-.

* A grade in the C range means that the work, while covering much of the required ground, does not show graduate-level analytic and expressive ability. That is, major and minor items may be missing or incorrect; and while the language may communicate most points adequately, it does not qualify as above-average academic work.

* A grade in the D range shows that the work does not, overall, achieve an acceptable level of coverage of the requirements AND/OR the language is insufficient to make the writer's points understandable to the reader. The content may be either incorrect to an unacceptable degree, or very incomplete.

* A grade of F indicates that so little of the required content is covered that grading the paper is an exercise in futility. It may mean that very major points have clearly not been grasped or have been misunderstood by the student. An F may also indicate that the ideas are expressed in such a way that they are not at all understandable to the reader. A grade of F is also awarded when assigned work is not handed in, or not handed in by the set deadline.