

# ENGR 2308 – ENGINEERING ECONOMICS

## South Plains College

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### Common Course Syllabus: ENGR 2308 Revised December 2019

**Department:** Mathematics, Engineering, and Computer Science

**Discipline:** Engineering

**Course Number:** ENGR 2308

**Course Title:** Engineering Economics

**Available Formats:** conventional

**Campuses:** Levelland

**Course Description:** Methods used for determining the comparative financial desirability of engineering alternatives. Provides the student with the basic tools required to analyze engineering alternatives in terms of their worth and cost, an essential element of engineering practice. The student is introduced to the concept of the time value of money and the methodology of basic engineering economy techniques. The course will address some aspects of sustainability and will provide the student with the background to enable them to pass the Engineering Economy portion of the Fundamentals of Engineering exam.

**Prerequisite:** Successful completion of 'C' or better in MATH 2413

**Credit:** 3 **Lecture:** 3 **Lab:** 0

**Supplies:** Please see the instructor's course information sheet for specific supplies.

**This course partially satisfies a Core Curriculum Requirement:** None

**Core Curriculum Objectives addressed:**

- **Communications skills**—to include effective written, oral and visual communication
- **Critical thinking skills**—to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information
- **Empirical and quantitative competency skills**—to manipulate and analyze numerical data or observable facts resulting in informed conclusions

**Student Learning Outcomes:** Upon completion of this course and receiving a passing grade, the student will be able to:

1. Apply different methods to calculate the time value of money.
2. Construct cash flow diagrams for a given problem.
3. Estimate total revenue, total cost, and break even points.
4. Calculate the uniform series payment, given principal, interest rate, and pay period.
5. Perform project evaluation, including cost/benefit analysis.
6. Articulate principles of taxation and depreciation.
7. Perform capital budgeting, cost comparisons, and replacement analyses.
8. Solve problems at a level consistent with expectations of the engineering economics portion of the Fundamentals of Engineering exam.

**Student Learning Outcomes Assessment:** A pre- and post-test questions will be used to determine the extent of improvement that the students have gained during the semester

**Course Evaluation:** There will be departmental final exam questions given by all instructors.

**Attendance Policy:** Attendance and effort are the most important activities for success in this course. Records of your attendance are maintained throughout the semester. Five (5) absences, *for any reason*, are allotted to the student for the semester. Tardies count as one-half (1/2) of an absence. Tardies will be applied for consistently being late to class, as deemed by the instructor and leaving class early. If this number is exceeded, the instructor has the right to drop you with a grade of F or an X, depending on their discretion.

Plagiarism violations include, but are not limited to, the following:

1. Turning in a paper that has been purchased, borrowed, or downloaded from another student, an online term paper site, or a mail order term paper mill;
2. Cutting and pasting together information from books, articles, other papers, or online sites without providing proper documentation;
3. Using direct quotations (three or more words) from a source without showing them to be direct quotations and citing them; or
4. Missing in-text citations.

Cheating violations include, but are not limited to, the following:

1. Obtaining an examination by stealing or collusion;
2. Discovering the content of an examination before it is given;
3. Using an unauthorized source of information (notes, textbook, text messaging, internet, apps) during an examination, quiz, or homework assignment;
4. Entering an office or building to obtain an unfair advantage;
5. Taking an examination for another;
6. Altering grade records;
7. Copying another's work during an examination or on a homework assignment;
8. Rewriting another student's work in Peer Editing so that the writing is no longer the original student's;
9. Taking pictures of a test, test answers, or someone else's paper.

**Student Code of Conduct Policy:** Any successful learning experience requires mutual respect on the part of the student and the instructor. Neither instructor nor student should be subject to others' behavior that is rude, disruptive, intimidating, aggressive, or demeaning. Student conduct that disrupts the learning process or is deemed disrespectful or threatening shall not be tolerated and may lead to disciplinary action and/or removal from class.

**Diversity Statement:** In this class, the teacher will establish and support an environment that values and nurtures individual and group differences and encourages engagement and interaction. Understanding and respecting multiple experiences and perspectives will serve to challenge and stimulate all of us to learn about others, about the larger world and about ourselves. By promoting diversity and intellectual exchange, we will not only mirror society as it is, but also model society as it should and can be.

**Disability Statement:** Students with disabilities, including but not limited to physical, psychiatric, or learning disabilities, who wish to request accommodations in this class should notify the Disability Services Office early in the semester so that the appropriate arrangements may be made. In accordance with federal law, a student requesting accommodations must provide acceptable documentation of his/her disability to the

Disability Services Office. For more information, call or visit the Disability Services Office at Levelland (Student Health & Wellness Office) 806-716-2577, Reese Center (Building 8) 806-716-4675, or Plainview Center (Main Office) 806-716-4302 or 806-296-9611.

**Nondiscrimination Policy:** South Plains College does not discriminate on the basis of race, color, national origin, sex, disability or age in its programs and activities. The following person has been designated to handle inquiries regarding the non-discrimination policies: Vice President for Student Affairs, South Plains College, 1401 College Avenue, Box 5, Levelland, TX 79336. Phone number 806-716-2360.

**Title IX Pregnancy Accommodations Statement:** If you are pregnant, or have given birth within six months, Under Title IX you have a right to reasonable accommodations to help continue your education. To [activate](#) accommodations you must submit a Title IX pregnancy accommodations request, along with specific medical documentation, to the Director of Health and Wellness. Once approved, notification will be sent to the student and instructors. It is the student's responsibility to work with the instructor to arrange accommodations. Contact the Director of Health and Wellness at 806-716-2362 or [email cqilster@southplainscollege.edu](mailto:cqilster@southplainscollege.edu) for assistance.

**Campus Concealed Carry:** Texas Senate Bill - 11 (Government Code 411.2031, et al.) authorizes the carrying of a concealed handgun in South Plains College buildings only by persons who have been issued and are in possession of a Texas License to Carry a Handgun. Qualified law enforcement officers or those who are otherwise authorized to carry a concealed handgun in the State of Texas are also permitted to do so. Pursuant to Penal Code (PC) 46.035 and South Plains College policy, license holders may not carry a concealed handgun in restricted locations. For a list of locations and Frequently Asked Questions, please refer to the Campus Carry page at: <http://www.southplainscollege.edu/campuscarry.php> Pursuant to PC 46.035, the open carrying of handguns is prohibited on all South Plains College campuses. Report violations to the College Police Department at 806-716-2396 or 9-1-1.

**SPC Bookstore Price Match Guarantee Policy:** If you find a lower price on a textbook, the South Plains College bookstore will match that price. The difference will be given to the student on a bookstore gift certificate! The gift certificate can be spent on anything in the store.

If students have already purchased textbooks and then find a better price later, the South Plains College bookstore will price match through the first week of the semester. The student must have a copy of the receipt and the book has to be in stock at the competition at the time of the price match.

The South Plains College bookstore will happily price match BN.com & books on Amazon noted as *ships from and sold by Amazon.com*. Online marketplaces such as *Other Sellers* on Amazon, Amazon's Warehouse Deals, *fulfilled by Amazon*, BN.com Marketplace, and peer-to-peer pricing are not eligible. They will price match the exact textbook, in the same edition and format, including all accompanying materials, like workbooks and CDs.

A textbook is only eligible for price match if it is in stock on a competitor's website at time of the price match request. Additional membership discounts and offers cannot be applied to the student's refund.

Price matching is only available on in-store purchases. Digital books, access codes sold

via publisher sites, rentals and special orders are not eligible. Only one price match per title per customer is allowed.

Note: The instructor reserves the right to modify the course syllabus and policies, as well as notify students of any changes, at any point during the semester.

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**Professor:** Dr.Ramesh Krishnan (alias: Krams)

**Office:** AG 108 **PHONE:**(806)716-2698 **Email:** [krishnan@southplainscollege.edu](mailto:krishnan@southplainscollege.edu)

**Office Hours:** **MW:** 10:20 – 11:00am ; 12:15 – 2:30pm; Fri 8:00 – 10:00 am

The Faculty will be at his office at AG108 only on Mondays and Tuesdays.

The rest of the days will be virtual office hours. For contacting the faculty during virtual office hours please email the faculty.

**Class Times:** **The class will meet at the scheduled time FACE TO FACE on Mondays. The class will meet online through BLACKBOARD COLLABORATE ULTRA on Wednesdays**

**Textbook:** Engineering Economic Analysis, (14<sup>th</sup> edn.): by Newman, Eschenbach, and Lavelle

**GRADING:** Grades in the course will be based on the following components:

• 3 exams	(60%)	$A \geq 90$
• Homework	(10%)	$80 \leq B < 90$
		$70 \leq C < 80$
• Final exam	(30%)	$60 \leq D < 70$
		$F < 60$
	<b>TOTAL</b>	<b>100%</b>

**PS: NO MAKE-UP** exams will be given. If you miss **one**, the final exam will count twice.

**HOMEWORK:** Homework problems for each chapter have been assigned online and can be accessed through the following URL address: <https://oup.instructure.com/enroll/C9MTYY>  
The due dates will be as listed online for each assignment and there will not be any late submissions allowed under any circumstance. If the book is bought at the bookstore on campus then it will come bundled with the access code for the homework. If the book is bought elsewhere please make sure you buy the code for online homework access.

**COURSE DESCRIPTION:** Emphasizes the systematic evaluation of the costs and benefits associated with proposed technical projects. The student will be exposed to the concepts of the “time value of money” and the methods of discounted cash flow. Students are prepared to make decisions regarding money as capital within a technological or engineering environment  
This course is designed to present engineering students the major concepts and techniques of engineering economic analysis that are needed in the decision making process. The emphasis of this course is on the analytical analysis of money and its impact on decision making

**STUDENT LEARNING OUTCOMES:** After completing this course;

1. The student will use EXCEL spreadsheets and financial functions to model and solve engineering economic analysis problems.
2. The student will define and provide examples of the time value of money.
3. The student will demonstrate the effects of depreciation, income taxes, inflation and price change in engineering economic analysis problems.

4. The student will solve economic problems involving comparison and selection of alternatives by using variety of analytical techniques including present worth analysis, annual worth analysis, future worth analysis, rate of return analysis, benefit-cost ratio, sensitivity and breakeven analyses, and payback period analysis.

An equally important objective of this course is to develop broad engineering skills. Engineering requires the mastery of complex concepts and development of critical thinking and problem solving skills. While these skills come naturally to some people, most of you will need to learn, develop, and practice techniques to enhance your ability to learn and apply engineering concepts. The skills that you develop and sharpen in this course may improve your performance in future engineering courses and determine your eventual success as a practicing engineer.

<b>Course Outline</b>		
This schedule is tentative and subjective to change. Changes will be announced in class.		
Week	Date	Topics and Sections Covered
1	8/29, Mon	Introduction, Chapter 1
	8/31, Wed	Chapter 2
2	9/5, Mon	Holiday
	9/7, Wed	Chapter 2
3	9/12, Mon	Chapter 2
	9/14, Wed	Chapter 3
4	9/19, Mon	Chapter 3
	9/21, Wed	Chapter 3
5	9/26, Mon	Chapter 4
	9/28, Wed	Chapter 4
6	10/3, Mon	Chapter 4
	10/5, Wed	Chapter 4
7	10/10, Mon	Chapter 5
	10/12, Wed	Exam #1
8	10/17, Mon	Chapter 5
	10/19, Wed	Chapter 5
9	10/24, Mon	Chapter 6
	10/26, Wed	Chapter 6
10	10/31, Mon	Chapter 7
	11/2, Wed	Chapter 7
11	11/7, Mon	Chapter 7
	11/9, Wed	Exam #2

12	11/14, Mon	Chapter 8	
	11/16, Wed	Chapter 8	
13	11/21, Mon	Chapter 9	
	11/23, Wed	Thanksgiving Break	
14	11/28, Mon	Chapter 11	
	11/30, Wed	Chapter 11	
15	12/5, Mon	Exam #3	
	12/7, Wed	Chapter 12	
Finals	12/12, Mon	Finals	