

# BSEN 206 – Engineering Economics

Othmer Hall 106 – Tuesday and Thursday 9:30-10:45 am

## Instructor

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Nebraska Athletic Performance Lab-Level C

## TA

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## About this Course

This course is an on-campus version of BSEN 206 - Engineering Economy. It is intended as an introductory course in economic decision making for engineers and scientists. For students taking this course, it is not expected that you have previous background in economics, accounting or finance. However, prior mathematical background up to and including college algebra and trigonometry is recommended. An on-line version of this course is also taught at the University of Nebraska - Lincoln during most summer semesters.

## Catalog Description

Introduction to methods of economic comparisons of engineering alternatives: time value of money, depreciation, taxes, concepts of accounting, and activity based costing.

## Prerequisite

Sophomore standing - this course is not intended for students just starting their engineering education.

## Course Objectives

After successfully completing this course, students should be able to (ABET outcome):

- Solve a variety of economic problems using the general engineering problem solving process. (2)
- Describe the basic concepts of cost and apply cost accounting methods to economic analysis. (2)
- Describe the time-value of money and be able to calculate economic equivalence for different economic alternatives. (2,4)
- Use appropriate qualitative and quantitative methods for comparing investment alternatives. (2,4)
- Demonstrate techniques for incorporating depreciation and income tax into economic analysis. (2,4)
- Use cost-benefit analyses to rank engineering projects. (2)
- Demonstrate an ability to recognize ethical principles, civics and stewardship, and their importance to society. (4)

## Course Hours and Credit

This course is a 3-credit hour semester course.

## Mask Policy

Given current CDC guidance and the current transmission level of COVID-19 in our community, I respectfully request that you join me in wearing a face covering during our classes.

## Problems and Quizzes

Problems will be assigned for each chapter but will not be collected or graded. This does not mean that doing the problems is voluntary. You need to do the problems assigned and make sure you understand them. BSEN 206 is a problem-oriented course, meaning you cannot learn the material without doing the problems. Notice that most of the course objectives relate to being able to solve a practical problem. This means that all of the assessments will test whether you are able to solve problems of the type assigned. To check to see if students have done the problems assigned, 10 weekly quizzes will be administered. These quizzes will be very similar to one or two of the homework problems. They will be timed quizzes (usually restricted to 10-20 minutes). If you have solved all of the homework problems, the quizzes will be easy. However, if you have not solved these problems ahead of time, they may be difficult. The sole purpose of these quizzes is to make sure you have done the homework problems and understand the material presented.

Quizzes will usually be given during class beginning promptly at 9:30 AM. Knowing that unfortunate and unexpected situations occur, ***one quiz grade may be dropped so there will be no means of making up a quiz without prior notification.***

## Problem Review/ Discussion Sessions

~~Problem review sessions will be held on Monday afternoons from 2:00-2:50 PM in 116 Chase Hall (East Campus) and 3:30-4:20 PM 105 Brace Lab (City Campus). The goal of these sessions will be to help you with homework problems you are having difficulty solving. For these sessions to be effective in helping you, you must have spent some time trying to do the homework before attending the help session. Attendance at the problem review (discussion) sessions is voluntary and will not be recorded. Unless we have some capacity issues at these sessions, students are welcome to attend either session.~~

## Exams

Two mid-term exams and a final will be given in this course. The mid-term exams will be closed-book and closed-notes. Laptop computers or tablets may not be used in the exam. Exams will stress the application of many of the techniques discussed in class, and in most cases will be based on the quizzes and homework assignments. The Final Exam will be cumulative, multiple choice, and closed-book/closed note. It is intended to resemble the engineering economy component of the FE exam that many engineers take when they are graduating.

*Final exam is Monday, Dec 12 at 10 a.m.*

## Exam and Homework Solutions

With exceptions, rather than simply giving the solutions to exam, quiz, and homework problems, solutions may not be posted. Most quizzes and exam problems will be reviewed in class. However, the burden is on you to make sure you find out how to solve the problems by getting help from classmates or the instructor.

## Attendance and Attention

As noted above, this course is a problem-oriented course. You can learn the material by reading the textbook and doing the problems if you are highly motivated (similar to what you would do for the on line version of this course). With the exception of the graded quizzes, attendance at lectures is purely voluntary and up to you. However, if you do attend the lectures, you will be expected to be engaged. This means that there will be no use of laptops computers or hand held devices for non-note taking in the lecture and no reading of materials, such as newspapers. In addition, you are expected to show up on time and to not disrupt other students attending the lecture. **Keep cell phones put away!**

## Academic Integrity

I have very little tolerance for cheating and dishonest students. You may study with other students and do the homework together. However, quizzes and exams will be taken individually. Any cheating of any sort or copying other students will not be tolerated.

“Students are expected to adhere to guidelines concerning academic dishonesty outlined in Section 4.2 of the University’s Student Code of Conduct (<http://stuafs.unl.edu/ja/code/>). The BSE Department process for grade and academic dishonesty appeals can be found at <http://bse.unl.edu/academicadvising-index>. Students are encouraged to contact the instructor for clarification of these guidelines if they have questions or concerns.”

## Final Grades

The following percentages will be used as calculating the final grade:

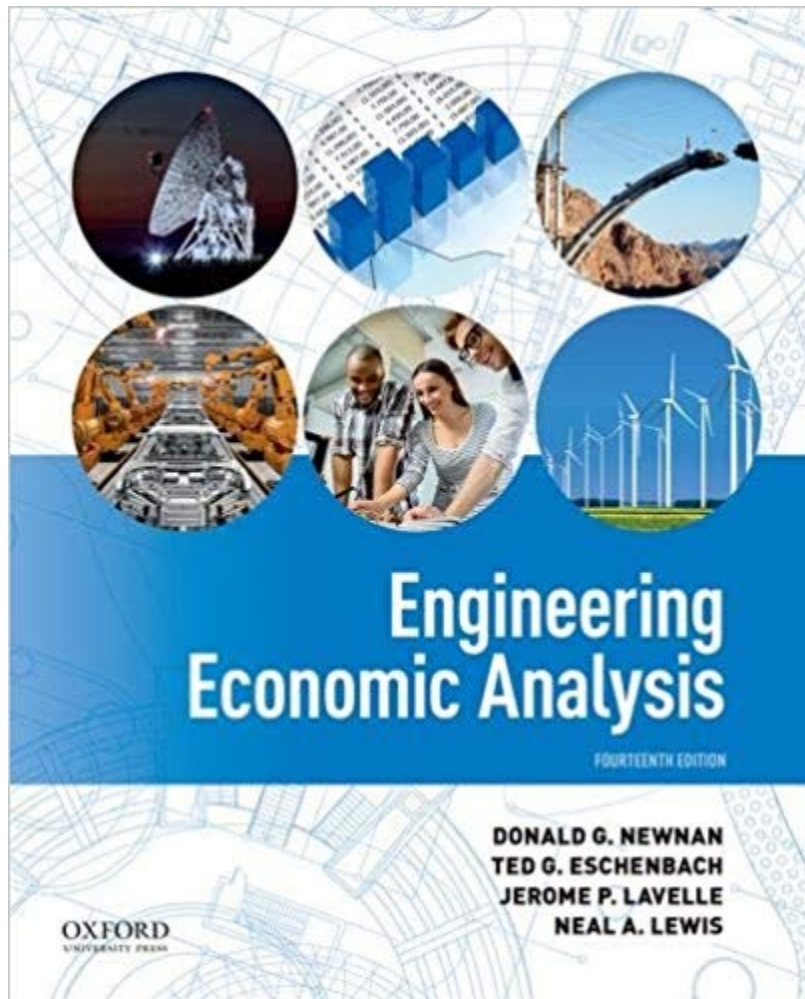
- Weekly Quizzes - 40%
- Exam #1 - 20%
- Exam #2 - 20%
- Final Exam - 20%

The grading scale for this course will be based on the following scale:

- A: 92% or above
- A-: 89%-92%
- B+: 86%-89%
- B: 82%-86%
- B-: 79%-82%
- C+: 76%-79%
- C: 72%-76%
- C-: 69%-72%
- D: 60%-69%

Please note that although Canvas will provide you with a total score for the points allocated in the course, this score has not been weighted by the scale given above and may not reflect your grade in the course.

**Title** **Engineering Economic Analysis (14<sup>th</sup> Edition)**  
**Author** Donald G. Newnan; Jerome P. Lavelle; Ted G. Eschenbach, Neal A. Lewis  
**ISBN** 978-0190296902  
**Publisher** Oxford University Press, Incorporated  
**Publication Date** 2019  
**Required**  
**Description** Please note that the 12<sup>th</sup> and 13<sup>th</sup> editions of this book are not ideal for this course. Many of the tables and most of the problems were changed when the textbook was updated from the previous editions.



Week	Tuesday	Thursday	Text Chapter	Topic	In Class	HW Problems (14th edition)
1	23-Aug	25-Aug	1 (FE Ethics)	Intro Ethics		
2	30-Aug	1-Sep	2 3	Costs Interest & Compounding		
3	6-Sep	8-Sep	4	Uniform Payments	Quiz 1	1-2, 2-5, 2-14, 2-15, 2-20, 2-44, (2-54), 2-76, 3-3, 3-19, 3-21
4	13-Sep	15-Sep	4	Gradient Payments, Continuous Compounding	Quiz 2	3-28, 3-37, 3-39, 3-40, 3-46, 3-48, 4-3, 4-5, 4-11, 4-15, 4-16
5	20-Sep	22-Sep	5 6	Present Worth / Annual Cashflow Loans	Quiz 3	(4-34), 4-35, (4-38), 4-53, 4-55, 4-64, 4-77, 4-88
6	27-Sep	29-Sep	6 7	Bonds Rate of Return	Quiz 4	5-11, 5-12, 5-15, 5-17, 5-20, 5-24, 5-44, 5-47, 5-62, 5-73, (5-92, 5-95), 6-2, 6-12, 6-20, 6-23, 6-47, 6-50, 6-53
7	4-Oct	6-Oct	7	Modified Internal RoR	Exam 1	
8	11-Oct	13-Oct	8 9	Selecting Alternatives Other analysis Techniques	Quiz 5	4-21, 7-8, 7-12, 7-18, 7-28, 7-40, 7-52, 7-75, 7-80, 7A-2
9	18-Oct	20-Oct	10	Uncertainty	*Quiz 6	8-15*, 8-23*, 8-39*, 9-33, 9-44, 9-50, 9-55
10	25-Oct	27-Oct	11 12	Depreciation Corporate Income Taxes	*Quiz 7	10-5, 10-8, 10-20, 10-31, 10-41, 11-13(3 yr prop class), 11-18, 11-20
11	1-Nov	3-Nov	(12A) 13	Personal Income Taxes Economic Life	*Quiz 8	11-45, 11-59, 12-5, 12-22*, 12-33*, 12-35*, 12-65*, (12-A2, 12-A3)
12	8-Nov	10-Nov	13	Replacement	*Exam 2	
13	15-Nov	17-Nov	14 15	Inflation Minimum Acceptable RoR	*Quiz 9	13-3*, 13-4*, 13-30, 12-35*, 13-37*, 13-38
14	22-Nov	24-Nov	16	Public Sector	Quiz 10	14-9, 14-11, 14-17, 14-23, 14-28, 14-31, 14-61e, 15-4, 15-8, 15-20
15	29-Nov	1-Dec	17	Accounting	*Quiz 11	16-14, 16-29, 17-11, 17-23
16	6-Dec	8-Dec		Review		
Finals	12-Dec @ 10 a.m.				Final Exam	

\*\*\*Subject to change\*\*\*

\* Thursday Quiz/Exam