

# ISE 226 Engineering Economy and Decision Analysis Spring 2020

## Instructor

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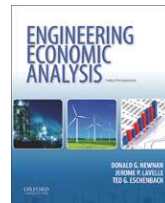
Office: Mohler Lab Room 325, Ext. 85868

Office Hours: 2-3pm Tuesday, Thursday, and by appointment.

**Class times: MWF 9:20-10:35 and 1:35-2:50 MO 453**

**Text:** Engineering Economic Analysis by Newnan, Eschenbach, and Lavelle, Oxford University Press.

Editions 11 and up (may be available from Amazon and other sources).



**Course Website:** Course materials, assignments and your grades will be posted on "Course Site". You are responsible for keeping track of assignments and announcements, so please visit the site regularly.

**Course Description:** This course is designed to teach the basic principles of engineering economics and the techniques and practices utilized in the area of capital investment analysis to evaluate proposed solutions to engineering problems in a decision-making context.

**Learning Outcomes:** Upon completion of this course, students will:

- Understand the meaning of the "time value of money", inflation, deflation, exchange rates, and interest and their use in the economic analysis.
- Apply the steps of the economic decision-making process, including defining a problem, generating solution alternatives, estimating cash flows, analysis, selection, implementation, and post-implementation analysis.
- Be able to financially describe investment alternatives with cash flows and cash flow diagrams.
- Be able to work with before or after tax cash flows.
- Understand the concept of economic equivalence for the basis of comparing mutually exclusive alternatives.

- Be able to find present worth annual equivalent, future worth, rate of return, and payback period.
- Be able to deal with uncertainty in the cash flows - be able to perform sensitivity analysis.
- Be able to evaluate impact of constraints and multiple attributes
- Understand the evaluation of economic impact for government or public works projects.
- Be able to evaluate the status of a project using Earned Value method.
- Be able to recognize ethical issues in Engineering Decision Making.

**Course Philosophy:** I see this course as a partnership between the textbook, lectures, and homework; all of them work to help you learn. Since no textbook is perfect, there will occasionally be items presented in lecture that are not in the book. You will be responsible for these topics just as much as the ones that are in the book. Similarly, there are some things in the textbook that are better read than lectured. **Just because it didn't appear in lecture doesn't mean it won't be in the homework or on the exams.**

Additionally, I believe that your Engineering education at Lehigh is more than reading textbooks, and solving homework problems. Indeed, the insight you gain through the discussions in class is a major part of your education. Therefore I shall frequently ask questions in class and discuss related topics that may not be in the textbook. You can count on questions on these material on the tests. **Additionally, unless you speak up in the class, you shall forgo a portion of the "class participation" points.** I therefore strongly encourage all of you to pay attention and participate in the class discussions.

**Homework:** You will have regular homework assignments. Homework assignments must be turned in during the class on PAPER on the assignment due date. Missed assignments require an explanation to the instructor. No credit will be given to the assignments submitted after solutions are posted.

Homework must be **typed or written neatly** and with the problems in correct order.

I consider every artifact (case report, homework, project report etc.) you turn in as professional work, and will grade them as such. **Untidy, or otherwise work unworthy of a professional will not be accepted.**

In this class, you might ask others for help with a homework assignment. Once you write up your answer in your own words to turn in, it must be your own work. It is dishonest to copy homework

solutions from past years that you might obtain or have. Naturally, Academic Honesty applies to your homework assignments too.

**Class Preparation and Participation:** You are expected to come to class regularly and to be prepared for each class by reading the relevant sections of the textbook ahead of time. I will post notes on *Course Site* in advance so that you may bring them to class if you wish. In addition, you are expected to participate in class discussions and ask questions and/or comment. ***A portion of your grade will be based on class participation.***

**Extended Absences and Missing HWs & Exams:** If you believe you will miss two or more consecutive lectures due to illness, holidays, family emergencies, etc., please contact me as early as possible so that we can develop a plan for you to make up the missed material. No credit will be given for missed homework or exams unless you have discussed your absence with me in advance or in some cases a written excuse from a doctor or the Dean of Students.

**Recording Devices and Cell Phones in the classroom:** Any use of personal devices including cell phones, mp3 players etc. is strictly forbidden. If you have to use personal laptops for note-taking, Care must be taken not to distract your fellow students.

**Grading:** Your grade will be calculated as follows

Home works	10%
Quizzes/Cases	30%
Exams (2)	30%
Final Exam	20%
Class Participation	10%

There will be two exams given during the semester and a cumulative final. All exams will be given in the normal class time. An alternate room might be used if available.

This semester the finals period ends at May 13. Everyone takes the final at the same time. Do not purchase your airline tickets before the schedule for the final exams is posted.

All exams will be open-book open-notes unless instructed otherwise.

Homework will be assigned most of the weeks. Some weeks, cases will be assigned and graded.

Quizzes will be given in class, both announced and un-announced as needed.

Class participation, and attendance, will determine a portion of the grade.

**Accommodations for Students with Disabilities:** If you have a disability for which you are or may be requesting accommodations, please contact both your instructor and the Office of Academic Support Services, University Center C212 (610-758-4152) as early as possible in the semester. You must have documentation from the Academic Support Services office before accommodations can be granted.

### **Principles of Equitable Community**

Lehigh University endorses The Principles of our Equitable Community (<http://www4.lehigh.edu/diversity/principles>). We expect each member of this class to acknowledge and practice these Principles. Respect for each other and for differing viewpoints is a vital component of the learning environment inside and outside the classroom.

### **Other Relevant University Policies**

Religious Holidays <http://www.lehigh.edu/~incha/holidays.html>

Lehigh Computer Usage <http://www.lehigh.edu/security/computepolicy.html>

Academic Integrity <http://www.lehigh.edu/~infkli/AcademicIntegrity.htm>