

Syllabus: IEMS 326
Economics and Finance for Engineers
Fall 2011

Time: Mondays, Wednesdays, and Fridays, 3:00-3:50.

Midterm Exams: Friday 10/7 and Wednesday 10/26, in class.

Final Exam: Friday, December 9, 3-5pm.

Place: Frances Searle 2-407 (for class meetings and exams)

Course webpage: <http://users.iems.northwestern.edu/~armbruster/2011fiems326>

Professor: Benjamin Armbruster

Office: Tech M237

Office Hours: Wednesdays, 4:00-5:00

Teaching Assistant: Dongjae Lim

Email: dongjae@u.northwestern.edu

Office Hours: Thursdays 5:00-6:00 in Tech C211

Required Textbook: We will be using a custom textbook ordered through the University bookstore. It contains selections from two books published by Oxford University Press:

- *Investment Science* by David G. Luenberger.
- *Engineering Economic Analysis*, 10th ed., by Donald G. Newnan, Jerome P. Lavelle, and Ted G. Eschenbach.

Course Purposes:

- Train engineers to
 - be conversant with their corporate financial environment
 - participate in the design of engineering projects that are financially advantageous
 - justify project proposals to management
- Teach tools useful for internal or external consultants advising on
 - project selection
 - company valuation
- Prepare students to take Financial Engineering I (IEMS 373).
- Teach uses of IEMS tools in business.

Course Objectives: You should be able to

- Compute the net present value of cash flow streams
- Use decision trees in project valuation and selection.
- Build spreadsheets and create reports justifying project selection decisions.
- Understand bond cashflows, leverage, financial risks, and diversification.

General Policies:

- Please check the course website daily for announcements and postings.
- All exams are open-book, closed-notes. The exam paper will include an information sheet to reduce the need for memorization. All exams are cumulative but the midterms will emphasize the material not covered on any previous exam.
- Numerical course grades will be based on the following components:

Homework	30%
Midterm Exams	40% total
Final Exam	30%

Homework Policies:

- You may prepare joint homework submissions in groups of size one or two. If you work in a group, please work together on the entire assignment; do not split it up into parts that you do separately, as this will result in reduced learning and reduced exam scores. Also, each group should submit only one solution.
- Students may discuss the homework with each other, but groups must prepare their submissions independently. If you need help with assignments, please come to office hours. Preparing submissions independently means:
 - Do not sit down with another group and work out the solution to a problem together.
 - Do not collaborate on the preparation of a spreadsheet used in more than one group's submission.
 - Do not copy or make use of another group's solutions or spreadsheets, and do not allow another group to copy or make use of yours.
- There will be eight homeworks: six regular homeworks and two case studies. Your lowest score out of the eight homeworks will be dropped. You need only do seven of the homeworks. Contact the instructor only if there are multiple homeworks you will not be able to submit on time.
- Submit homework at the beginning or end of class; pick up graded items from the TA in office hours.
- Bring late homeworks to me in my office; leave them under the office door if I am not there. Do *not* put homework in my mailbox or the TA's mailbox, because we might not find it before solutions are posted. Late homeworks can not be accepted after solutions have been posted, so please contact me if you are going to be slightly late with the homework.
- Please read the solutions closely each week, even if your homework received a good score, to see if your answer matches the solution and what was the source of any error. This is an important part of the learning process. See the TA in office hours if you have trouble figuring out what went wrong.
- Homeworks should not be submitted electronically except when specifically requested or with the instructor's prior permission (e.g., unavoidable travel). In those instances when you should submit the homework (or part of it) electronically, please email it to the TA. The body of the email should be empty, the subject line should mention the assignment number, and the name of the attached file(s) should be *Lastname_Firstname*.
- Show your work except when the assignment states otherwise.

- Please make your charts beautiful. Text should be legible. Axes should be labeled. Appropriate units and precision should be used. A caption explaining the figure should be provided.
- Please make your spreadsheets easy to understand. Make the spreadsheet self-contained by labeling and explaining things. Show the units used (dollars, millions of widgets, etc.) Use formatting to make things easier to understand and to highlight the conclusions. Use appropriate precision and formatting for the data (e.g., avoid scientific notation for cells displaying millions of dollars).
- Think of your response to the case as a well-written lab report that counts as a full homework but you have more time to complete. More detailed guidelines for the case studies will be given in class.