ENMG 602 Introduction to Financial Engineering
Fall 2012, CRN 10363: TTH 4:00 - 5:30 PM - Bechtel 407

Instructor
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Office hours: Thu 12:30 - 3:30 PM. (The class GA will have an evening office hour. TBA.)

Course Description and Objectives
Financial Engineering (FE) is the tailoring of cash flows over time to be as desirable as possible. This involves the scientific design of financial products which are traded in the financial markets. Examples of financial products (also known as financial instruments or securities) include bonds, stocks, futures, and options. This course aims to (i) introduce the student to financial accounting, the investment process and financial markets; and (ii) to give the student a flavor of FE applications. The course is divided to two parts. The first part covers the basics of financial accounting. It provides the student with a working knowledge of the accounting process and its usage in assessing the financial performance of organizations. This also enhances the understanding of the “big picture” (i.e., the business environment where FE is implemented). The second part is on FE applications to “fixed income” securities involving deterministic cash flow streams. These applications include pricing and portfolio structuring of bonds, capital budgeting, cash matching, dynamic investment management and firm valuation. This course will prepare the students to handle more complex financial instruments with uncertain cash flows such as stocks, options and futures (which are covered in ENMG 624 and 625).

Course Prerequisites
Basic concepts of engineering economy. A training equivalent to ENMG 400 is required.

Textbooks
Additional References

Topics Covered
We will cover Chapters 1 to 7 of Antle’s book and Chapters 2 to 5 of Luenberger’s book.

1. Introduction to financial accounting. Financial statements, decision making, economic concepts: Value, wealth, income, generally accepted accounting principals (GAAP), institutional context (Chapter 1, Antle).


4. Statement of cash flows. Cash and cash flow concepts, operations, investing and financing activities, construction of cash flow statement, articulation of statements, analysis and ratios (Chapter 4, Antle).

5. Utilizing the accounting framework. Analyzing AOL financial statements (Chapter 5, Antle).


9. Term structure of interest rates. Term structures, forward rates, term structure explanations, expectation dynamics, duration, immunization. (Chapter 4, Luenberger).

10. Applied interest rate analysis. Capital budgeting, optimal portfolios, dynamic cash flow processes, the Harmony theorem, valuation of a firm (Chapter 5, Luenberger).
Grading
Grading is as follows.

- Midterm Exam 35%
- Final Exam 35%
- Homework 20%
- Paper 10%

Homework
Homework problems will be assigned and graded frequently. Students are encouraged to spend plenty of time working on the homework problems and to discuss their solution with each other and the instructor. However, each student should write and submit the homework individually. Do not type the homework. But do staple it. Doing the homework is the best way to excel in this course.

Paper
This aims at introducing you to serious academic research. You will work in groups of two and read, summarize (in 4 double-spaces pages at most), and present (in 5 minutes max) a paper from a respectful accounting or finance journal. (A detailed list of journals will be provided later.) This “small” project will be done in two phases. Phase 1 (the paper summary) is due three weeks before the semester ends. I will read your summary and give feedback on it. You’ll then address my comments, update the paper, and submit it back with the final exam.

Attendance Policy and Class Management
Attendance will be noted utilizing random sampling. A student is allowed two unexcused absences at most. Each additional unexcused absence will lead to losing five points from the final grade. No student will be admitted to class after 15 minutes from the beginning of the lecture. Cell phones, laptops and other gadgets are not allowed in class.

Course Website

http://www.aub.edu.lb/~bm05/ENMG602/

Look for class notes, assignments and other class related material there.

University Rules and Regulations
Students are advised to review all relevant university rules and regulations including those related to attendance, cheating, plagiarism, misconduct, and academic integrity, among many others. It shall be expected that strict enforcement of these rules and regulations will be exercised.

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1 I’ll call on one quarter of the students at random in every session. There is a 25% chance that your name is called in a given session. With approximately 28 sessions in the semester, there is approximately a 98.3% chance that your name will be called more than two times in the whole semester. So, the probability of missing all sessions and not getting penalized is 1.7%.