

ISE 330 – Engineering Economy

Winter 2005

Course: ISE 330 – Engineering Economy - 3 credit hours

Call number: 03979

ISE 530 – Engineering Economy - 3 credit hours

Call number: 04000

Catalog description: Provides knowledge of the economic consequences of engineering decision processes, and methods for evaluation of engineering design alternatives in terms of costs and benefits. Topics include time equivalence of money, annual cost method, present worth method, rate of return method, depreciation, benefit/cost, break-even analysis, income taxes, equipment replacement and risk.

Sessions: Monday-Wednesday-Friday 1:10-2:00, 102 Stocker

Instructor: David Koonce koonce@ohio.edu

283 Stocker Center, 593-1550

Office hours: MWF 8-9 AM

Textbook: Engineering Economy, Blank and Tarquin, Fifth Edition (2002).

Course objectives:

Whenever large expenditures are to be made by a company, government, or organization, it is important to compare the amount of money required for the purchase and the value of the benefits that the purchase will provide. However, in doing so, it is necessary to account for the fact that the payment is typically made in the present, but the benefits aren't seen until the future. Engineering Economic analysis allows us to consider this delay in benefits as part of the analysis, and make the correct choice.

Course outcomes:

- Move single cash flows along a time line using a compound interest rate.
- Move annualized cash flows along a time line using a compound interest rate.
- Move gradient and escalating cash flows along a time line using a compound interest rate.
- Convert nominal and effective interest rates.
- Determine an effective interest rate for asynchronous cash flows.
- Determine unknown years and interest rates for net present worth (NPW) determination.
- Convert cash flows into NPW, net future worth, annualized series, gradient series or escalating series.
- Compare alternatives using NPW.
- Compare alternatives with differing life-cycles.
- Compare infinite-life projects using capitalized costs.
- Compute an Internal Rate of Return (IRR) for a set of cash flows.
- Identify spurious IRR from complex cash flows.
- Compare alternatives using Rate-Of-Return (ROR) analysis.
- Classify benefits, disbenefits and cost for Benefit/Cost analysis.
- Utilize MACRS depreciation.
- Apply fundamental income taxation to their analysis.

Computer usage:

Microsoft Excel will be used for data analysis, specifically and an introduction to it will be given for students who are not familiar with it. Homework must be typed using Microsoft Word or another appropriate word processing package.

Grading policy:

Assignments:

Homework assignments (~1 per week).....	30%
Quizzes/Discussion (each Friday, lowest one dropped)	10%
Midterm (open book)	15%
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<u>Final exam (open book) will be Wednesday, March 16, at 12:20 p.m</u>	<u>30%</u>
Total	100%

Grading Scale:

	A=93-	A-=90-92%
B+=87-89%	B=83-86%	B-=80-82%
C+=77-79%	C=73-76%	C-=70-
D+=67-69%	D=63-66%	D-=60-
Below60%=		

Attendance policy:

Attendance will not be taken but students are expected to be present for all class periods. Missed homework submissions and exams may only be made up when a legitimate class absence occurs. Final grades will be assigned using the following scale. If necessary, grades will be rounded up. (No student's grade will be rounded down.)

Academic misconduct:

Cheating will not be tolerated. If you copy from another person, plagiarize, turn in someone else's work as your own, or otherwise fail to maintain a high standard of academic honesty, you will receive a 0 on the assignment and the case will immediately be referred to the university judiciary office.

Tentative schedule:

Week	Week of	Topic(s)	Chapter(s)
1	1/3/05	Intro, Time Value of Money	1,2
2	1/10/05	Combined Factors	3
3	1/19/05	Nominal and Effective Interest, VBA, Exam #1	4
4	1/24/05	Present Worth, Annual Worth	5,6
5	1/31/05	Rate of Return Analysis	7
6	2/7/05	ROR Continued	8
7	2/14/05	Benefit/Cost Analysis, Exam #2	9
8	2/21/05	Depreciation	16
9	2/28/05	Taxes	17
10	3/7/05	Sensitivity Analysis	18
11		Final Exam	