

1. ES464 Survey of Engineering Economics
2. 3 Credit hours, 3 recitation hours
3. Course Coordinator/Instructor: LCDR Jeremiah Young, USN
4. Text book: Engineering Economic Analysis, Newman et al, 13th ed, 2017
 - a. Supplemental materials: None
5. Specific course information
 - a. This course provides a survey of material relevant to financial intertemporal decision making for engineering activities.
 - b. Prerequisite: 1/C ESE or ESEH
 - c. Elective course
6. Specific goals for the course
 - a. At the conclusion of the course, students will be able to:
 - Define and use cost concepts, modelling, and estimating to describe project costs and benefits.
 - Define and solve problems using the time value of money, equivalence, simple and compound interest, single and uniform series, different time periods to determine cost, benefit, worth, and rate of return analysis.
 - Measure and consider risk when making economic decisions.
 - Be able to describe and distinguish between depreciation, deterioration and obsolescence. The student should be able to calculate annual depreciation charge to account for capital gains/losses, ordinary losses and depreciation recapture due to the disposal of a depreciated business asset.
 - Develop and use cash flows that inflate at different interest rates and cash flows subject to different interest rates per period and use this information to explain the effect of inflation on purchasing power.
 - Use spreadsheets, financial functions, algebraic equations and interest & depreciation tables to model and solve engineering economic analysis problems.

- Demonstrate through a comprehensive project the assimilation of all the course objectives to make an engineering analysis.

b. This course introduces the following Student Outcomes

- an ability to apply knowledge of mathematics, science, and engineering
- (e) an ability to identify, formulate, and solve engineering problems
- (g) an ability to communicate effectively
- (h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context

7. Topics covered:

- Cost/ Costs Estimation
- Interest & Equivalence
- Repeated Cash flows
- Present Worth Analysis
- Rate of Return Analysis
- Taxes
- Best Alternative Analysis
- Inflation
- Depreciation
- Uncertainty/Risk Analysis