



BAKER COLLEGE
STUDENT LEARNING OUTCOMES

EGR3210 Engineering Economy I
3 Semester Hours

Student Learning Outcomes & Enabling Objectives

1. Classify and organize the steps that are used to make decisions in the engineering economy study.
 - a. Identify and use engineering economy terminology and symbols
 - b. Develop a spreadsheet that involves simple and compound interest, incorporating sensitivity analysis
 - c. Illustrate the use of cash flow diagrams to display what is known, what is estimated, and what is needed at the end of a given interest period
2. Adapt compound interest factor tables to show how time and interest affect money
 - a. Derive and use the uniform series present worth and capita recovery
 - b. Derive and use the uniform series compound amount and sinking fund factors
 - c. Derive and use the arithmetic gradient present worth and uniform series formulae
3. Combine different economic factors to solve different economic situations.
 - a. Calculate P, F and A for uniform series starting at a time other than period 1.
 - b. Calculate P, F and A of randomly placed single amounts and uniform series.
 - c. Apply equivalency calculations for cash flows involving: shifted or geometric gradients and decreasing arithmetic gradients.
4. Calculate nominal and effective interest rates of a given engineering practice situation.
 - a. Derive and use formula for the effective annual interest rate and the effective interest rate for any time period.
 - b. Perform equivalency calculations for periods different than the compounding period.
 - c. Implement effective interest rates in equivalency computations.
5. Compare mutually exclusive alternatives on a “Present Worth Basis - PW”, and apply extensions of the present worth method.
 - a. Select the best alternative (equal-life and different-life alternatives) using PW analysis and capitalized cost calculations.
 - b. Select the best alternative using capitalized cost calculations.
 - c. Develop spreadsheets that use PW analysis and its extensions.
6. Make “Annual Worth Calculations - AW” and compare alternatives using the annual worth method.
 - a. Calculate capital recovery and annual worth.
 - b. Select the best alternative on the basis of AW analysis.
7. Perform Rate of Return (ROR) Analysis for single and multiple alternatives.

- a. Calculate the ROR using a present worth (PW) and/or annual worth (AW) equations.
 - b. Determine the maximum number of ROR and their values for a specific cash flow series.
 - c. Calculate the composite ROR.
 - d. Prepare tabulation of incremental cash flows for two alternatives.
 - e. Select the best of multiple alternatives using an incremental ROR analysis.
 - f. Develop spreadsheets that include PW, AW, and ROR evaluation for multiple, different-life alternatives.
8. Formulate the Benefit / Cost (B/C) Ratio to perform analysis on project alternatives.
- a. Identify and comprehend fundamental differences between public and private sector economic alternatives.
 - b. Use the B/C ratio to evaluate a single project, select the better of two alternatives using the incremental B/C ratio method.
 - c. Select the best from multiple alternatives using the incremental B/C method
-

Project Student Learning Outcomes and Enabling Objectives

9. Prepare and present to class, in a professional manner, a topic/article on current engineering economic issues that have an impact on the global economy.
- a. Conduct survey of local or global economic issues and select one for in-class presentation
 - b. Deliver in-class a well-prepared presentation on the selected economic topic.
10. Plan and prepare a report on a selected topic of interest on engineering economy either individually or in teams and utilize the Internet, library, and other resources.
- a. Review a selection of engineering economically topics of interest, individually or in teams, utilizing the Internet, library and other sources.
 - b. Present a status update on the project
 - c. Submit final report to the instructor

These SLOs are/are not approved for experiential credit.

Effective: Spring 2020