

## ABET course syllabus (Engineering Economy)

1. Course number and name  
CE 0901420: Engineering Economy.
2. Credits and contact hours  
3 Credit Hours.
3. Instructor's name and contact information  
Husam A. Abu Hajar, Assistant Professor of Civil Engineering.  
Email: [h.abuhajar@ju.edu](mailto:h.abuhajar@ju.edu)  
Office hours: 10 am – 12 pm (Su, Tu, Th), Civil Engineering Department, 2<sup>nd</sup> floor.
4. Text book, title, author, and year
  - “Engineering Economy”, Sullivan, Wicks,&Koelling, 16<sup>th</sup> Edition, 2014.
  - a. *other supplemental materials*
    - Class handouts.
5. Specific course information
  - a. *brief description of the content of the course (catalog description)*  
Major elements of feasibility studies. Principles of engineering Economy. Equivalence and compound interest formula. Single payment model. Uniform payment model. Gradient payment model. Exponential payment model. Decision criteria for single and multiple alternatives: present worth, annual worth, future worth, internal rate of return, benefit cost ratio and payback methods. Income-tax effect on decision making, Management concepts, management cycle. Theories of management. Project scheduling techniques using Gantt and Precedence methods.
  - b. *prerequisites or co-requisites*  
None.
  - c. *indicate whether a required, elective, or selected elective course in the program*  
Required for Engineering.
6. Specific goals for the course
  - a. *specific outcomes of instruction: The student is expected to develop the following skills upon the successful completion of this course:*
    - Using EXCEL spreadsheets and financial functions to model and solve engineering economic analysis problems.
    - Defining and providing examples of the time value of money.
    - Solving economical problems involving comparison of alternatives by using a variety of analytical techniques including present worth analysis, annual worth analysis, future worth analysis, rate of return analysis, and payback period analysis.
    - Selection among alternatives on the basis of economic considerations.
    - Demonstrating the effects of depreciation, income taxes, and price change in engineering.

*b. Explicitly indicate which of the student outcomes listed in Criterion 3 or any other outcomes are addressed by the course.*

Course addresses ABET Student Outcome(s): h and k.

7. Brief list of topics to be covered

- Introduction to engineering economy.
- Cost concepts and design economics.
- Cost estimation techniques.
- The time value of money: simple versus compound interest.
- The time value of money: present values, future values, and annuities.
- The time value of money: gradient formulas, nominal and effective.
- Interest rates, continuous compounding.
- Evaluating a single project: present worth, future worth annual worth.
- More applications: conventional and discounted payback periods; internal and external rates of return.
- Comparison and selection among alternatives.
- Depreciation and income taxes.
- After-tax cash flow analysis.