

## **SE 52000 - Engineering Economics**

### **Type of Course**

Elective

### **Catalog Description**

Provides an overview of financial accounting principles and basic economic concepts that drive project selection, design, and development. Topics include the time value of money, investment return, depreciation, budgeting, cash flow, risk, and cost management. The course will emphasize the linkage between project scope and cost management with special attention to cost estimation and earned-value cost management techniques.

### **Credits**

3

### **Contact Hours**

3

### **Prerequisite Courses**

None

### **Corequisite Courses**

None

### **Prerequisites by Topics**

Prerequisites: Senior or graduate class standing in an engineering or science degree program, or consent of instructor.

### **Textbook**

None

### **Course Objectives**

#### **Students who successfully complete this course will have demonstrated**

1. An understanding of the time value of money and how to make investment decisions among alternatives
2. An understanding of the pros and cons of Cost as An Independent Variable (CAIV) and trading other acquisition variables with respect to cost
3. The ability to create a Cash Flow Statement and budget for a project
4. An understanding of the techniques to estimate project cost and ROI

5. Understand how to develop a Work Breakdown Structure (WBS) and Systems Engineering Management Plan (SEMP) to document project scope and to derive the chart of accounts from the WBS
6. Familiarity with pros and cons of traditional and lean cost allocation methodologies and Earned Value Management (EVM) Metrics
7. Be able to evaluate whether a company's operating policies are compliant with Defense Contract Audit Agency (DCAA) and Department of Defense (DoD) Acquisition process regulations
8. Gain a basic understanding of double entry accounting

### **Lecture Topics**

1. The Time Value of Money and Interest Formulas
2. Decision Making among Alternatives
3. Cost as an Independent Variable and System Design
4. Accounting and Depreciation
5. Cash Flow, Budgeting and Cost Estimation, Return on Investment (ROI) and Payback
6. Systems Engineering Management Plan (SEMP), Work Breakdown Structure (WBS) and Chart of Accounts
7. Traditional Cost Allocation, Lean Accounting and Earned Value Management (EVM)
8. Defense Contract Audit Agency (DCAA) and Department of Defense (DoD) Acquisition Process Compliance

### **Computer Usage**

None

### **Laboratory Experience**

None

### **Design Experience**

Low

### **Coordinator**

David S. Cochran, Ph.D.

### **Date**

11/16/2022