

Course ID

**ENGECON**

Course Duration

**3 days**

**Related Courses**

Course Title

**Engineering Economics for Telecom and Media Engineers**

- 3G, IMS, and the Carrier Business Economics (3G-IMS-STRAT, 2 days)

**Aimed At**

This course is aimed at design engineers, senior engineers, project engineers, engineering managers, directors, and others engaged in telecommunications engineering activities that have economic impact.

**Group Size**

5-25

**Prerequisites**

While there are no particular course prerequisites, you should have performed enough engineering work at a level that has provided you with some exposure to the economic considerations that underlie engineering decisions.

**Course in a Nutshell**

By training, engineers are very cognizant of the need to engineer a network to the defined KPI's and take pride in acquiring the knowledge and skills that help them do that. They are less aware that every engineering decision or trade-off they make has economic consequences as well.

Like Engineering, Engineering Economics is also a well-established discipline with its concepts, terminology, methods, and considerations. Mastering the basics of engineering economics will help you understand the economic impact of the many technical choices you make as an engineer. Whether you are selecting a new technology, making lease versus buy decisions, doing break-even analyses, or computing return on your infrastructure investment, the course will help you acquire as good an appreciation of the economic trade-offs as you do of the engineering issues. It will help you make engineering decisions in a manner that is consistent with your company's operating and capital expense policies and other financial objectives.

**Customize It!**

Customize this course to your company's specific requirements by adding or omitting topics and including examples and case studies specific to your organization. If you are faced with a particular engineering economic decision, we can work it into the course as a class case study. The course duration can be expanded or shortened as needed. While the course is aimed at a telecom audience, it can be adapted to other engineering disciplines as well.

**Learn How To**

- Learn the key definitions and concepts of engineering economics
- Explain how economics plays into technology deployment decisions
- Utilize the economic considerations, tools, and techniques that will help you

## Course Outline

### Day 1: Basics, P&L, and Balance Sheet

- Introduction
- The Engineer's Financial Role
- What Are the Cost Elements of a Network
- Cost versus Revenue versus Income
- Fiscal Understanding
- What is a Balance Sheet?
- *Example: Reviewing a Balance Sheet*
- Objectives of an Economic Analysis/Engineering Economic Study
- The Engineering Economic Study Processes
- What Engineering Economic Studies Are Not and Don't Do
- *Review and Q/A*
- *Exercise: Identifying the Cost Elements of Your Product(s) and Service(s)*
- *Case Study*
- Accounting Concepts
  - Telecom/Technology Accounting Classifications
- What is an Asset?
  - Intellectual Property is an Asset: How Do you Value it? Why Do You Value it?
- Liabilities and Owner's Equity
- Balance Sheet
- Shareowner's Equity
- Operating Revenues
- Operating Expenses
- Income Statement: What is Income?
- What is the Relationship between the Balance Sheet and the Income Statement?
- After Income: Earnings and Profit
- How Do You Balance Technology and Cost?
- *Review and Q/A*
- *Open Discussion: How Do You Make a Decision?*
- *Case Study: Making a Decision*

## Day 2: Capital Expenditure

- Capital Expenditures and the Nature of Costs
- What Are Capital Expenditure Policies?
- *Example: Capital Expenditure Policies in a Healthy Company*
- Capital Expenditure Policy Structure
- *Example: Capital Expenditure Policy*
- What Are:
  - Revenue
  - Gross Profit
  - Break Even
  - Fixed Capital Investment
  - Working Capital
  - Income Tax
  - Depreciation
  - Interest
  - Net Profit/Operating Profit
  - Rate of Return on Investment
  - Payout/Payback Period
  - Discounted Rate of Return
  - Minimum Rate of Return
- *Example Review: Income and Rate of Return*
- *Case Study: Developing the Rate of Return*
- Cost Expenditures: When Can You and Should You Spend Capital?
- Capital Costs
- First Costs: Their Role and Future Impact
- Financial Loading: Engineering Loading
- Continuing Costs
- Maintenance Expenses
- Depreciation
- Advertising
- Travel and Entertainment (T&E)
- Payroll
- Benefits
- General Administration
- Outsourcing
- *Example: Typical Cost Structure of a Company*
- *Example: Your Own Company*
- Equipment
  - Salvage, Scrap, and Junk Value

- Estimating the Useful Life of an Asset
- Attributes of Depreciation: Why Is It Important?
  - Methods of Depreciation
  - Straight-Line Method
  - Declining-Balance Method
  - Double-Declining Balance Method
  - Sum-of-the-Years-Digits Method
  - The Sinking-Fund Method
- Which Depreciation Method Do You Use, If at All?
- *Exercise: Sample Design and Engineering Problem Taking into Account Engineering Economics*
- *Case Study: Valuing Equipment and Technology*

### **Day 3: Mathematics of Investment**

- Mathematics of Money
  - Time is Money and Money Is Time
- Interest: Income and Penalty
- Equivalence
- Present Worth and Future Worth: Money and Equipment
- *Example: Review*
- What is an Annuity?
- *Example of an Annuity*
- Time Value of Money – How Does It Fit Into Your Business?
- Future Worth of Money
- Present Worth of Money
- *Example Review of How Your Technology's Value is Impacted by Time*
- Investment Decision Frameworks and Drivers
  - Qualitative Decision Framework
  - Quantitative Decision Framework
- Investment Decision out of Necessity
- Replacing Worn out and Obsolete Equipment
- Repairs to Facilities
- Research and Development
- The Investment Evaluation and the Market Strategy; Integrating the Two and Making a Decision
- *Case Study: Start to finish; taking a product from beginning to sale.*
- *Wrap-up: Putting It All Together - Group Discussion*

**How You Will  
Learn**

- A highly qualified instructor, well versed in both engineering and business economics, will present this course in a lecture/workshop format.
- Along with lecture, we will employ examples, exercises, case studies, and interesting group activities to enrich the instruction and drive home the essential points.
- You will receive a printed Participant Handbook which will help you remember and retain what you learned in class and apply it on your job.

*Revised*

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