

# **ECON 401: ENGINEERING ECONOMICS**

(Required)

**Course Description:** **ECON 401: Engineering Economics LT: 3 LB: 0 CR: 3**

This course provides the student with an understanding of the basic concepts of money and its management, business and project evaluation, financial aspects of engineering projects and fundamentals of cost-benefit analysis. Specifically, it examines the role of engineers in business, cost and investment concepts, capital budgeting, project cash flows, project risks and replacement decisions.

**Prerequisite:** MGT 301 – Introduction to Management

**Textbook:** Contemporary Engineering Economics, by Chan S. Park - Prentice Hall, 3<sup>rd</sup> Edition, 2002

- References:**
- Fundamentals of Engineering Economics, by Chan S. Park, Prentice Hall, 1<sup>st</sup> Edition, 2004
  - Economics, by John Sloman, Prentice Hall, 5<sup>th</sup> Edition, 2002
  - Fundamentals of Financial Management, by James C. Van Horne and John M. Wachowicz, 12<sup>th</sup> Edition, Prentice Hall, 2005
  - Engineering Economy by E Paul DE Garmo and others, Prentice Hall, 5<sup>th</sup> Edition, 2006

**Course Learning Objectives:** To enable the students to:

1. Discuss the concepts of time value of money, debt and equity and amortized loans.
2. Describe business projects, capital expenditure, rate of return, mutually exclusive projects, cost-benefit analysis and cost-benefit ratios.
3. Explain the role of engineers in business, large and small scale engineering projects and types of strategic economic decisions.
4. Explain the technique of capital budgeting, origins of project risk and resolution of risk.
5. Discuss cash flow forecasting and preparation of project cash flows statements.

**Course Outline:**

**[I] Modules:**

<b>Module</b>	<b>Topic</b>	<b>Duration</b>
1.	Understanding Money and its Management	1-3 week
2.	Business and Engineering Projects	4-6 weeks
3.	Engineering Economic Decisions	7-9 week
4.	Capital Budgeting	10-12 week
5.	Project Cash Flows	13-14 weeks

**Evaluation Methods:**

1. Major exams and a final exam.
2. Assignments and quizzes

**Course Learning Outcomes:**

The expected learning outcome is that the students will be able to:

1. Explain the concept of net present value [NPV]
2. Discuss the meaning and components of the capital structure of a firm
3. Explain the concept of rate of return
4. Discuss the role of engineers in business
5. Explain and compare large scale and small scale engineering projects
6. Discuss the types of strategic engineering economic decisions
7. Explain the meaning of capital budgeting
8. Explain project risk and resolution of project risk
9. Explain the techniques of forecasting project cash flows
10. Develop and prepare project cash flow statements

**Prepared by:**

IMT curriculum committee      Feb . 2009

