

ENMA 3000: Introduction to Engineering Management- Fall 2007

This course is required for the engineering management concentration

Course Coordinator: Eugene Dixon

Catalog Description:

Introduces principles of management and organization as applicable to the engineering profession. Special emphasis on project management, systems engineering and analysis, team building, quality leadership, planning, and quantitative decision making. Includes topic exercises, case studies, and extensive writing assignments.

Course Structure:

Three 50- minute lectures per week (three credits)

Prerequisites:

Consent of Instructor – junior standing.

Required Materials:

Engineering Management: Challenges in the New Millennium, 1/e by Chang, 2005, Prentice Hall, ISBN-10: 013144678, ISBN-13: 9780131446786

Articles from the Harvard Business review

- HBR reprint 0503D, What Great Managers Do, Marcus Buckingham, March 2005
- HBR reprint 7386BC, Motivation: the Not-So-Secret Ingredient of High Performance
- HBR reprint R0407L, Marketing Myopia, Theodore Levitt, August 2004
- HBR reprint R0707B, The Next 20 Years, Neil Howe and William Strauss, August 2007

Current fundamentals of engineering formula text

Course Objectives:

Upon completion of this course, students will be able to:

1. Analyze engineering management problems by defining the root cause of a problem and a feasible approach to solving the problem.
2. Understand the principles of engineering management including organizing, planning, controlling and leadership.
3. Work in a team to present a technical problem solution to both technical and non technical audiences.
4. Write clearly and concisely on engineering management topics and problems.
5. Apply principles of strategic planning to engineering management problems.
6. Apply tools of technology analysis in engineering including cost and financial accounting, engineering economics, and decision science tools.
7. Analyze ethical issues in engineering management.
8. Identify technology issues related to globalization and technology product life cycles.

Lecture Topics

- Motivation- Introduction to Management for Engineers (1 class)
- Planning for engineering management (2 classes)
- Leading in engineering management (3 classes)
- Controlling in engineering management (2 classes)
- Organizing in engineering management (2 classes)
- Cost accounting for engineering managers (4 classes)
- Activity based cost analysis (2 classes)
- Inventory accounting (2 classes)
- Economic analysis of projects (4 classes)
- Financial statements and ration analysis (5 classes)
- Risk analysis tools (5 classes)
- Product development in a global context (4 classes)
- Enterprise information systems and web based data systems (3 classes)
- Global ethics issues (1 class)

- FE topic review (2 classes)

Relevant Program Outcomes

- c) Graduates of the Engineering Program will demonstrate an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
- h) Graduates of the Engineering Program will demonstrate the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context.
- j) Graduates of the Engineering Program will demonstrate a knowledge of contemporary issues.
- l) Graduates of the Engineering Program will demonstrate an ability to apply engineering concepts to an area of concentrated study, chosen from systems engineering, engineering management, bioprocess engineering and biomedical engineering.

Professional Component Content:

Math/Science: 0; Engineering: 3 credits; General Education: 0

Assessment Requirements:

Student Work Samples

- Case study report (outcome h) related to the next twenty years of technological change and management issues.
- Exam questions (outcome j) with grading rubric to identify awareness of contemporary issues related to motivation of technical employees.

Exam questions

- Targeted questions on financial analysis and cost analysis
- Targeted questions on risk analysis

Student Course Survey

Last Review:

February 19, 2008 by Gene Dixon