

Department Of Computer Science and Engineering
Kathmandu University
Dhulikhel, Kavre



Subject: Engineering Management

Course: MGTS 403

Level: B.E./B.Sc 3rd Year 1st Semester

Credit Hours: 3

Contents:

Unit-1 Introduction to Engineering Management

1. Engineering and Management : Engineering , Management , Engineering , Engineering Management: A synthesis (2 hrs)
2. Historical Development of Engineering Management: Origins, The Industrial Revolution, Management Philosophies, Scientific Management, Administrative Management, Behavioral Management, Other Contributions (4hrs)

Unit- 2 Functions of Technology Management:

1. Planning and Forecasting: Nature of planning, The foundation for planning, some planning concepts, Forecasting , Strategies for Managing Technology, Numerical problems (4 hrs)
2. Decision Making: Nature of Decision making, Management Science, Tools for decision making, Computer-based Information System, Implementation, Numerical Problems (3hrs)
3. Organizing: Nature of Organizing , Traditional Organization theory, Technology and Modern Organization structures, Teams (2hrs)
4. Human Aspects of Organizing : Staffing Technical Organization , Authority and Power, Delegation, Committees and Meetings (2hrs)
5. Motivating and Leading Technical People: Motivation , Motivation theories , Leadership , Leadership theories, Motivating and Leading Technical Professionals (4 hrs)
6. Controlling : The process of control, Financial controls, Non-financial Controls (2 hrs)

Unit-3 Managing Technology through the Product Life Cycle

1. Managing the Research Function: Product and Technology Life Cycles, Nature of Research and Development, Research Strategy and Organization , Selecting R&D projects, Protection of ideas , Creativity , Making R&D Organization Successful (4hrs)
2. Managing engineering Design: Nature of engineering Design, Systems Engineering/New Product Development, Concurrent Engineering and CAL, Control Systems in Design, Product Liability and safety, Designing for Reliability, other “Ilities” in design (4 hrs)

Unit 4: Managing Projects

1. Project Planning and Acquisition: Characteristics of a project , The project proposal process, Project Planning tools, CPM and PERT, Types of Contracts (2 hrs)
2. Project Organization , Leadership and Control: Project Organization , The project manager, Motivating project performance, Controlling cost and schedule (2hrs)

Unit 5: Managing your Engineering Career

1. Achieving Effectiveness as an Engineer : Charting your Engineering Career, Communicating your ideas, staying Technically Competent (2hrs)
2. Professional ethics and Conduct (2 hrs)

Unit 6: Special Topics in Engineering Management

1. Ergonomics: Objectives and Importance of Ergonomics, Loads and stresses at Workplace, Consideration in Designing Layout of working Space (2hrs)
2. Introduction Total Quality Management: Total Quality Management, Quality Gurus, Costs of Quality , Benchmarking (2hrs)
3. Introduction to Lean Management: Lean Management, Wastes in Processes, Lean Principles (2hrs)

Text Books:

- Managing Engineering and Technology- Daniel L. Babcock, Lucy C. Morse-Prentice Hall India Pvt. Ltd.

Reference Books:

- Engineering Management- Gupta-S. Chand publications
- Industrial engineering and Organization Management- Dr. S.K. Sharma, savita Sharma
- A new American TQM- Four Practical in Management – Shoji Shiba
- Management , J.A.F Stoner, R.E. Freeman & D. R. Gilbert, 1995, prentice Hall
- Management – A global perspective, International edition , 1994, McGraw-Hill