DEPARTMENT OF CIVIL ENGINEERING
BUET, DHAKA

Course No : CE 401 (4.0 Credits)

Course Title

Project Planning and Construction Management

Course Teachers
Professor Dr. Md. Mazharul Hoque
Professor Dr. Md. Mizanur Rahman
Dr. Md. Raquibul Hossain

CE401 COURSE OUTLINES

Principles and Concepts of Management: Introduction (Prof. M. M. Hoque)

1. Introduction: Principles and Concepts of Management, Management in Civil Engineering, Construction Management, Project Planning and Evaluation
2. Definitions: Organization, Management, Managing, Administration vs Management, Decision-Making
3. The Management Process; Management as a Meta Process; Framework for Planning
4. Different Approaches to Management and Development of Management Theories
5. Elements, Principles and Benefits of Organization; Creation of Jobs and Departmentation
6. Delegation and Authority Relationships; Organization Structures

CE401 COURSE OUTLINES

Psychology in Administration-Human Factors in Management: Introduction (Prof. M. M. Hoque)

7. Framework for Motivation: Concepts; Approaches and Theories; Concepts and Importance of Morale
8. Understanding Human Needs: Classification of Needs and Need Satisfaction
9. The Process of Leading, Directing and Guiding; Leadership Functions and Attitudes
10. Influencing, Disciplining, Rewarding and Compensating.
11. Controlling Conflicts: Aspects of Conflict
12. Manning Organization: Job-Man Match Methodology, Manpower Planning, Procurement and Development
13. Introduction to Labour Relations and Collection Bargaining; Unionism

CE401 COURSE OUTLINES

Project Preparation, Evaluation & Equipment Replacement Studies (Prof. M. M. Hoque)

14. Project Planning and Evaluation: Project Preparation; Aspects of Project Preparation
15. Feasibility Studies and Reports
16. Cash Flows-General Concepts, Time Value of Money, Techniques of Discounting
17. Cash Flows-Payback Period, Net Present Value (NPV), Internal Rate of Return (IRR), Benefit Cost (B/C) ratio
18. Case Studies of Project Evaluation
19. Equipment Replacement Studies
20. Course Review: Concluding Remarks

CE401 Course Outlines

Construction Management and Project Management Concepts and Practices (Prof. Md. Mizanur Rahman)

21. Construction Management: Principles, Objectives and Functions of Construction Management
22. Project Management Concepts; Project Organization, Methods and Practices
23. Construction Technology
24. Construction Supervision: Site Management; Problems in Project Implementation
25. Construction Economy: Construction Costs ; Methods of Reducing Construction Costs
26. Management of Materials and Equipment

CE401 Course Outlines

Construction Management Techniques and Tools
(Prof. Md. Mizanur Rahman)

27. Construction Contracts and Specifications; Contractual Documents
28. Mechanics of Bidding and Prequalification.
29. Construction Inspection and Quality Control; Construction Safety
30. Linear Programming (LP); Definition and Formulation and Applications
31. Solution of LP: The Simplex Method (graphical and algebraic)
32. Construction Planning and Scheduling
33. PERT, CPM, Case Studies, Resource Scheduling; PERT as a Cost Accounting System

CE401 Course Outlines

Human Resource, Inventory Control, Legal & Environmental Aspects of Project Management
(Dr. Md. Raquibul Hossain)

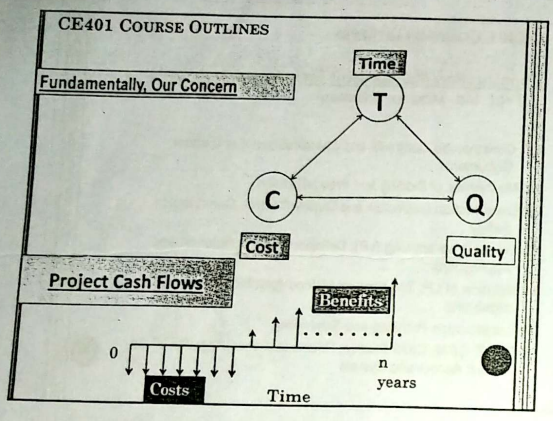
33. Human Resource Management; Conflict Management
34. Demand Forecasting
35. Inventory Control
36. Procurement and Stores Management
37. Legal Issues in Construction
38. Environmental Regulations

CE401 Course Outlines

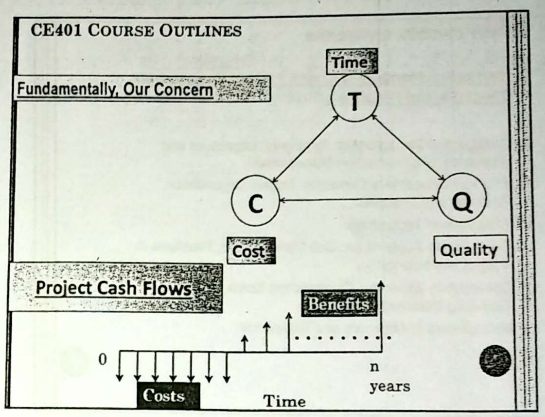
References:

1. The Process of Management --Willian H. Newman
2. Introduction to Operations Research- Hillier & Liberman
3. Project Management Techniques - A.O. Awani
4. Construction Planning, Equipment and Methods - Peurifoy
5. Materials Management & Inventory Control - A.K. Datta
6. Project Management - S. Chowdhury
7. Construction Planning & Management - Gahloj & Dhir 1992
8. Practical Project Management – Ghattas and McKee
9. Other Publications of Most Relevance
   - ASCE Management Journals
   - Books on Economic Analysis, Cost-Benefit analysis etc.

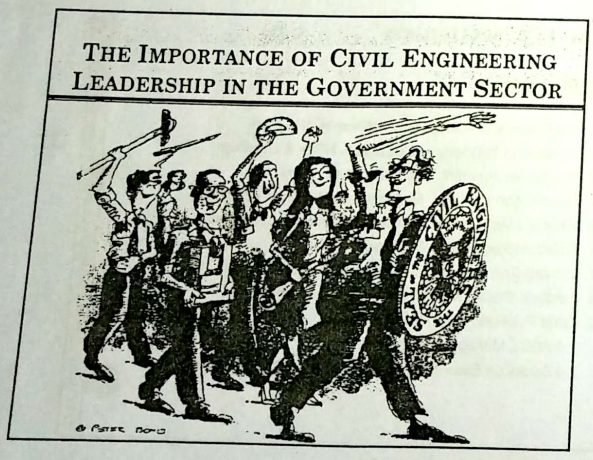
CE401 Course Outlines



CE401 Course Outlines



The Importance of Civil Engineering Leadership in the Government Sector



The Importance of Civil Engineering Leadership in the Government Sector

- If civil engineers are to regain their leadership roles as directors of public works, educational changes are necessary.
- In the future, engineers must develop management skills and managers must be skilled in technical areas to serve society adequately

Engineering Ethics and Public Trust

✓ The public's main interests in public works concern the prudent expenditure of their funds for the provision of high-quality infrastructure facilities.

✓ Civil engineers are product-oriented, and tend to minimize administrative and organizational tinkering that wastes funds on unproductive activities.

✓ Thus, their interests closely match those of the public, which deserves competent, efficient leadership by dedicated career-oriented professionals trained to handle critical public works responsibilities.

✓ Because civil engineers have specialized training and are frequently in a position to know the most about government projects, they have the potential to provide the strongest leadership for those projects.

✓ Civil engineers are trained to make rational decisions, so their appointment to leadership posts in government results in more realistic practical solutions to problems and gives them some influence on how funds are distributed and disbursed.

Management in Civil Engineering

An update of the Results of the 1995 "Civil Engineering Education Conference" (Journal of Management in Engineering, Dec 1999)

Consensus

"Civil Engineering Students need More Management Education"

Identified Four Attributes to Foster

Technical Competence
- "an engineer is hired for his or her Technical skills, fired for Poor skills and promoted for Leadership & Management skills"

Communication skills
- Written as well as oral expressions; Negotiations, Decision making, Contract and Legal issues.

Management in Civil Engineering

Management Concepts
- **Business Management:** Leadership, Resource allocation, Financial etc
- **Project Management:** Planning, Design, Construction Maintainec phases, Tools and Tecniqes, Human Needs and Behaviour etc.

Team Work
- People and social skills, Social behaviour
- Training, quality issues, conflict resolution, team building

Management in Civil Engineering

EMERGING ROLE OF MANAGEMENT IN CIVIL ENGINEERING

Large projects undertaken by large civil engineering firms and large public enterprises require project managers who have considerable managerial skills, as well as technical expertise.

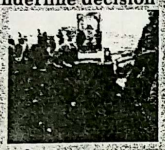
The project manager in a large firm is often called upon to make client presentations, write proposals, negotiate contracts and changes, hire staff, and select sub consultants.

This requires civil engineers who serve as project Managers to have excellent communication skills, training in financial management, human resources, and contract law, as well as other managerial skills.

Management in Civil Engineering

Making decisions is in many respects is the essence of management:

The typical management questions that underline decision include:



- What is the problem?
- What are the key facts?
- Who should be involved in the decision?
- What are the alternatives?
- What do they cost? What are their impacts?
- Which course of action best serves these objectives?
- What does the decision imply for the future?
- What are the procedures for making it work?
- How are the results to be tested?
- What arrangements are there for modification or change?
- Can the decision maker live with the result?