SPECIAL NOTE: The design of this course is such that topics in “Managing Operations” and “Managing Projects” serve as potential topics for team research projects and presentations. Consequently, instructor notes are limited to an extremely brief overview.

MANAGING

ENGINEERING

OPERATIONS

AND

PROJECTS
MANAGING

ENGINEERING

OPERATIONS
IMPORTANCE OF OPERATING GOALS AND OBJECTIVES

World-class organizations have established as an operating goal that they will be world class ... (Compton)

Those whose businesses depend on winning in the global marketplaces are slowly coming to the conclusion that our priorities are exactly wrong ... (Welch)
ENGINEER INVOLVEMENT IN OPERATIONS

TWO POTENTIAL GENERIC CATEGORIES

Design and Analysis of Operational Systems

Control of Operational Systems
DESIGN AND ANALYSIS
OF
OPERATIONAL SYSTEMS

TASKS/TOOLS

• Plant Location
• Plant Layout
• Production/Construction Methods
• Job Design
• Learning Curves
• Methods Design (e.g., Ergonomics)
• Work Measurement
• Production/Construction Processes (including stationary products)
• Flexible Manufacturing Systems
• Computer Integrated Manufacturing
• Network Analysis (e.g., PERT/CPM)
• Allocation Analysis (e.g., Linear Programming)
• Line Balancing
• Queuing Models
• Simulation Models
• Materials Handling Systems
CONTROL
OF
OPERATIONAL SYSTEMS

TASKS/TOOLS

- Production/Construction Planning
- Materials Requirements Planning (MRP)
- Manufacturing Resource Planning (MRP II)
- Just-In-Time
- Inventory Control (e.g., EOQ)
- Facilities Maintenance
- Facilities Security
- Marketing
- Scheduling
- Quality Control (e.g., TQM, SPC, Process Control, Inspection)
- Suppliers & Contracting (or Subcontracting)
- Contract Management
MANAGING

ENGINEERING

PROJECTS
PROJECT MANAGEMENT
(1 of 3)

PROJECT

One-of-a-kind activity
to produce something new

PROJECT PROPOSAL

Management Proposal
Technical Proposal
Cost Proposal
PROJECT MANAGEMENT
(2 of 3)

PROJECT ORGANIZATION STRUCTURE

Functional
Functional Matrix
Balanced Matrix
Project Matrix
Project Team

PROJECT MANAGER

Technical Skills
Administrative Skills
Interpersonal Skills
Scope of Authority
PROJECT MANAGEMENT
(3 of 3)

PROJECT CONTRACTS

Fixed-Price Type  Time & Materials Letter
Cost Type

PROJECT ESSENTIALS

Time (Project Schedule)
Cost (Dollars and Other Resources)
Performance (Achievement of Objectives)

PROJECT MANAGEMENT TOOLS

Statement of Work and Work Breakdown Structure
Milestone Schedule and Gantt Chart
Network Scheduling and Resource Allocation Systems