

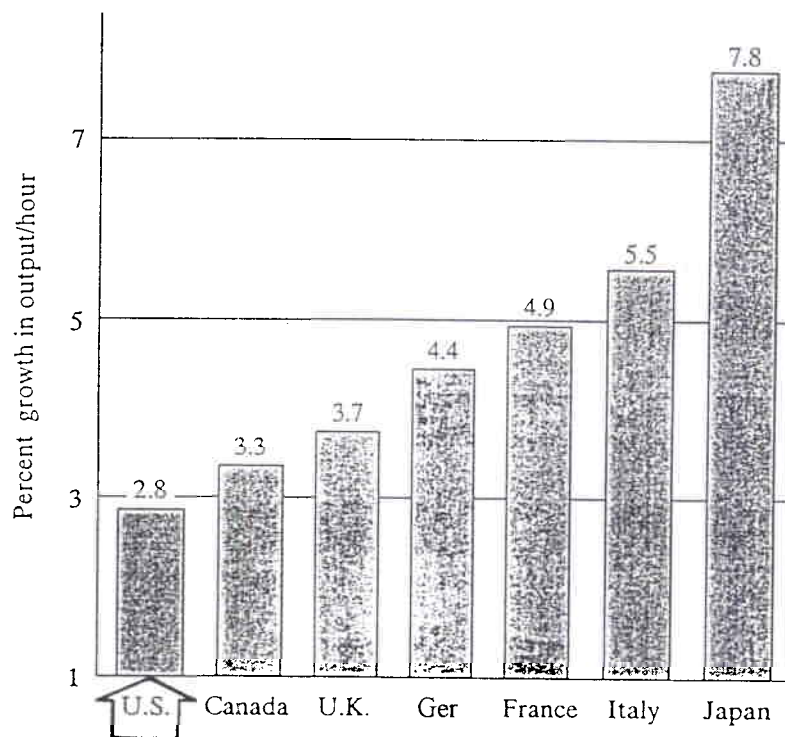
SPECIAL NOTE: The design of this course is such that topics in “Managing Operations” and “Managing Projects” serve as potential topics for team research projects and presentations. Consequently, instructor notes are limited to an extremely brief overview.

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
Cost Type**

**Time & Materials
Letter**

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