

**CALIFORNIA STATE POLYTECHNIC UNIVERSITY, POMONA
EXPANDED COURSE OUTLINE**

Technology and Operations Management

2002-2003

Expanded Course Outline

Course Title: Operations Management

Course Number: TOM 301

Prepared By: W. Cosgrove

Date Prepared: 06/10/03

SECTION A

I. Catalog Description:

Fundamental concepts of operations including: productivity, quality control and total quality management, new product and process development, forecasting, inventory management, supply chain management, project management, operations strategy, and computer applications. 4 lectures/problem solving. Prerequisite: STA 120 or equivalent, and microcomputer proficiency.

II. Required Background or Experience:

- A. Prerequisites:** STA 120 or equivalent; microcomputer proficiency.
- B. Prerequisites Justification:** Text readings and problems require understanding of material in STA 120. Microcomputer proficiency required to complete problem assignments requiring software packages.
- C. General Education Contribution:** The student is expected to use basic analytical and critical thinking skills when applying quantitative techniques to solve operations management problems. This capability is enhanced through mathematics and statistics courses in Area B1 and critical thinking in Area A3 of the General Education requirements.

III. Expected Outcomes:

Upon completion of the course, the student should be able to:

1. Become knowledgeable of fundamental concepts and appreciate the application of such concepts to processes in organizations associated with the creation and distribution of goods and services.

2. Apply analytical skills to interpret and solve a variety of technical problems encountered in the creation and distribution of goods and services.
3. Become familiar with the terminology employed in operations management, and with the availability of software to address various problem areas in operations management.
4. Be able to relate analytical solutions to practical settings in manufacturing and service organizations.

IV. Text and References: The TOM department faculty committee that coordinates this course determines the business statistics text and computer software package.

COURSE MATERIALS:

Required: Operations Management (7th edition), by William J. Stevenson (McGraw-Hill, 2002)

Additional: Software disk which is included with the text

Materials: Handouts on current material not completely covered in the text, as required

V. Special or Unique Student Materials:

Check any materials, supplies, equipment, etc., which students must provide.

<input type="checkbox"/> Zip Disk	<input checked="" type="checkbox"/> Calculator	<input type="checkbox"/> Camera	<input type="checkbox"/> Laptop
<input checked="" type="checkbox"/> Floppy Disk	<input type="checkbox"/> Graph Paper	<input type="checkbox"/> Video Camera	<input type="checkbox"/> Computer
<input type="checkbox"/> CD-Rom	<input type="checkbox"/> Writing Pad	<input type="checkbox"/> Videotape	<input type="checkbox"/> Other

VI. Special or Unique University Facilities:

List the university facilities/equipment that will be required in order to offer this class, such as gymnastic equipment, special classroom, A-V equipment, laboratories, etc.

- | | | |
|---|---|---|
| <input checked="" type="checkbox"/> Computer Lab | <input type="checkbox"/> Computer Connection | <input type="checkbox"/> "Smart" Classroom (one workstation) |
| <input type="checkbox"/> File Server | <input checked="" type="checkbox"/> White Board/Markers | <input checked="" type="checkbox"/> Overhead Screen |
| <input checked="" type="checkbox"/> Computer Projector | <input type="checkbox"/> VCR | <input type="checkbox"/> Microphone |
| <input type="checkbox"/> Laser Pointer | <input type="checkbox"/> Printer | <input type="checkbox"/> Moveable Classroom Furniture |
| <input checked="" type="checkbox"/> Internet Connection | <input type="checkbox"/> Laptop Ports | <input checked="" type="checkbox"/> Other: Operations Management Software |

VII. Expanded Description of the Course and Instructional Methods:

A. Expanded Description of the Course:

This course serves as an introduction to production and operations management. Topics include the use of quantitative methods such as networks, regression lines, inventory models, and applications of probability and statistics to operations management. The course includes both a qualitative and quantitative treatment of topics such as productivity, quality control and total quality management, new product and process development, forecasting, inventory management, supply chain management, project management, operations strategy, and computer applications.

B. Instructional Methods:

- | | | |
|--|--|---|
| <input checked="" type="checkbox"/> Lecture | <input checked="" type="checkbox"/> Cases (mini-cases) | <input type="checkbox"/> Individualized Instruction |
| <input checked="" type="checkbox"/> Lecture/Discussion | <input type="checkbox"/> Open Lab | <input type="checkbox"/> Cooperative Learning |
| <input type="checkbox"/> Seminar | <input type="checkbox"/> Videotapes | <input type="checkbox"/> Distance Learning |
| <input type="checkbox"/> Simulation | <input type="checkbox"/> Other | |

The delivery system will be a combination of lecture, classroom discussion, problem solving, and computer activities.

VIII. Methods of Evaluating Outcomes:

Students will be given both qualitative and quantitative questions and problems on tests and exams. In addition, students must be able to clearly interpret their solutions, which will be demonstrated through writing. Optional substitutions for some exams would be computer projects, case studies, homework and quizzes.

Recommended Evaluation Tools:

Individual Paper: ___%	Tests & Exams <u>85</u> %	Individual Project ___%
Group Paper: ___%	Quizzes <u>5</u> %	Team Project ___%
Individual Presentation ___%	Peer Evaluation ___%	Outside/Expert Evaluations ___%
Group Presentation ___%	Participation <u>5</u> %	Writing Assignments: <u>5</u> %

SECTION B

Week 1

1 Introduction

Justification for Studying Operations Management
Functions within Business Organizations
The Scope of Operations Management
Differentiating Features of Operations Management
The Operations Manager and the Management Process
Operations Managers and Decision Making
Historical Evolution of Operations Management
Trends in Business

2 Competitiveness, Strategy, and Productivity

Competitiveness
Productivity

Week 2

3 Forecasting

Moving Average
Exponential Smoothing
Linear Trend Equation
Compute Seasonal Indexes
Trend and Seasonal
Simple Linear Regression
Forecast Accuracy and Control

Week 3

4 Product and Service Design

Sources of ideas for new/redesigned prods. and serv.
Legal, Ethical, and Environmental Issues
Other Issues in Product and Service Design
Designing for Manufacturing
Designing for Services
Quality function deployment
Operations Strategy

6 Process Design and Facility Layout

Process Selection
Product, Process, and Service Layouts

Week 4

9 Introduction to Quality

The Evolution of Quality Management
Quality: The Basics
Quality Gurus
Quality Awards

10 Quality Control

Normal Distribution
Mean Control Chart (σ known)

Mean Control Chart (σ unknown)
Range Control Chart
p-Chart
c-Chart
Runs Tests
Process Capability

11 TQM and Quality Tools

Obstacles to Implementing TQM
Criticisms to TQM

Week 5

13 Inventory Management

ABC Classification System
Basic EOQ Model
Economic EPQ Model
Quantity Discounts

Examinations (as required during the course)

Week 6

12 Supply Chain Management (SCM)

The need for SCM
Benefits of SCM
Managing the supply chain
Logistics
E-Commerce
Creating an effective supply chain
Operations Strategy

Week 7

18 Project Management

Pert/CPM, Probabilistic Time Estimates
Pert/CPM, Probabilistic Completion Time
Time-Cost Tradeoffs: Crashing

Week 8 (as time permits)

12S Purchasing and Supplier Management

Purchasing
Supplier Management

16 Just-In-Time Systems

Level Capacity Loading

Week 9 (as time permits)

17 Scheduling

Assignment Model
Job Sequencing
Johnson's Rule

19 Aggregate Planning

Aggregate Planning
Master Scheduling

Week 10 (as time permits)

**15 Material Requirements Planning (MRP)
and Enterprise Resource Planning (ERP)**

Component Requirements
MRP
Capacity Requirements Planning
Manufacturing Resources Planning (MRP II)
ERP

WEEK 11 (Final Examinations Week)

SECTION C

Operations Management is affected continuously and comprehensively by the AACSB criteria listed in Section C. Concern with these matters permeates all "modules" of TOM 301 and many of the modules involve nearly all of the criteria. Accordingly this section has been completed as shown.

SECTION C: UNDERGRADUATE (AACSB CRITERIA)

General Education Goals*

Goal	% of course
Communication abilities	<u>10</u>
Ethical understanding and reasoning abilities	<u>5</u>
Analytic skills	<u>70</u>
Multicultural understanding	
Reflective thinking skills	<u>15</u>
Total:	<u>100</u>

*sum should be $\leq 100\%$

Management-Specific Learning Goals*

Goal	% of course
Ethical responsibilities in organizations and society	<u>5</u>
Financial theories, analysis, reporting, and markets	<u>5</u>
Creation of value through the integrated production and distribution of goods and services	<u>85</u>
Group and individual dynamics in organizations	
Domestic and global economic environments of organizations	<u>5</u>
Other management-specific knowledge and abilities	
Total:	<u>100</u>

*sum should be $\leq 100\%$

*Explanation of percentages: these percentages are being collected as part of an AACSB requirement. Curriculum committee is evaluating what “Other management specific knowledge and abilities” to include in the ECO. For example, marketing specific knowledge or use of technology may be additional goals we wish to measure.