Competitive Advantage from Operations

DCSN 200 (operations management)

Course Syllabus - Spring 2011

(Subject to Some Revisions)

COURSE DESCRIPTION:

This course serves as an introduction to Operations Management. The coverage of the discipline is very selective: We concentrate on a small number of powerful themes that have emerged recently as the central building blocks of world-class operations. We also present a sample of operations management tools and techniques that have been proved extremely useful over the years. The topics are equally relevant in the manufacturing and service sectors.

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MEETINGS: T TR | Room: 206 | Time: 14:0 - 15:15 | 17:00 -18:15

TEXT: Required material:

- *Operations Management* (Tenth Edition), by Heizer J. and Render, B., Prentice Hall 2010

Other Operations Management References (Optional):

- *Designing and Managing the Supply Chain: Concepts, Strategies, and Cases*, by David Simchi-Levi, Philip Kaminsky and Edith Simchi-Levi, Irwin / McGraw-Hill

Grading scheme:

Midterm:	30%
Final:	30%
Various Assignments + class participation :	30%
Case Study and the Beer Game:	10%

Co-requisite: CMPS209

Course Description:

This course provides a foundation for understanding the operations of a firm. One of the main objectives of this course is to recognize the immense competitive advantages companies can draw from an efficient management of operations. The focus will be mainly on the systematic planning, design, and operations of some of the main processes required for the production of goods and the delivery of services. Operations management touches upon many vital business functions of an organization including product and service design, customer order management, processes design and improvement, capacity and material planning, quality control, inventory and supply chain management. These and additional related topics will be covered in this course.

At the end of the course, students will have a good understanding of the key role operations management play in a business. Students should expect to become familiar with various operations processes and operating systems. Furthermore, they will acquire some of the skills necessary to critically analyze a firm's performance from an operation point of view.

Relationship to Other Coursework:

Operations Management is a prerequisite for Managerial Decision Making and is an introduction to other courses, such as Logistics and Supply Chain Management. The topics covered in the course provide an introduction to the critical role operations management plays in a business.

Program Learning Goals Emphasized:

The key BBA program goals addressed through this course are:

B-LG1: Business professional knowledge and competence – Students will be able to apply operating strategies that will allow a firm to compete successfully within its environment. In formulating these strategies students will use concepts, principles and theories from core business professional knowledge and competence both from generic and specific business areas in a familiar situation.

B-LG2: Decision Making: Through this course, students will recognize, describe and apply analytical-quantitative approaches to business and managerial decision making situations. Students will become familiar with process design, forecasting, capacity planning, inventory management, quality control, in addition to location and layout decisions, and supply chain management

Specific Learning Objectives (SLO) for the course

The Specific Learning Objectives(SLOs) for this course that map to the BBA Program Learning Goals mentioned above are as follows:

B-LG1: Business professional knowledge and competence:

1. Define Operations Management functions and strategy and how OM can lead to a competitive advantage
2. Describe and define products (goods and services) and apply some of the techniques used in the design process.
3. Describe and define process strategy and apply the tools needed for process analysis and design.
4. Define quality and Total Quality Management (TQM) and its required tools. Understand process capability.
5. Understand and measure operation efficiency and effectiveness. Apply Single and Multi-factor productivity, process capability, utilization and efficiency and various objectives for short-term scheduling.

B-LG2: Decision Making:

6. Understand and apply single stage decision trees and calculate Expected Monetary Value(EMV)
7. Understand qualitative and quantitative methods for demand forecasting. Apply quantitative methods such as exponential smoothing, trend projection, seasonal indexes and regression and correlation analysis.
8. Understand and apply Statistical process Control and determine process capability. That includes using control charts (x-chart, R-chart, p-charts and c-charts) cp and cpk.
9. Understand location and layout strategies.
10. Understand inventory and supply chain management. Apply Economic Order Quantity (EOQ), Production Order Quantity (POQ), quantity discount and simple safety stock calculation models
11. Understand planning and scheduling in operations applying various techniques such as crossover points and break-even analysis, short-term scheduling (priority and Johnson's rules)

Use of Technology:

Students are expected to be familiar with Excel.

Instructional Methodology:

Lecture, cases, class discussion, individual assignments

Performance Evaluation and Grading:

Midterm Exam	30%
Final Exam	30%
Case Study, Beer Distribution game	10%
Assignments, Quizzes and Active Participation	30%
Total	100%

Summary of Topical Coverage:

		SLO	Hours	% of Time
Midterm	**Introduction to Operations** (Ch 1& 2)	1	3.75 hrs.	10%
	Forecasting (Ch 4)	7	3.75 hrs.	10%
	Product and Service Design (Ch 5)	2	1.25 hrs.	3%
	Process strategy (Ch 7)	1,3	2.50 hrs.	7%
	Capacity Planning (Supplement Ch 7. Refer to Appendix A for covering material)	5,6,11	2.50 hrs.	7%
	Short Term Scheduling (Ch 15. Refer to Appendix B for covering material)	5,11	3.75 hrs	10%
	Location Strategies (Ch 8)	9	2.50 hrs.	7%
Final	**Layout Strategies** (Ch 9)	9	2.50 hrs.	7%
	Quality Control (Ch 6)	4	2.50 hrs.	7 %
	Statistical Process Control (Supplement Ch 6 Refer to Appendix C for covering material)	5,8	2.50 hrs.	7 %
	Inventory Management (Ch 12)	10	5.00 hrs.	14%
	Aggregate Planning (Ch 13 Refer to Appendix D for covering material)	5	1.25 hrs.	3%
	Supply chain Management (Only the Beer Dist. game)	10	2.50 hrs.	7%
	Total Hours *(based on 15 weeks per semester @ 2.5 hours per week for 3 credit hours; 50 minutes per week for 1 credit hour)*		36.25 hrs.	

Appendix: Covered Materials for Ch 4 ; Ch S7 ; Ch 15 ; Ch S6 ; Ch13 | 10th edition. (In parenthesis are the corresponding pages in the 9th edition)

A. Chapter 4: Forecasting

Time Series Forecasting **Pages 136 – 158 (106-128)**

B. Chapter S7: Capacity Planning

I. Capacity **Pages 314 – 319 (288 - 294)**

a. Design and Effective Capacity
b. Capacity and Strategy
c. Capacity Considerations
d. Managing Demand
e. Demand and Capacity Management in the Service Sector

II. Bottleneck Analysis and the Theory of Constraints **Pages 320 – 324**

a. Process Times for Stations, Systems and Cycles
b. Theory of Constraints
c. Bottleneck Management

III. Break-Even Analysis **Page 324 – 328 (296-300)**

a. Single-Product Case
b. Multiproduct Case

IV. Reducing Risk with Incremental Changes **Pages 328 – 329**

V. Applying EMV to Capacity Decisions **Pages 329-330 (300-301)**

C. Chapter 15: Short Term Scheduling

I. The Importance of Short-Term Scheduling **Page 616 (602)**

II. Scheduling Issues **Pages 616 – 619 (602-605)**

a. Forward and Backward Scheduling

b. Scheduling Criteria

III. Loading Jobs **Pages 622 – 623 (607-609)**

a. Gantt Charts

IV. Sequencing Jobs **Pages 626 – 632 (612-618)**

a. Priority Rules for Dispatching Jobs

b. Critical Ratio

c. Sequencing N Jobs on Two Machines (Johnson's Rule)

d. Limitations of Rule-Based Dispatching System

D. Chapter S6: Statistical Process Control

I. Statistical Process Control **Pages 250 – 263 (222-234)**

II. Process Capability **Pages 263 – 265 (235-236)**

E. Chapter 13: Aggregate Planning

I. Aggregate Planning in Services **Pages 556 – 559 (541-543)**

II. Yield Management **Pages 559 – 562 (543-546)**