

**THE OPERATIONS FUNCTION
MBA 607
SUMMER I 2004**

Course materials also available at <http://blackboard.uncg.edu>

FACULTY MEMBER

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PLACE and TIME

Class sessions will be held in Bryan 202 from 5/17 to 6/21, 2004; 6:00PM to 9:20PM

OFFICE HOURS/APPOINTMENT TIME

5:00-6:00 p.m. on Mondays. You are encouraged to stop by during office hours to talk about any problems or suggestions you may have concerning the course, careers, benefits of advanced courses in operations management, or things in general. If you would like to talk to me and find the appointment hours to be inconvenient, feel free to schedule any other appointment time.

CATALOG DESCRIPTION OF THE COURSE

The course examines design, operation, and control of organizations. Procedures and quantitative techniques to analyze and critique present operations and develop improved operations are presented.

DESCRIPTION OF THE COURSE

The course is an introduction to the managerial processes underlying operations management in both service-providing and goods-producing organizations. Specific topics to be covered include process design, capacity planning, facilities location and design, application of forecasting in operations, aggregate planning, inventory management, and quality management. To the extent relevant and feasible, the material presented will include ethical and global issues, the influence of political, social, legal, and regulatory, environmental, technological issues, and the impact of demographic diversity with respect to the operations of the organization. The topics will be integrated using a systems approach to the operations of an organization.

PRE-REQUISITE COURSES

MBA 600 (Business Statistics). For a student to do well in the MBA 607 course, the student should have done more than simply taken the Business Statistics course. It is more important that the student be competent and thorough with the MBA 600 material, such as Probability, Normal Distribution, etc. It is the responsibility of the student to prepare himself/herself adequately in these areas. The concepts and principles covered as part of the MBA 600 course will not be covered in MBA 607. However, the applications of these principles to the operations function will be dealt with in the MBA 607 course. Certain quantitative topics will be introduced in MBA 607, but quantitative techniques for their analysis will be developed in MBA 617. MBA627 will revisit some of MBA607's topics, but the emphasis will be on strategic implications for the firm.

READING MATERIALS AND TECHNOLOGICAL SUPPORT

The required textbook for this class is Foundations of Operations Management by Larry P. Ritzman and Lee J. Krajewski (ISBN # 0130473847). The book is available for purchase at the UNCG Bookstore (located at the Elliott University Center). Students should read the required materials prior to attending each class session. Please make sure there is a CD-ROM attached to the book. Students should also become familiar with the OM Explorer software on the CD, and the text website: www.prenhall.com/ritzman .

GRADING

The course grade is based on one in-class written exam, two mini-cases, inputs to a threaded discussion site, and weekly memos/homework. All of these are individual assignments, and should represent YOUR work, and not someone else's. All graded work will include a signed Academic Honor Policy statement! Each memo is a minimum of one page, double spaced that addresses the topic. Each mini-case is worth 50 points.

Grades are based on the following scale: Test (100), 2 Mini-Cases (50 points each), Threaded Discussions (total of 40 points), and weekly memos (total of 80), for a total of 320 points. One weekly memo from each chapter is due the next week; if there is a second one for a chapter, that one is due the night we discuss that chapter in class.

Since class discussion is essential to your learning in this course, you will lose 10 points for each "half-class" that you miss. Percentages for certain grades are as follows: A \geq 93%; A- \geq 90; B+ \geq 87; B \geq 83; B- \geq 80; C+ \geq 77; C \geq 73; C- \geq 70; F < 70%.

EXAMS

The in-class written exam (of 135 minutes duration) will include about five short answer questions (i.e., brief discussion questions), possibly some multiple choice questions, and about four problems (which will involve computations). The exam content will be drawn from the textbook, vignettes, video films, and class discussions using the objectives listed in the schedule of sessions as a general guideline. The in-class exam is closed book/notes.

RE-EXAMINATION POLICY

As a rule, re-examinations will not be held. Absence from the in-class written examination due to illness, summons to jury duty, or any other compelling reason should be backed by the appropriate documents (e.g., medical certificate, etc.) in order to qualify for a re-examination. If possible, meet/talk with me before missing the examination to discuss the circumstances.

THREADED DISCUSSIONS

Blackboard (<http://blackboard.uncg.edu>) is a course management software that facilitates class discussions and threaded discussions. Two types of discussions are required.

1. Four to eight discussion questions are listed for each scheduled class meeting. Each student is required to post a response to one of the listed questions. You will be assigned your questions on the first class night. Each student is expected to make FIVE such postings to fulfill this part of the assignment. Each posting should be a meaningful discussion of the original question. The posting should be at least two paragraphs in length. You may draw on any references to provide justification for your posting. Each posting is worth 6 points. See Blackboard for list of questions.

2. The second level of discussion is for you to pose either a discussion question yourself, or provide a counter argument to a previous posting or provide some personal experiences with regard to a given posting or topic. You should preface your question with a rationale or why that issue is of interest to you. One sentence postings will not count. You will be expected to make two such postings to fulfill this part of the assignment. Each posting is worth 5 points.

Also, all postings should be completed at least 24 hours before the next class meeting, regardless of whether the class meeting is online or in-class. Avoid the use of attachments whenever possible. Since different students have different client systems it is not always possible to open attachments. Lastly there will be a general discussion forum for you to ask any questions and seek clarifications and others issues that you would like the instructor to address.

Due dates: Questions 1-12: May 24, 2004.

Questions 16-20: June 7, 2004.

Questions 13&14: May 31, 2004.

Questions 15, 21-24: June 14, 2004.

PEDAGOGIC APPROACH

Lecture presentations, video films, and “real world” situation vignettes will be used. The "lecture" sessions will rely on your class participation, so it is very important for each student to be prepared to discuss the assigned readings for each class session. The assigned questions given in the syllabus are only for the purposes of developing your thoughts on the subject. They are not representative of the type of question(s) that can be expected on the exam. The list of questions is not an exhaustive one. The course syllabus provides a general plan for the course; deviations may be necessary.

PRACTICE PROBLEMS (We will talk about this in class!!)

Practice problems have been assigned for some of the concepts that we will be covering in the course. The solutions to these practice problems are available at the internet website. They may also be available on electronic reserve in the Jackson Library (assuming students want this option). This means you can assess by electronically without having to physically go the library. To do that type in <http://library.uncg.edu> and clicking on “Search for Items on Reserve”. You will then type in my name or type in the course name to assess the materials.

COGNITIVE COURSE OBJECTIVES

Upon completing the course, the student should be able to:

- 1) Differentiate between productivity, effectiveness, efficiency, and other performance measures.
- 2) Explain the factors that make service operations more difficult to manage than manufacturing operations.
- 3) Compare and contrast the different types of conversion systems (i.e., project, job shop, mass production, and continuous process).
- 4) Explain the meaning of economies of scale and scope in terms of gaining a competitive advantage.
- 5) Distinguish between long range, intermediate range, and short range capacity planning in Operations Management.
- 6) Identify the factors that influence the location of service and manufacturing facilities.
- 7) Identify the important aspects and issues related to facility design decisions.
- 8) Explain the role of a forecasting system in the operations of an organization.
- 9) Describe the typical objectives and constraints in the aggregate planning problem related to both manufacturing and service organizations.
- 10) Differentiate the management concerns between dependent demand and independent demand items.
- 11) Compare and contrast a Manufacturing Resource Planning (“MRP II” or “Push”) system and a Just-In-Time/Total Quality Management (“JIT/TQM” or “Pull”) system.
- 12) Develop and use a process control chart for managing quality.
- 13) Acquire a thorough understanding of the inter-relationships between the operations function and other functional areas (such as marketing, finance, etc.) in order to effectively participate in a multi-functional task force in an organization for meeting specific corporate, business unit, and functional objectives.

Oral & Written Communications Content:

Oral and written communications for this course are addressed through the homework, class discussions, individual participation and the term project as detailed above.

Technology Applications:

This is addressed through the application of spreadsheets to aid in the decision-making process. Several different spreadsheet models are used at different points throughout the course. Students will be expected, whenever possible, to use appropriate information technology in the completion of assignments.

Ethical Perspectives:

Even though specific coverage of ethical issues is generally not done in this class, students will be made aware of the importance of ethical considerations in making location decisions. Our discussion here always includes the pros and cons of locating a new facility in say Mexico or Ghana.

Global Perspectives:

This course spends a great deal of time on worldwide competition, the Japanese development of JIT, global supply chain management, and global manufacturing.

Demographic Diversity Perspectives:

This course discusses the cultural impacts on different work forces.

Political, Social, Legal, Regulatory & Environmental Perspectives:

The environmental perspective receives the greatest amount of emphasis, as companies focus operations on making better products, and part of being better is being environmentally sound.

SCHEDULE OF SESSIONS

SESSION 1: May 17, 2004

INTRODUCTION TO OPERATIONS MANAGEMENT (10 memo points)

Assignments:

Read Chapter 1 – Competing with Operations

A1) Case Memo: Chad's Creative Concepts (first two memos are found on page 26)

A3) Internet Tour: Write memo on comparison of Baja Spas with Hershey Foods (pg 27)

One of the above memos is due on May 17.

Review Questions:

- 1) What are the main elements in an "Operations Systems" Model (Figure 1.1)?
- 2) What does "value-adding" mean? What are the different ways that companies can add "value" for service and manufacturing organizations?
- 3) What are the primary differences between manufacturing and service operations?
- 4) Discuss different Service and Manufacturing Strategies.
- 5) What is the most simple and general form of the "productivity" formula?
- 6) Differentiate between a partial measure of productivity and total factor productivity.
- 7) What role does technology play in the productivity equation?
- 8) How do core competencies impact Competitive Priorities?

Helpful Assignment) CD Tours: Describe how a process delivers the competitive priority

OPERATIONS PROCESSES (10 memo points)

Assignments:

Read Chapter 2 – Process Management

Video Film (shown in class): Manufacturing Processes

A4) Case Memo: Custom Molds (Case memo and Internet Tour are found on page 55).

A6) Problems: Use information tools and a memo to solve either Problem 2 or 6.

One of the above memos is due on May 17.

Review Questions:

- 1) Detail actual manufacturing/service processes, and discuss a company's value chain.
- 2) Give examples of Engineering-to-Order, Make to Stock, Assemble to Stock, and Make to Order Operations.
- 3) Making use of the facts presented in the video film titled "Manufacturing Processes", compare and contrast the different conversion processes (i.e., job shop, batch process, line flow production, and continuous process).
- 4) What factors are important in the selection of a particular process?
- 5) How do you use the concept of break-even analysis to help select production processes?

Helpful Project) Internet Tour: Discuss on any one of the three companies.

SESSION 2: May 24, 2004**DESIGN ISSUES FOR OPERATIONS: Capacity, Location, Layout**

Assignment (Total of 20 Memo Points):

- 1) Read Handout (provided 1st class night) on Service Design Considerations.
- 2) Read Chapter 6 on Capacity and Chapter 7 on Facility Location and Layout
- 3) Video Film (shown in class): Service Design Matrix - First National Bank of Chicago.
- 4) Mini-Case: TBA. Due in one week.

A7 & A9) Chapter 6: Case on Fitness Plus, Part A; Problems, do either Problem 4 or 9.

Turn in either one by May 24.

A10 & A12) Chapter 7: Case, pick any one; Problems, do both Problem 8 and 20 (use Longest Operation Time and Shortest OT). **Turn in either one by May 24.**

Review Questions for Capacity Planning:

- 1) What is the definition of capacity? Differentiate between output and capacity.
- 2) Discuss economy and diseconomy of scale, and Capacity Cushions.
- 3) Explain the concepts of “capacity leading demand” and “wait-and-see strategy”.
- 4) Distinguish between short range and long range capacity alternatives.
- 5) Understand the concept of learning curves and its role in capacity planning.
- 6) Solve a long-range capacity planning problem using the decision tree model.

Review Questions for Service Processes:

- 1) Discuss the customer contact, operations efficiency, and sales opportunity matrix.
- 2) Based on the facts provided in the video film, detail out the six phases of the customer contact/operations efficiency/sales opportunity matrix (First National Bank of Chicago).

Review Questions on Facility Layout:

- 1) Differentiate between product and process layout.
- 2) What are the important factors are layout planning?
- 3) What are the primary advantages and disadvantages of a cellular layout?
- 4) Understand the load-distance method for process layouts and be prepared to do a simple problem using the method.
- 5) What is cycle time? What is its role in designing an assembly line?
- 6) Understand the relationship between the production rate of a line and its cycle time.
- 7) Be prepared to develop a precedence diagram, balance a line, and compute cycle time.
- 8) What is the significance of “Efficiency Balance” in an assembly line?
- 9) Identify some non-quantitative considerations in balancing an assembly line.

Helpful Assignment) Chapter 6 Internet Tours: pick one process

Review Questions for Location Planning:

- 1) What are some of the macro-level factors in locating facilities?
- 2) What are some of the micro-level factors in site selection?
- 3) What factors would influence the location of a bank and location of a paper mill?
- 4) Be prepared to solve a facility location problem using the Center of Gravity Method and the Weighted (or Factor) Scoring method.

Helpful Assignment) Chapter 7 Internet Tours: Take all three

SESSION 3: May 31, 2004**SUPPLY CHAIN MANAGEMENT**

Assignments:

- 1) Read Chapter 8 on Supply Chain Management
- 2) Read pages 90-92 and ERP section on pages 97-102.
- A15) Problem: Do #4 Either A15 or A16 is due on 5/31

Review Questions:

- 1) What is supply chain management and why is it gaining so much attention in business?
- 2) What are the characteristics of an efficient supply chain?
- 3) What are the characteristics of an effective supply chain?
- 4) Describe how outsourcing works? Why would a firm want to outsource?
- 5) What are the important components of a Global Supply Chain?

Helpful Assignment) Internet Tours: Take any one plant tour

Helpful Assignment) Case: Pick one

INVENTORY MANAGEMENT

Assignments:

- 1) Read Chapter 10 on Inventory Management
- A16) Case: Parts Emporium

Final 1) Test Problems: 5, 6, 8, and 13

Review Questions:

- 1) Identify the different types and purposes of inventory.
- 2) What are safety stock and service levels? How are they related?
- 3) What is ABC analysis? What is its purpose in materials management?
- 4) What is cycle counting and physical inventory? What purpose do they serve?
- 5) What are the two fundamental questions in developing an inventory policy? Under what assumptions would a fixed order quantity system be chosen over a fixed order interval system, i.e., what considerations would encourage the use of a fixed order quantity system over the use of a fixed order interval system?
- 6) Distinguish between perpetual and periodic inventory systems. How do these two systems relate to the concepts of "continuous review" and "periodic review"? Which one is event triggered and which one is time triggered? Which of the two systems requires more careful monitoring?
- 7) Given the required data, be prepared to compute the Economic Order Quantity, the Reorder Point, and Total Cost in a perpetual ordering system.
- 8) Understand the relationship between the annual inventory holding cost fraction for each item and the annual inventory holding cost for each item.
- 9) Given the required data, be prepared to compute the Economic Order Interval (i.e., the time between orders), and the quantity to be ordered in a periodic ordering system.
- 10) Given a quantity discount, compute the optimal quantity to order for a firm.

Helpful Assignment) Internet Tour

SESSION 4: June 7, 2004**QUALITY MANAGEMENT & STATISTICAL QUALITY CONTROL**

Assignments:

1) Read Chapter 5 on Quality

A20) Problem: Do either #4 or #8

One of A20/A21/A22 is due on 6/7**Review Questions for Quality Management:**

1) How would you define quality for a Product? for a Service?

2) Identify briefly the contributions of Deming, Juran, Crosby, ISO 9000, and the Malcolm Baldrige Award to the quality revolution.

3) Discuss the roles of cause/effect diagrams, Pareto Charts, Process Flowcharts in quality management.

4) Describe acceptance sampling. Why is it used? Could it be used in services?

5) "Acceptance sampling is a thing of the past. We need to conduct 100% inspection to ensure Zero Defects." Take a position and defend.

Helpful Assignment) Internet Tours: Pick one

Helpful Assignment) Case: Pick one

Review Questions for SPC:

1) Describe Statistical Process Control. Why is it used? How can it be used in services?

2) Be prepared to develop process control charts for attributes and variable measurements and understand the situations under which further investigation is required.

AGGREGATE PLANNING AND SCHEDULING

Assignments:

1) Read Chapter 11

2) Mini-Case: ABC Tax Firm. Due in one week.

A21) Internet Tours: Do Stratton Furniture

A22) Case: Pick one

Final 2) Test Problems: 3, 5, 10, and 11**Review Questions for Aggregate Planning:**

1) What is the objective function in the aggregate planning problem? Why does the problem exist? What is the typical planning period and planning horizon used in the aggregate planning problem?

2) Is the aggregate planning problem long range, medium range, or short range in nature? Please give an explanation for your conclusion.

3) What are the three typical strategies available for a manager in developing an aggregate production plan, i.e., what are the controllable variables?

4) What are the typical costs affected by the aggregate production plan?

5) What are the specific characteristics of industries where the three extreme strategies could be applied?

6) Be prepared to develop an aggregate plan. Also, be prepared to compute the total cost using the three strategies for a given aggregate planning problem.

SESSION 5: June 14, 2004**RESOURCE PLANNING**

Assignments:

- 1) Read Chapter 12 on Resource Planning.
- 2) Prepare Problem #7 for class on June 17

A23) Case: Flashy Flashers

One of A23/A24/A26 is due on 6/14

A24) Internet Tour: American Acoustech Guitars

Final 3) Test Problems: 6, 9, 10, and 11**Review Questions on Scheduling and Schedule Management:**

- 1) How are forecasting, aggregate planning, master scheduling, materials requirements planning, and operations control tied together?
- 2) What are the implications of an inaccurate forecast in the planning/scheduling process?

Review Questions:

- 1) What are the main components of an ERP system?
- 2) Differentiate between independent and dependent demand inventory.
- 3) What is a Material Requirements Planning system?
- 4) What are the primary inputs and outputs in a MRP analysis? MRP's objectives?
- 5) What is the meaning of "planned order release" and "planned order receipt" in MRP?
- 6) What is the significance of low level coding in developing an MRP.
- 7) Be prepared to develop Material Requirements Plan for different BOMs.

LEAN SYSTEMS

Assignments:

- 1) Read Chapter 13 on Lean and JIT Systems
- A26) Internet Tour: NUMMI

Review Questions:

- 1) Using the facts presented in the video film on the JIT film, answer the following questions:
 - a) How do small lot sizes help customer service?
 - b) Why do the large lot size runs produce stockouts even though WIP levels are high?
 - c) Why are production lead times reduced when lot sizes are decreased?
 - d) What is meant by the statement "Reduced inventory is the not the major benefit of JIT production"?
- 2) What are the disadvantages or limitations in adopting a JIT system?
- 3) Is JIT more applicable to repetitive manufacturing or job shop operations?
- 4) What is a "KANBAN" system? What are its salient features?
- 5) Compare and contrast a "push" system and a "pull" system.
Helpful Assignment) Case: Copper Kettle Catering

SESSION 6: June 21, 2004**REVIEW for 30 minutes; EXAM at 6:30PM (135 min)**