

**THE OPERATIONS FUNCTION****MBA 607-01****Spring 2005 (first Session)**

<http://www.uncg.edu/bae/amoako/graduate.htm> and click on MBA 607

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

**PLACE and TIME**

Class sessions will be held in Room 202, Joseph M. Bryan School of Business and Economics, 6:30 p.m. to 9:20 p.m. on Wednesdays.

**FACULTY MEMBER**

Dr. Kwasi Amoako-Gyampah

E-Mail: [kwasi\\_amoako@uncg.edu](mailto:kwasi_amoako@uncg.edu)

Department of Information Systems and Operations Management

479, Joseph M. Bryan School of Business and Economics

Phone Numbers: (336) 334-5739 (Work) (336) 668-0021 (Home) (336) 334-4083 (Fax)

**APPOINTMENT TIME**

5:00-6:00 p.m. on Wednesdays. 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, it is not just adequate if the student has taken the Business Statistics course. It is more important that the student be 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

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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 608. MBA627 will revisit some of MBA607's topics, but the emphasis will be on strategic implications for the firm.

**READING MATERIALS**

The required textbook for this class is Foundations of Operations Management by L. P. Ritzman & L. J. Krajewski, ISBN # 0-01-300852-19. 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. Students should the textbook website: [www.prenhall.com/ritzman](http://www.prenhall.com/ritzman) for supporting materials that accompany the book.

**GRADING**

The course grade is based on two in-class written exams, and a term paper (done individually or in groups of two students per group). Grades are based on the following scale:

	<u>Points</u>	<u>Date</u>
Test 1	70	Feb. 2, 2005
Test 2	115	March 2, 2005
Cases	55	see specific dates
Threaded Discussions	40	Completed by 6 p.m., Feb. 22.
Class participation	<u>20</u>	See syllabus
TOTAL	300	

A ≥ 273; A- ≥ 266; B+ ≥ 260; B ≥ 249; B- ≥ 237; C+ ≥ 231; C ≥ 219; C- ≥ 210; F < 210.

All graded work will include a signed Academic Honor Policy statement!

**EXAMS**

The first in-class written exam (of 75 minutes duration) will include about four short answer questions (i.e., brief discussion questions) and about three problems (which will involve computations). The second in-class exam (of 150 minutes duration) will include about five short answer questions (i.e., brief discussion 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 exams are closed-book and closed-notes.

**RE-EXAMINATION POLICY**

As a rule, re-examinations will not be held. Absence from the in-class written examinations 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.

**MINI-CASES**

Each student will be responsible for analyzing three mini-cases from a given set of four cases. These cases are: Fitness Plus (Chapter 6). Wolf Motors (Chapter 8); Flashy Flashers, Inc. (Chapter 12) and Copper Kettle Catering (Chapter 13). Each student will be required to answer Flashy Flashers Inc. and then to choose two of the other three cases. The schedule and points for the cases as shown below:

Case	Due Date	Points
Fitness Plus	January 26, 2005	15
Wolf Motors	February 9, 2005	15
Flashy Flashers	February 16, 2005	25
Copper Kettle Catering	March 2, 2005	15

**The focus of your analysis should be on addressing the main questions posed at the end of the case. You should not repeat the case facts. Provide a background to the problem at hand and present your analysis by addressing the questions posed at the end of the case.**

**All the cases are posted on BlackBoard.**

**THREADED DISCUSSIONS**

We will use Blackboard for threaded discussions. Blackboard (<http://blackboard.uncg.edu>) is a course management software that facilitates online class discussions. Since you are signed up for the course you will see this course as part of your Blackboard courses when you log on to BlackBoard.

Two (and sometimes three) 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 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 end of syllabus for list of questions.

Also, all postings should be completed **at least 24 hours** before the next class meeting. 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.

**CLASS PARTICIPATION POINTS**

Class participation points will be based on contributions made in class, on blackboard and through in-class case discussions.

**PEDAGOGIC APPROACH**

Lecture presentations, video films, and “real world” situation vignettes will be used. The "lecture" sessions will rely on student 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**

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 on electronic reserve in the Jackson Library. 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) Classify and explain the different process designs for service systems
- 5) Distinguish between long range, intermediate range, and short range capacity planning in Ops Mgmt.
- 6) Explain the meaning of economies of scale and scope in terms of gaining a competitive advantage.
- 7) Identify the factors that influence the location of service and manufacturing facilities.
- 8) Identify the important aspects and issues related to facility design decisions.
- 9) Explain the role of a forecasting system in the operations of an organization.
- 10) Describe the typical objectives and constraints in the aggregate planning problem related to both manufacturing and service organizations.
- 11) Differentiate the management concerns between dependent demand and independent demand items.
- 12) Explain supply chain management and the role of technologies such as ERP systems, EDI, RFID in managing the supply chain.
- 12) Develop and use a process control chart for managing quality fro both manufacturing nad service processes.
- 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**

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- 1 January 12, 2005 INTRODUCTION TO OPERATIONS MANAGEMENT**
- Assignments :**
- Read Chapter1: Competing with Operations (pages 1-28).**
- Read the case: Chad's Creative Concepts**
- Review Questions:**
- 1). What are the main elements in an "Operations Systems" Model?
  - 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) What are the primary ways of evaluating the Operations Function?
  - 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) Explain the difference between productivity, effectiveness, and efficiency.
  - 9) What is operations strategy; what are the main components of an operations strategy and how does operations strategy relate to corporate strategy?
  - 10) How would you distinguish between make-to-stock, make-to-order and assemble-to-order strategies?
- OPERATIONS PROCESSES**
- A. Assignments:**
1. Read Chapter 2 on Process Management (pages 29-51):
  2. Video Film (shown in class): Manufacturing Processes
  3. Video Film (shown in class): Service Processes
- B. Review Questions**
- 1) 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).
  - 2) Discuss the customer contact, operations efficiency, and sales opportunity matrix.
  - 3) Based on the facts provided in the video film, detail out the six phases of the customer contact/operations efficiency/sales opportunity matrix at the First National Bank of Chicago.
  - 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?

SESSION #	DATE	TOPICS AND ASSIGNMENTS
2	January 19	<p><b>CAPACITY PLANNING &amp; FACILITY LOCATION</b></p> <p><b>Assignment:</b></p> <ol style="list-style-type: none"> <li>1) Read Chapter on Capacity (Chapter 6, pages 155-168; pages 170-179).</li> <li>2). Read Chapter on Location (Chapter 7, pages 203-218 only, for this week)</li> <li>3). Practice Problem #4 page 177</li> <li>4. Practice Problem #10 page 178.</li> <li>5. Practice Problem #2 page 246; Problem #5 page 247; Problem #8 page 248</li> <li>6. Read the case: <b>Imaginative Toys</b></li> </ol> <p><b>Review Questions for Capacity Planning :</b></p> <ol style="list-style-type: none"> <li>1) What is the definition of capacity? Differentiate between output and capacity.</li> <li>2) What are the different forms of capacity?</li> <li>3) Distinguish between economy of scale and economy of scope, and technology economy.</li> <li>4) Explain the concepts of “capacity leading demand” and “capacity lagging demand”.</li> <li>5) Distinguish between short range and long range capacity alternatives.</li> <li>6) Be prepared to solve simple capacity requirement problems</li> <li>7) Be prepared to solve a long-range capacity planning problem using the decision tree model</li> </ol> <p><b>Review Questions for Location Planning</b></p> <ol style="list-style-type: none"> <li>1) What are the macro-level factors in locating facilities?</li> <li>2) What are some of the micro-level factors in site selection?</li> <li>3) What factors would influence the location of a bank, and a paper mill?</li> <li>4) Be prepared to solve facility location problems using the Factor Scoring, Break-even, Load-distance and Center of Gravity methods.</li> </ol>
3	January 26	<p><b>FACILITY LAYOUT &amp; AGGREGATE PLANNING</b></p> <p><b>Assignments:</b></p> <ol style="list-style-type: none"> <li>1. Read Chapter on Facility Layout (Chapter 7, pages 219-254</li> <li>2. Practice Problem #15 pg 249; Problem 19, page 251 and Problem 20, page 251.</li> <li>3. Read Chapter on Aggregate Planning and Scheduling (Chapter 11, pgs 359-374; 379-398).</li> <li>4. Practice Problem #3, page 395; Problem #5 page 396.</li> <li>5. Fitness Plus Case Due</li> <li>6. Read case: <b>The Pizza Connection</b></li> <li>7. Read Case: <b>Memorial Hospital</b></li> </ol> <p><b>Review Questions on Facility Layout</b></p> <ol style="list-style-type: none"> <li>1) Differentiate between product and process layout.</li> </ol>

- 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 its 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.

#### **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 and scheduling process.

#### **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.
- 7) How is aggregate planning done in service organizations?

<b>SESSION #</b>	<b>DATE</b>	<b>TOPICS AND ASSIGNMENTS</b>
<b>4</b>	<b>February 2</b>	<b>IN-CLASS WRITTEN EXAM (75 Minutes)</b>

#### **SUPPLY CHAIN MANAGEMENT**

##### Assignments:

- 1) Read Chapter 8 on Supply Chain Management
- 2) Read pages 90-92 and ERP section on pages 97-102.
- 3). Video Film: Regal Marine Supply Chain (shown in class)

##### 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?



**5****February 9****RESOURCE PLANNING****(MATERIAL REQUIREMENTS PLANNING --- MRP)****Assignments:**

2. Read Chapter 12 on Resource Planning (pages 399-434).
3. Practice Problem #7 pg 431.

**Review Questions:**

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

**INVENTORY MANAGEMENT.****Assignments:**

1. Read Chapter 10 on Inventory Management (pages 323-357)
2. Practice Problems #2 (pg 355), #4 (pg 355), #9 (pg 356), & 10 (pg 356)
3. Wolf Motors Case Due

**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.

SESSION #	DATE	TOPICS AND ASSIGNMENTS
6	February 16	<p><b>QUALITY MANAGEMENT &amp; STATISTICAL QUALITY CONTROL (SPC)</b></p> <p><b>Assignments:</b></p> <ol style="list-style-type: none"> <li>1. Read Chapter 5 on Quality Management &amp; SPC (Pages 336-394)</li> <li>2. Practice Problems: Prob. #7 (pg 151), #8 (pg 151), &amp; Prob. #9 (page 151)</li> </ol> <p><b>Review Questions for Quality Management</b></p> <ol style="list-style-type: none"> <li>1) How would you define quality for a product? For a Service?</li> <li>2) Identify briefly the contributions of Deming, Juran, Crosby, ISO 9000, and the Malcolm Baldrige Award to the quality revolution.</li> <li>3) Discuss the roles of cause/effect diagrams, Pareto Charts, Process Flowcharts in quality management.</li> <li>4) Describe acceptance sampling. Why is it used? Could it be used in services?</li> <li>5) "Acceptance sampling is a thing of the past. We need to conduct 100% inspection to ensure Zero Defects." Take a position and defend.</li> </ol> <p><b>Review Questions for SPC:</b></p> <ol style="list-style-type: none"> <li>1) Describe Statistical Process Control. Why is it used? How can it be used in services?</li> <li>2) Be prepared to develop process control charts for attributes and variable measurements and understand the situations under which further investigation is required.</li> </ol>

SESSION #	DATE	TOPICS AND ASSIGNMENTS
7	February 23	<p><b>LEAN SYSTEMS</b></p> <p><b>LEAN &amp; JIT PRODUCTION SYSTEMS</b></p> <ol style="list-style-type: none"> <li>1. Read Chapter 13 on Lean Systems (pages 435-456)</li> <li>2. Video Review: Styro Incorporated (Shown in class)</li> <li>3. Flashy Flashers Case due at the beginning of class.</li> </ol> <p><b>Assignments:</b></p> <ol style="list-style-type: none"> <li>1) What are lean systems and what role do they play in the achievement of a company's objectives</li> <li>2) Using the facts presented in the video film on the JIT film, answer the following questions: <ol style="list-style-type: none"> <li>a) How do small lot sizes help customer service?</li> <li>b) Why do the large lot size runs produce stockouts even though WIP inventories are high?</li> <li>c) Why are production lead times reduced when lot sizes are decreased?</li> <li>d) What is meant by the statement "Reduced inventory is the not the major benefit of JIT production"?</li> </ol> </li> <li>2) What are the disadvantages or limitations in adopting a JIT system?</li> <li>3) Is JIT more applicable to repetitive manufacturing or job shop operations?</li> </ol>

- 4) What is a "KANBAN" system? What are its salient features?
- 5) Compare and contrast a "push" system and a "pull" system.
- 6) What are the challenges facing implementers of lean systems

### Exam Review and Course Wrap-up

SESSION #	DATE	TOPICS AND ASSIGNMENTS
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8	March 2	Test 2 (135 minutes) Copper Kettle Catering Case Due.
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### Threaded Discussion Questions - Spring 2005

1. Some managers think managing service operations is more "difficult" than managing goods producing operations. Do you agree with this assertion? If you do, why and if you don't agree explain why
2. Some people have suggested that exceeding customer expectation is the key to service success. Give an example from your own experience to support or refute this assertion.
3. Is it realistic to expect a company to be both efficient and effective at the same time or are tradeoffs between the two necessary? Use examples to justify your answer.
4. Could a service firm use a production line approach or self-service design and still maintain a high customer focus (personal attention)? Explain and support your answer with brief examples.
5. How is managing a "batch flow process" different from managing a "continuous flow" process. Use specific examples to illustrate your answer.
6. Do you think it makes sense for a small or mid-sized manufacturer of mature products to move its manufacturing operations from the United States to say Mexico or another location where labor costs are cheaper?
7. Available and reliable statistics show that, on average, the purchasing of materials makes up at least 50% of a company's revenues and direct labor costs make up less than 15% of a manufacturing company's revenues. Yet, companies continue to seek locations with low labor cost. Why do you think this is happening?
8. Under what circumstances will it be more appropriate for a company to place emphasis on achieving "economies of scale" as opposed to "economies of scope"? Be specific in your discussion. Under what circumstances will it be more appropriate for a company to emphasize "economies of scope" as opposed to "economies of scale"? Again be specific in your discussion.
9. Under what conditions would a capacity planning strategy where "Capacity Leads Demand" be more appropriate for a firm? Under what conditions would a strategy where "Demand Leads Capacity" be more appropriate? Discuss your answer in terms of the risks and benefits for each strategy.
10. If you had an assembly line and one person was 20% slower than the other 10 people on the line, what types of problems are likely to surface and how would you deal with such problems?
11. In highly automated facilities, the job responsibilities of the few workers who remain (after

- automation has replaced the manual workers) increase although there is less potential for applying their skills. As a manager what will you do to motivate these employees?
12. Group Technology Layout (Cellular Layout) is often discussed as providing advantages over regular process layouts. If that is the case, why do you think Group Technology is not widely used in the United States?
  13. Several companies are moving toward single sourcing. What does single sourcing mean and what do you think is making single-sourcing attractive to companies?
  14. In many of today's firms, the customer's computer network is tied directly to the supplier's computer network so that purchase orders go directly into the supplier's planning system. What are the implications of this close relationship for both the supplier and the customer?
  15. A widely used arrangement in supply chain management is Vendor Managed Inventory. What does VMI mean and what are the benefits for the parties that use this technique.
  16. Safety stock (sometimes referred to as customer service inventories) are generally held as finished goods. What factors could cause a firm not to want to hold safety stock as finished goods but rather as work-in-process or perhaps raw material? What might a firm need to do to compensate for holding safety stock in this unfinished form?
  17. A benefit of an MRP system is reduction of inventories. Under what circumstances will inventory levels actually increase in an MRP environment and therefore what can a manager do to reduce this situation?
  18. A famous saying (attributed to Crosby) is "Quality is Free". First, what does this statement mean? Second, provide arguments why you agree or disagree with that saying
  19. Some experts have noted that ISO 9000 is really a documentation process. If this statement is true (and I sort of agree), then how can ISO 9000 certification lead to quality improvements? If you don't think it leads to quality improvements, you should provide arguments why it does not.
  20. "If line employees are required to assume the quality control function, their productivity will decrease." Do you agree with statement? If so, why and if not, why not?
  21. "You don't inspect quality into a product; you have to build it in." What does this statement mean? Provide arguments why you agree or disagree with the statement.
  22. Do you think JIT can be used in all manufacturing environments? Under what circumstances might JIT have limited application?
  23. Why do you think the Japanese have had so much success with the use of JIT principles and yet JIT has been less successful in the United States?
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