I. INTRODUCTION
   A. Emphasis on physical distribution and total supply chain management. Includes warehouse operations management, hardware and software operations, bar codes, organizational effectiveness, just-in-time, and continuous replenishment

   B. LMGT1325 Warehouse and Distribution Center Management is a required course for the Certificate in Logistics and an Associates of Applied Science in Logistics and Global Supply Chain Management.

   C. Warehouse and Distribution Center Management is an introductory course in Logistics that examines the role of warehousing in the supply chain. It addresses warehouse strategies, procedures and practices.

   D. Alphanumeric coding used throughout this syllabus denotes integration of the Secretary’s Commission on Achieving Necessary Skills (SCANS) occupational competencies (CA, C1, 2, B, etc.) and foundation skills (B, C1, 2, FA, etc.) for this course. The instructor will ensure the designated SCANS competencies and skills are addressed in the course. A detailed description of each competency/skill is contained in “A SCANS Report for America 2000," Executive Summary, furnished.

II. LEARNING OUTCOMES Upon successful completion of this course, Warehouse and Distribution Center Management the student will be able to:

   A. Discuss total supply chain management and its function in the physical distribution system;
   B. Identify and demonstrate current technology utilized in warehouse management operations
   C. Apply the technology utilized in organizational effectiveness including time and money management and acquisition procession
   D. Interpret information with relationship to inventory management.
   E. The following SCANS competencies and foundations skills will be covered in this course:

      1. Foundation Skills:
a. Basic Skills
   (1) Reading (FA1)
   (2) Writing (FA2)
   (3) Mathematics (FA3)
   (4) Listening (FA4)
   (5) Speaking (FA5)

b. Personal Qualities
   (1) Responsibility (FC1)
   (2) Self-esteem (FC2)
   (3) Sociability (FC3)
   (4) Self-management (FC4)
   (5) Integrity/honesty (FC5)

2. Competencies
   a. Resources
      (1) Time (CA1)
      (2) Money/budget (CA2)
   b. Information
      (1) Acquires/uses (CC1)
      (2) Organizes/maintains (CC2)
      (3) Interprets/communicates (CC3)

III. INSTRUCTIONAL MATERIALS

A. The instructional materials identified for this course is Warehouse Management A Complete Guide To Improving Efficiency And Minimizing Cost The Modern Warehouse 2nd edition, Gwynne Richards, Kogan Press, ISBN XXXXXXXXX and is viewable through www.ctcd.edu/books

IV. COURSE REQUIREMENTS

A. Reading Assignments: Read text assignments and independent research related to the reading on at least one of the discussion questions at the end of each chapter prior to class. Be prepared to discuss the text material and your research answering instructor questions orally with well-organized thoughts and ideas. (CC3, FA1 & 5)

B. Homework Assignments: Instructor will assign two research projects which must be completed as scheduled. (FA2, FA3, FC1, CA1, CC1 through CC3)

This will be a 4 -5 page report including the following:

- **Cover Page** including a plagiarism statement
Executive Summary including the thesis statement on an instructor approved topic. What is the primary reason for writing the paper? What are the major points to be covered?

Discussion Section will present arguments to support the thesis statement. Find references or each argument you make in support of each point you make in the paper. You should have a least three arguments starting with the strongest. There should be a minimum of 10 references from substantive resources.

Conclusion Statement restates the thesis and summarizes the arguments.

Each research paper will be electronically submitted and follow a template which will be provided. The standards will include correct grammar, spelling and style. Each paper will be reviewed for plagiarism (see CTC policy on plagiarism.) Papers that are deemed inadequate may be returned for resubmission at the discretion of the instructor.

How the paper is Graded:

<table>
<thead>
<tr>
<th>Executive Summary: Concisely describes the thesis of the paper and the major arguments supporting that thesis.</th>
<th>20 pts</th>
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<tr>
<td>The paper must be substantially in your own words with an original thesis.</td>
<td>50 pts</td>
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<tr>
<td>The paper should be clearly relevant to the course learning objectives.</td>
<td>10 pts</td>
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<tr>
<td>There are three well-reasoned arguments that support the thesis.</td>
<td>30 pts</td>
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<tr>
<td>Quotes from the course text book must be used to support or disagree with your arguments.</td>
<td>20 pts</td>
</tr>
<tr>
<td>Quotes from scholarly articles must be used to support or disagree with your arguments.</td>
<td>20 pts</td>
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There must be six to twelve citations to scholarly articles in addition to the text.  

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<td>The paper must be correct with regard to grammar, spelling, punctuation and sentence structure</td>
<td>20 pts</td>
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<tr>
<td>The paper must be properly submitted.</td>
<td>10 pts</td>
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<td><strong>Total 200 pts</strong></td>
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**C. Class Attendance:** You are expected to attend each class period and be involved in the class discussion. You are responsible for all course material missed due to absence. The instructor does not provide class notes for classes missed. (FA1, FA4, FA5, FC1, FC3 through FC5, CA1, CC1 through CC3)

**D. Class participation.** This course is using a “flipped classroom” model. You are required to read the chapter prior to coming to class. In addition to the reading you must google at least one topic within the chapter that interests you. Be prepared to cite your research in class including the source.

Classroom time will be focused on discussion of the questions at the end of each chapter. You will be graded on your meaningful participation in those discussions. There will be up to 200 points awarded over the course of the semester. (FA1, FA4, FA5, FC1, FC3 through FC5, CA1, CC1 through CC3)

**E. Chapter quiz.** Each chapter will have a 25 point multiple choice quiz administered in blackboard. There are 16 chapter quizzes worth 25 points each of 400 total points. There are no major exams. (CC1 through CC3; CA1, CA2; FA1 through FA5)

**V. How the Grade is Determined**

A. Points for grades will be awarded as follows:

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<tr>
<td>Chapters 1-16 chapter Quiz (25 points each)</td>
<td>400</td>
</tr>
<tr>
<td>Two Research Papers (200 points each)</td>
<td>400</td>
</tr>
<tr>
<td>Classroom participation</td>
<td><strong>200</strong></td>
</tr>
</tbody>
</table>
B. Letter grades will be assigned based on the percentage of total points earned as follows: 90-100% = A 80-89% = B 70-79% = C 60-69% = D BELOW 60% = F VII.

NOTES AND ADDITIONAL INSTRUCTIONS FROM COURSE INSTRUCTOR

A. Course Withdrawal: It is the student's responsibility to officially withdraw from a class if circumstances prevent attendance. Any student who desires to, officially withdraw from a course after the first scheduled class meeting must file a Central Texas College Application for Withdrawal (CTC Form 59). The withdrawal form must be signed by the student.

CTC Form 59 will be accepted at any time prior to Friday, the 12th week of classes during the 16-week fall and spring semesters. The deadline for sessions of other lengths is:

- 10-week session Friday of the 8th week
- 8-week session Friday of the 6th week
- 5-week session Friday of the 4th week

The equivalent date (75% of the semester) will be used for sessions of other lengths. The specific last day to withdraw is published each semester in the Schedule Bulletin.

A student who officially withdraws will be awarded the grade of "W", provided the student's attendance and academic performance are satisfactory at the time of official withdrawal. Students must file a withdrawal application with the College before they may be considered for withdrawal. A student may not withdraw from a class for which the instructor has previously issued the student a grade of "F" or "FN" for nonattendance.

B. Administrative Withdrawal: An administrative withdrawal may be initiated when the student fails to meet College attendance requirements. The instructor will assign the appropriate grade on CTC Form 59 for submission to the registrar.

C. Incomplete Grade: The College catalog states, "An incomplete grade may be given in those cases where the student has completed the majority of the course work but, because of personal illness, death in the immediate family, or military orders, the student is unable to complete the requirements for a course..." Prior approval from the instructor is required before the grade of "IP" is recorded. A student who merely fails to show for the final examination will receive a zero for the final and an "F" for the course.

Total 1000
D. Cellular Phones and Beepers: Cellular phones and beepers will be turned off while the student is in the classroom.

E. American’s With Disabilities Act (ADA): Disability Support Services provide services to students who have appropriate documentation of a disability. Students requiring accommodations for class are responsible for contacting the Office of Disability Support Services (DSS) located on the central campus. This service is available to all students, regardless of location. Explore the website at www.ctcd.edu/disability-support for further information. Reasonable accommodations will be given in accordance with the federal and state laws through the DSS office.

E. Instructor Discretion: The instructor reserves the right of final decision in course requirements.

F. Civility: (FC3) Individuals are expected to be cognizant of what a constructive educational experience is and respectful of those participating in a learning environment. Failure to do so can result in disciplinary action up to and including expulsion.

G. Honesty and Integrity: (FC5) All students are required and expected to maintain the highest standards of scholastic honesty in the preparation of all course work and during examinations. The following will be considered examples of scholastic dishonesty:

a. Plagiarism: The taking of passages from writing of others without giving proper credit to the sources.

b. Collusion: Using another’s work as one’s own; or working together with another person in the preparation of work, unless joint preparation is specifically approved in advance by the instructor.

c. Cheating: Giving or receiving information on examinations. Students guilty of scholastic dishonesty will be administratively dropped from the course with a grade of “F” and will be subject to disciplinary action. (FC5)

VIII. COURSE OUTLINE

CHAPTER 1 THE ROLE OF THE WAREHOUSE

Primarily a warehouse should be a transshipment point for all goods received are dispatched as quickly, effectively and efficiently as possible.

The basic processes of warehouse management remain the same over time. We receive goods into the warehouse, we process orders, we replenish, we include some
value added services and then we dispatch the product. Advances in warehousing tend to relate to the increased use of technology and automation, improve performance measures and the effective management of resources.

1. Learning Outcomes: Upon successful completion of this unit, the student will be able to:

- Describe types of warehouse operations.
- Explain why warehouse is hold inventory.
- Discuss considerations of warehouse location and number of warehouses.
- Discuss supply chain trends affecting warehouses.
- Explain the growth of the fulfillment and its effect on the warehouse.
- Define specialized warehouses.

2. Learning Activities:
   a) Read the assigned chapter. (FA1, FC1)
   b) Summarize the Key Points for the chapter (FA2, FA3, FC1, CA1, CC1 through CC3)
   c) Note the Key Terms and assure that you understand and define each of these terms. (FA2, FA3, FC1, CA1, CC1 through CC3)
   d) Research a topic covered in the chapter by finding an article from a substantive source. Make notes including the source of the article and come to class prepared to discuss the topic including citing from your research. (FA2, FA3, FC1, CA1, CC1 through CC3)
   e) Complete the assigned Quiz in Blackboard to test your knowledge of the materials. There are sixty minutes are allowed for twenty five questions for one submission attempt. (FA1, FA3, FC1, FC4, FC5, CA1, CC1 through CC3)

CHAPTER 2 ROLE OF WAREHOUSE MANAGER.

Today's warehouse managers no longer patrol the warehouses in brown coats clutching a clipboard and a pencil they are more likely to be in the suit or corporate uniform use of personal digital assistants and more often than not are seen hunched over a laptop deciphering the latest cost and productivity figures. This chapter examines the challenges facing today's warehouse manager and the attributes required to deal with them. Each challenge is introduced to the reader and is further examined in detail in the remaining sections of the book.

1. Learning Outcomes: Upon successful completion of this unit, the student will be able to:

- Explain trade-offs in warehouse management
- Discuss the warehouse managers challenges.
- Define lean warehousing.
• Discuss the challenges of management of people including attracting and retaining employees in an era of an aging and changing workforce.
• Explain operating our considerations.
• Explain the cost and benefits of training.
• Discuss the warehouse audit process.
• Explain warehouse quality systems.

2. Learning Activities:
   a) Read the assigned chapter. (FA1, FC1)
   b) Summarize the Key Points for the chapter (FA2, FA3, FC1, CA1, CC1 through CC3)
   c) Note the Key Terms and assure that you understand and define each of these terms. (FA2, FA3, FC1, CA1, CC1 through CC3)
   d) Research a topic covered in the chapter by finding an article from a substantive source. Make notes including the source of the article and come to class prepared to discuss the topic including citing from your research. (FA2, FA3, FC1, CA1, CC1 through CC3)
   e) Complete the assigned Quiz in Blackboard to test your knowledge of the materials. There are sixty minutes are allowed for twenty five questions for one submission attempt. (FA1, FA3, FC1, FC4, FC5, CA1, CC1 through CC3)

CHAPTER 3 WAREHOUSES PROCESSES RECEIVING AND PUT AWAY.

“Almost all quality improvement comes via simplification of design layout processes and procedures” Tom Peters. These process need to be aligned to work optimally if they are to improve efficiency and as a result reduce cost within the warehouse operation. These processes include pre-receipt, receiving, put away, storage, picking, replenishment, value-added services and dispatch.

1. Learning Outcomes: Upon successful completion of this unit, the student will be able to:
   • Outline the receiving process discuss in-handling.
   • Outline the pre-receiving preparation process.
   • Outline the offloading process.
   • Explain the requirements of checking.
   • Explain cross docking process.
   • Discuss recording and quality control.
   • Outline the put away process.

2. Learning Activities:
   a) Read the assigned chapter. (FA1, FC1)
CHAPTER 4 WAREHOUSE PROCESSES: PICK AND PREPARATION.

Order picking is the most costly activity within today's warehouse not only is it labor-intensive, but it is challenging to automate, can be difficult to plan, is prone to error and critically has direct impact on customer service. Companies target the picking operation is an area in which productivity improvements can make a significant difference in overall costs.

1. Learning Outcomes: Upon successful completion of this unit, the student will be able to:

   • Explain Prato's law
   • Explain ABC analysis and how it impacts preparation for picking.
   • Explain product slotting tools.
   • Discuss order analysis and pick face analysis.
   • Recognize warehouse pick area layout.

2. Learning Activities:
   a) Read the assigned chapter. (FA1, FC1)
   b) Summarize the Key Points for the chapter (FA2, FA3, FC1, CA1, CC1 through CC3)
   c) Note the Key Terms and assure that you understand and define each of these terms. (FA2, FA3, FC1, CA1, CC1 through CC3)
   d) Research a topic covered in the chapter by finding an article from a substantive source. Make notes including the source of the article and come to class prepared to discuss the topic including citing from your research. (FA2, FA3, FC1, CA1, CC1 through CC3)
   e) Complete the assigned Quiz in Blackboard to test your knowledge of the materials. There are sixty minutes are allowed for twenty five questions for one submission attempt. (FA1, FA3, FC1, FC4, FC5, CA1, CC1 through CC3)
CHAPTER 5 PICKING: STRATEGIES AND EQUIPMENT

This chapter examines the different types of picking strategies available to the warehouse manager and the types of equipment used for storage and picking. One of the main cost areas within the picking operation is the movement between pick locations. Depending on the operation this can account to up to 50% of the picker’s time. While the aim is to reduce the amount of travel, congestion at the pick face is also an issue as it can convert travel time into waiting time. This section examines the different methods of picking and the equipment utilized to attain these goals of reduced travel and waiting time.

1. Learning Outcomes: Upon successful completion of this unit, the student will be able to:

   - Compare and contrast various pick strategies including Pick to order, Cluster picking, Batch picking, Zone picking, Wave picking and Goods to picker.
   - Describe various types of automated picking systems including compact, distribution, mini-load AS/RS and robotics.
   - Discuss mechanical and manual handling equipment.
   - Describe high-level order pickers (HLOP).
   - Describe sortation systems.
   - Identify types of storage systems.
   - Compare and contrast shelf storage systems versus cartons flow storage systems
   - Discuss carousels vertical lift modules and A-frames

2. Learning Activities:
   a) Read the assigned chapter. (FA1, FC1)
   b) Summarize the Key Points for the chapter (FA2, FA3, FC1, CA1, CC1 through CC3)
   c) Note the Key Terms and assure that you understand and define each of these terms. (FA2, FA3, FC1, CA1, CC1 through CC3)
   d) Research a topic covered in the chapter by finding an article from a substantive source. Make notes including the source of the article and come to class prepared to discuss the topic including citing from your research. (FA2, FA3, FC1, CA1, CC1 through CC3)
   e) Complete the assigned Quiz in Blackboard to test your knowledge of the materials. There are sixty minutes are allowed for twenty five questions for one submission attempt. (FA1, FA3, FC1, FC4, FC5, CA1, CC1 through CC3)

CHAPTER 6 ORDER PICKING METHODS.
This is the area in which advanced technology has transformed the picking operation and improved accuracy and productivity significantly. The introduction of barcoding, voice technology and pick by light systems is not only improving warehouse picking operations but also producing an acceptable return on investment.

1. Learning Outcomes: Upon successful completion of this unit, the student will be able to:

- Discuss paper pick lists, pick by label and pick by voice systems.
- Explain barcode scanning.
- Explain radio frequency identification (RFID).
- Explain pick by light/pick to light.
- Identify cost of errors.
- Discuss the considerations of deciding on picking systems and equipment

2. Learning Activities:
   a) Read the assigned chapter. (FA1, FC1)
   b) Summarize the Key Points for the chapter (FA2, FA3, FC1, CA1, CC1 through CC3)
   c) Note the Key Terms and assure that you understand and define each of these terms. (FA2, FA3, FC1, CA1, CC1 through CC3)
   d) Research a topic covered in the chapter by finding an article from a substantive source. Make notes including the source of the article and come to class prepared to discuss the topic including citing from your research. (FA2, FA3, FC1, CA1, CC1 through CC3)
   e) Complete the assigned Quiz in Blackboard to test your knowledge of the materials. There are sixty minutes are allowed for twenty five questions for one submission attempt. (FA1, FA3, FC1, FC4, FC5, CA1, CC1 through CC3)

CHAPTER 7 WAREHOUSE PROCESSES FROM REPLENISHMENT TO DISPATCH AND BEYOND.

Process management is the essence of successfully managing warehouse operations. This chapter examines the remaining processes within the warehouse. These include replenishment, value adding services and dispatch, together with the peripheral but essential tasks of stock picking and housekeeping. We also look at security measures that can be taken within the warehouse. Picking

1. Learning Outcomes: Upon successful completion of this unit, the student will be able to:

- Discuss the replenishment of the pick face
- Identify value-added services.
- Identify indirect activities.
- Discuss inventory counts including cycle counts in perpetual inventory counts.
• Identify issues in the actual count.
• Discs discuss security considerations.
• Outline returns processing.
• Discuss packing and loading.
• Discuss shipping.
• Explain documentation requirements.

2. Learning Activities:
   a) Read the assigned chapter. (FA1, FC1)
   b) Summarize the Key Points for the chapter (FA2, FA3, FC1, CA1, CC1 through CC3)
   c) Note the Key Terms and assure that you understand and define each of these terms. (FA2, FA3, FC1, CA1, CC1 through CC3)
   d) Research a topic covered in the chapter by finding an article from a substantive source. Make notes including the source of the article and come to class prepared to discuss the topic including citing from your research. (FA2, FA3, FC1, CA1, CC1 through CC3)
   e) Complete the assigned Quiz in Blackboard to test your knowledge of the materials. There are sixty minutes are allowed for twenty five questions for one submission attempt. (FA1, FA3, FC1, FC4, FC5, CA1, CC1 through CC3)

CHAPTER 8 WAREHOUSE MANAGEMENT SYSTEMS (WMS)

This chapter introduces the role of technology in the warehouse. Warehouse management systems can significantly improve warehouse productivity, increase utilization, reduce costs and increase customer satisfaction.

1. Learning Outcomes: Upon successful completion of this unit, the student will be able to:
   • Explain the benefits of warehouse management system.
   • Discuss the process of selecting a warehouse management system.
   • Calculate the return on investment from a warehouse management system.
   • Outline the implementation process of warehouse management system.
   • Discuss software as a service.

2. Learning Activities:
   a) Read the assigned chapter. (FA1, FC1)
   b) Summarize the Key Points for the chapter (FA2, FA3, FC1, CA1, CC1 through CC3)
   c) Note the Key Terms and assure that you understand and define each of these terms. (FA2, FA3, FC1, CA1, CC1 through CC3)
   d) Research a topic covered in the chapter by finding an article from a substantive source. Make notes including the source of the article and come to class prepared to discuss the topic including citing from your research. (FA2, FA3, FC1, CA1, CC1 through CC3)
e) Complete the assigned Quiz in Blackboard to test your knowledge of the materials. There are sixty minutes are allowed for twenty five questions for one submission attempt. (FA1, FA3, FC1, FC4, FC5, CA1, CC1 through CC3)

CHAPTER 9 WAREHOUSE LAYOUT.

Today's highly competitive and consistently changing markets have a significant effect on the design of warehouses and distribution centers. Continually evolving products and changing order profiles require warehouses to be a great deal more flexible than in former times. The goal is the design that fully meets today's operational requirements but has consider how it will accommodate future growth by being flexible, scalable and relevantly inexpensive to adapt

1. Learning Outcomes: Upon successful completion of this unit, the student will be able to:
   - Identify relative data for warehouse layout.
   - Calculate storage space.
   - Define aisle width.
   - Explain other space needs.
   - Present solutions for additional warehouse space.

2. Learning Activities:
   a) Read the assigned chapter. (FA1, FC1)
   b) Summarize the Key Points for the chapter (FA2, FA3, FC1, CA1, CC1 through CC3)
   c) Note the Key Terms and assure that you understand and define each of these terms. (FA2, FA3, FC1, CA1, CC1 through CC3)
   d) Research a topic covered in the chapter by finding an article from a substantive source. Make notes including the source of the article and come to class prepared to discuss the topic including citing from your research. (FA2, FA3, FC1, CA1, CC1 through CC3)
   e) Complete the assigned Quiz in Blackboard to test your knowledge of the materials. There are sixty minutes are allowed for twenty five questions for one submission attempt. (FA1, FA3, FC1, FC4, FC5, CA1, CC1 through CC3)

CHAPTER 10 STORAGE AND HANDLING EQUIPMENT

This chapter examines the different types of storage systems and manual handling equipment used in warehousing today. In the warehouse it should be all about throughput. The transfer of manufacturing offshore to many countries has necessitated an increase in storage requirements. While counterbalance forklifts have been around
for over ninety years we are now seeing significant technological advances with later
scissor guided trucks articulated trucks hybrid trucks and high lift as well as very narrow
aisle trucks

1. Learning Outcomes: Upon successful completion of this unit, the student will be able
to:

- Recognize types of storage equipment.
- Discuss storage options for blocked and racked storage.
- Identify different types of racking discuss shuttle racking technology.
- Explain very high bay warehouses.
- Explain mezzanine storage.
- Identify warehouse handling equipment.
- Discuss automated guided vehicles.
- Explain automated storage and retrieval systems.
- Identify specialized warehouse equipment.

2. Learning Activities:
   a) Read the assigned chapter. (FA1, FC1)
   b) Summarize the Key Points for the chapter (FA2, FA3, FC1, CA1, CC1 through
      CC3)
   c) Note the Key Terms and assure that you understand and define each of these
terms. (FA2, FA3, FC1, CA1, CC1 through CC3)
   d) Research a topic covered in the chapter by finding an article from a substantive
      source. Make notes including the source of the article and come to class
      prepared to discuss the topic including citing from your research. (FA2, FA3,
      FC1, CA1, CC1 through CC3)
   e) Complete the assigned Quiz in Blackboard to test your knowledge of the
      materials. There are sixty minutes are allowed for twenty five questions for one
      submission attempt. (FA1, FA3, FC1, FC4, FC5, CA1, CC1 through CC3)

CHAPTER 11 RESOURCING A WAREHOUSE.

This chapter examines the allocation of warehouse resources for that are required for
efficient operations the types of resources found in warehouses are numerous and in
include people, equipment, consumables, general supplies as well as others. This
section will focus on labor and equipment

1. Learning Outcomes: Upon successful completion of this unit, the student will be able
to:

- Describe processing activities.
• Describe work rates.
• Explain seasonality and demand variation.
• Explain the process of resource modeling.
• Calculate staffing levels.

2. Learning Activities:
   a) Read the assigned chapter. (FA1, FC1)
   b) Summarize the Key Points for the chapter (FA2, FA3, FC1, CA1, CC1 through CC3)
   c) Note the Key Terms and assure that you understand and define each of these terms. (FA2, FA3, FC1, CA1, CC1 through CC3)
   d) Research a topic covered in the chapter by finding an article from a substantive source. Make notes including the source of the article and come to class prepared to discuss the topic including citing from your research. (FA2, FA3, FC1, CA1, CC1 through CC3)
   e) Complete the assigned Quiz in Blackboard to test your knowledge of the materials. There are sixty minutes are allowed for twenty five questions for one submission attempt. (FA1, FA3, FC1, FC4, FC5, CA1, CC1 through CC3)

CHAPTER 12 WAREHOUSE COSTS.

The cost of operating a warehouse can average between one and 5% of total sales depending upon the type of company and the value of its goods. For example a pallet of laptops will take up the same amount of space in the same amount of handling is a pallet of baked beans, yet the value of the goods will be significantly different. Hence the variation in the percentage cost of sales. Warehousing also makes up about 22% of the company's total logistics cost with inventory carrying cost a further 23%. As a result, warehouse managers require comprehensive knowledge of all costs and cost drivers within the warehouse. At the same time the manager is under significant pressure to reduce costs yet to continue to produce optimum customer service with the added pressures of reduced inventory but increased number of stock keeping units.

1. Learning Outcomes: Upon successful completion of this unit, the student will be able to:
   • Identify the types of warehouse costs.
   • Calculate return on investment.
   • Compare and contrast traditional costing method with activity-based costing.
   • Calculate activity-based cost.
   • Explain shared warehouse services.
   • Determine storage charges and handling charges.
   • Explain logistic charging methods and contracts.
CHAPTER 13 PERFORMANCE MANAGEMENT

It is crucial to any company's financial well-being that the warehouse must provide accuracy, quality, timeliness and cost-effectiveness within the processes that are controlled. This contributes to a high-performance operation which will contribute to customer satisfaction and retention. This chapter looks at why we need to measure what we need to measure and how we can use this information to prove improve overall warehouse service to the customer.

1. Learning Outcomes: Upon successful completion of this unit, the student will be able to:

- Explain the need for performance measurement.
- Identify criteria for measurement.
- Explain key performance indicators KPI.
- Identify traditional productivity measures explain on time and in full (OTIF).
- Calculate stock cover in days and stock turn.
- Define inventory accuracy.
- Discuss hard and soft measures.
- Discuss integrated performance models.
- Discuss the balanced scorecard.

2. Learning Activities:

a) Read the assigned chapter. (FA1, FC1)

b) Summarize the Key Points for the chapter (FA2, FA3, FC1, CA1, CC1 through CC3)

c) Note the Key Terms and assure that you understand and define each of these terms. (FA2, FA3, FC1, CA1, CC1 through CC3)

d) Research a topic covered in the chapter by finding an article from a substantive source. Make notes including the source of the article and come to class prepared to discuss the topic including citing from your research. (FA2, FA3, FC1, CA1, CC1 through CC3)

e) Complete the assigned Quiz in Blackboard to test your knowledge of the materials. There are sixty minutes are allowed for twenty five questions for one submission attempt. (FA1, FA3, FC1, FC4, FC5, CA1, CC1 through CC3)
CHAPTR 14 OUTSOURCING

Outsourcing is generally defined as working with the supplier to provide a function or service that isn't part of the organization's core competence. As Peter Drucker says “Do what you do best and outsource the rest.” The idea is to take advantage of a specialist provider’s knowledge and economies of scales to improve performance and achieve the service needed usually at a lower. but not necessarily at a lower, cost.

1. Learning Outcomes: Upon successful completion of this unit, the student will be able to:

   • Enumerate the criteria for outsourcing decisions.
   • Explain core activity/core competence.
   • Discuss measures of improvement in customer service, cost reduction and labor relations.
   • Discuss financial strategy and flexibility
   • Explain the role of third-party contractors.
   • Outline the outsourcing decision process.
   • Outline the criteria for selecting an outsourcing partner.
   • Discuss managing third-party relationships.
   • Identify why contracts fail.
   • Explain the "what’s in it for we" mindset.
   • List and explain Vitasek's five rules of outsourcing.

2. Learning Activities:

   a) Read the assigned chapter. (FA1, FC1)
   b) Summarize the Key Points for the chapter (FA2, FA3, FC1, CA1, CC1 through CC3)
   c) Note the Key Terms and assure that you understand and define each of these terms. (FA2, FA3, FC1, CA1, CC1 through CC3)
   d) Research a topic covered in the chapter by finding an article from a substantive source. Make notes including the source of the article and come to class prepared to discuss the topic including citing from your research. (FA2, FA3, FC1, CA1, CC1 through CC3)
   e) Complete the assigned Quiz in Blackboard to test your knowledge of the materials. There are sixty minutes are allowed for twenty five questions for one submission attempt. (FA1, FA3, FC1, FC4, FC5, CA1, CC1 through CC3)
CHAPTER 15 HEALTH AND SAFETY.

This chapter's intent is to inform managers of the potential hazards found within the warehouse and how they can make the area as safe as possible for their staff. Accidents will happen, however, there are processes that can reduce the danger significantly. This can be a high cost area not only in providing a safe environment but also the cost of not providing a safe and secure place to work.

1. Learning Outcomes: Upon successful completion of this unit, the student will be able to:
   - Calculate the OSHA incidence rate.
   - Outline and explain the five stages of risk assessment.
   - Discuss layout and design as risk mitigation.
   - Identify the five stages of fire risk assessment.
   - Explain how to minimize slips and trips.
   - Explain the risk of manual handling.
   - Explain the risk of working at height.
   - Discuss vehicle management.
   - Discuss forklift management.
   - Discuss planning for first-aid.

2. Learning Activities:
   a) Read the assigned chapter. (FA1, FC1)
   b) Summarize the Key Points for the chapter (FA2, FA3, FC1, CA1, CC1 through CC3)
   c) Note the Key Terms and assure that you understand and define each of these terms. (FA2, FA3, FC1, CA1, CC1 through CC3)
   d) Research a topic covered in the chapter by finding an article from a substantive source. Make notes including the source of the article and come to class prepared to discuss the topic including citing from your research. (FA2, FA3, FC1, CA1, CC1 through CC3)
   e) Complete the assigned Quiz in Blackboard to test your knowledge of the materials. There are sixty minutes are allowed for twenty five questions for one submission attempt. (FA1, FA3, FC1, FC4, FC5, CA1, CC1 through CC3)

CHAPTER 16 THE WAREHOUSE AND THE ENVIRONMENT

In recent years environmental and waste issues have affected us all, both at home and at work. Recycling has become an everyday occurrence and carbon foot prints are being left, but not without a trace. These issues have become ingrained into corporate social responsibility, but what does this mean for the warehouse sector.
1. Learning Outcomes: Upon successful completion of this unit, the student will be able to:

- Explain legislative and other pressures on environmental considerations.
- Discuss warehouse energy use and production.
- Discuss waste management and mitigation.

2. Learning Activities:
   a) Read the assigned chapter. (FA1, FC1)
   b) Summarize the Key Points for the chapter (FA2, FA3, FC1, CA1, CC1 through CC3)
   c) Note the Key Terms and assure that you understand and define each of these terms. (FA2, FA3, FC1, CA1, CC1 through CC3)
   d) Research a topic covered in the chapter by finding an article from a substantive source. Make notes including the source of the article and come to class prepared to discuss the topic including citing from your research. (FA2, FA3, FC1, CA1, CC1 through CC3)
   e) Complete the assigned Quiz in Blackboard to test your knowledge of the materials. There are sixty minutes are allowed for twenty five questions for one submission attempt. (FA1, FA3, FC1, FC4, FC5, CA1, CC1 through CC3)

CHAPTER 17 THE WAREHOUSE OF THE FUTURE

This section looks at the likely role of the warehouse in the supply chain of the future, what it might look like and the new technology that will potentially have a significant effect of the work on the warehouse.

1. Learning Outcomes: Upon successful completion of this unit, the student will be able to:

- Recognize the factors which will affect warehousing in the future.
- Discuss Capgemini’s view of the future warehouse
- Discuss alternative scenarios of the future warehouse

2. Learning Activities:
   a) Read the assigned chapter. (FA1, FC1)
   b) Summarize the Key Points for the chapter (FA2, FA3, FC1, CA1, CC1 through CC3)
   c) Note the Key Terms and assure that you understand and define each of these terms. (FA2, FA3, FC1, CA1, CC1 through CC3)
   d) Research a topic covered in the chapter by finding an article from a substantive source. Make notes including the source of the article and come to class prepared to discuss the topic including citing from your research. (FA2, FA3, FC1, CA1, CC1 through CC3)