

Burlington County Institute of Technology

\_\_\_\_\_ Medford Campus

\_\_\_\_\_x\_\_\_\_\_ Westampton Campus

**CAREER MAJOR PROGRAMS**

**Course Title: Supply Chain Management**

**Career Cluster: Transportation, Distribution, and Logistics**

Curriculum Area: CTE

Credits: 18

Board Approved: August 26th, 2022

Prepared by: Tom Mason

Supply Chain Management  
Syllabus  
Grade 9

A. Introduction to Supply Chain Management	(9th)	S1 B4
B. Global Procurement and Sourcing Strategies	(9th)	S2 B4

**II. COURSE DESCRIPTION**

Supply Chain Management includes a broad overview of business logistics processes and strategies. This program will span all aspects of movement of goods and materials from point of origin to point of consumption, inventory, and storage. Specific topics will include revenue management and pricing, logistics and distribution strategies, warehousing and order fulfillment, supply chain design and integration, supply chain software--MRP/ERP systems, procurement and outsourcing, and project management. This program will feature case studies as provided by the NJDOE which allow students to practice the skills needed to succeed in the field. Graduates of this program can enter directly into the workforce or continue their education and obtain positions such as materials analyst, procurement manager, purchasing agent, logistics planner or supply chain analyst.

“This level introduces the basic functions of warehousing and distribution—the movement, storage, control and protections of products and materials in the supply chain. Students will develop an in-depth understanding of fundamental safety and ergonomic principles. This course will also introduce logistics concepts, principles, and terminology as foundational knowledge to scaffold upon as the student progresses into the next level and beyond. Students will also be able to identify and differentiate various types of warehouse equipment and develop proficiency in using manual material handling equipment.”

**III. PROGRAM OUTCOME**

At the conclusion of the four year program, students will have a fundamental understanding of strategic sourcing, global procurement, contract management, business performance, supply chain technologies, pricing analysis, supply chain alignment, and distribution management. Students can earn three credits with Rutgers University for Introductory Topics in

Business along with multiple courses for Rowan College of Burlington County. In addition, students will earn OSHA 10, Career Safe-Employability Skills and Career Safe- Start Safe.

**a. Introduction to Supply Chain Management (9th)**

This introductory course offers a broad overview of business logistics processes and strategies. Topics include revenue management and pricing, logistics and distribution strategies, warehousing and order fulfillment, supply chain design and integration, supply chain software--MRP/ERP systems, procurement and outsourcing, and project management. It also includes an introduction to strategic supply chain management.

**b. Global Procurement and Sourcing Strategies (9th)**

This course dives deeper into the tactical and strategic tenets of global procurement and strategic sourcing. It will include the tools, techniques, and strategies used by businesses around the world to introduce students to the tools needed in a global economy. Students will visit the tenets of modern global procurement and sourcing.

**IV. PROJECTS**

- a. Supply Chain Flow
- b. Manufacturing Strategy Decision
- c. Strategic Sourcing and Supplier Selection
- d. Transportation Mode Selection
- e. Manufacturing Process Decision
- f. Warehouse Design

**V. STANDARDS COVERED**

- *9.3.12.TD.1 Describe the nature and scope of the Transportation, Distribution & Logistics Career Cluster and the role of transportation, distribution and logistics in society and the economy.*
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- *9.3.12.TD.2 Describe the application and use of new and emerging advanced techniques to provide solutions for transportation, distribution and logistics problems.*
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- *9.3.12.TD.3 Describe the key operational activities required of successful transportation, distribution and logistics facilities.*
- *Career Ready Practices:*
  - *Act as a responsible and contributing community member and employee.*
  - *Attend to financial well-being.*
  - *Consider the environmental, social and economic impacts of decisions.*
  - *Demonstrate creativity and innovation.*
  - *Utilize critical thinking to make sense of problems and persevere in solving them.*
  - *Model integrity, ethical leadership and effective management.*
  - *Plan education and career paths aligned to personal goals.*
  - *Use technology to enhance productivity, increase collaboration and communicate effectively.*
  - *Work productively in teams while using cultural/global competence.*
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- *RST.9-10.1. Accurately cite strong and thorough evidence from the text to support analysis of science and technical texts, attending to precise details for explanations or descriptions.*
- *RST.9-10.2. Determine the central ideas, themes, or conclusions of a text; trace the text's explanation or depiction of a complex process, phenomenon, or concept; provide an accurate summary of the text.*
- *RST.9-10.4. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 9-10 texts and topics.*
- *WHST.9-10.4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.*
- *WHST.9-10.6. Use technology, including the Internet, to produce, share, and update writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically.*
- *WHST.9-10.7. Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.*

**Course: Introduction to Supply Chain Management S1      Grade 9      Unit: Introduction to the Supply Chain and Manufacturing Strategies**

STANDARDS	ESSENTIAL QUESTIONS	CONTENT	SKILLS	ASSESSMENTS
9.3.12.TD.1 9.3.12.TD.2 9.3.12.TD.3 9.3.12.TD-LOG.1 9.3.12.TD-MTN.1 9.3.12.TD-MTN.2 9.3.12.TD-WAR.1 9.3.12.TD-WAR.2 9.3.12.TD-SYS.2  RST.9-10.1 RST.9-10.2 RST.9-10.4  WHST.9-10.4 WHST.9-10.6 WHST.9-10.7  CRP1 CRP2	<ul style="list-style-type: none"> <li>-What is a supply chain?</li> <li>-How does a supply chain impact everyday life?</li> <li>-How can I diagram a product's supply chain flow?</li> <li>-Who will manufacture the finished product that my company is going to sell?</li> <li>-What are the major materials and services that my company will need in order to manufacture the finished product</li> <li>-Where, or from whom, will my suppliers get the materials and services</li> </ul>	<b>Supply Chain Flow:</b> <ul style="list-style-type: none"> <li>-Consumer</li> <li>-Customer</li> <li>-Distributor</li> <li>-Distribution</li> <li>-Distribution Channel</li> <li>-Manufacturer</li> <li>-Manufacturing</li> <li>-Retailer</li> <li>-Supplier</li> <li>-Supply Chain</li> <li>-Transportation</li> <li>-Transportation Mode</li> <li>-Wholesaler</li> </ul>	<ul style="list-style-type: none"> <li>-Understand that products start as unprocessed raw material and through processes are made into everyday products.</li> <li>-Interpret a Supply Chain Flow Diagram</li> <li>-Identify the stakeholders within the supply chain.</li> <li>-Identify suppliers and vendors.</li> </ul>	<ul style="list-style-type: none"> <li>-Students will be assessed on their participation in daily discussions on relevant matters to the topic areas.</li> <li>-Students will be assessed through quizzes on the subject matter as well as unit examinations.</li> <li>-Students will be evaluated on relevant tasks in relation to job performance.</li> <li>-Supply Chain Flow Diagram of their chosen</li> </ul>

<p>CRP3 CRP4</p>	<p>that they will need to produce the item(s) they are going to provide to my company? -Who are the expected customers of my company's finished product? -How will my company distribute its finished product? -How will my company's products actually be moved or transported?</p> <p>-What are MTO and MTS? -Which manufacturing strategy is better for customization? -Which manufacturing strategy is better for stockpiling goods in a warehouse? -How does disruptions in the supply chain impact people and in everyday life?</p>	<p><b>Manufacturing Strategy Decision:</b> -Consumer -Customization -Economies of Scale -Enterprise Resource Planning (ERP) -Forecast -Lead Time -Manufacturer -Manufacturing -Make-to-Order -Make-to-Stock</p>	<p>-Understand the advantages and disadvantages of each manufacturing strategy. -Recommend a manufacturing strategy for a new and customized product. -Identify various disruptions in the supply chain. -Understand how to create a contingency plan. -Tailor the company's contingency plan to the</p>	<p>commodity.</p> <p>-Manufacturing Strategy Recommendation for new product. -Students will be assessed on their participation in daily discussions on relevant matters to the topic areas.  -Students will be assessed through quizzes on the subject matter as well as unit</p>
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	Which stakeholders do disruptions in the supply chain affect?	-Mass Customization -Mass Production	needs of the supply chain. -Identify the best options for profit based on the commodity and the company's needs.	examinations.  -Students will be evaluated on relevant tasks in relation to job performance.
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**Course: Global Logistics and Supply Chain Management I      S2      Grade 9      Unit: Global Procurement and Sourcing Strategies**

STANDARDS	ESSENTIAL QUESTIONS	CONTENT	SKILLS	ASSESSMENTS
9.3.12.TD-LOG.2  RST.9-10.3 RST.9-10.5 WHST.9-10.1  CRP5 CRP6 CRP7 CRP8	-Why are selection and performance criteria important to research before choosing a supplier?  -If there are both onshore and offshore sources, what factors would influence a decision to select the offshore source?  -Which criteria will be most useful when evaluating suppliers?  -How will you evaluate suppliers?	<b>Strategic Sourcing and Supplier Selection:</b> -Capacity -Collaborative -Cost -Criteria -Cycle Time -Insourcing -Order System -Outsourcing -Performance -Quality Systems -Reliability -Request for Information (RFI) -Request for Proposal	-Explain the variables that impact the supply chain. -Understand the SWOT analysis and the benefits of using it for business decisions. -Create math equations to understand the needs of the company. -Create a scorecard based on set criteria.	-Selection and Performance Criteria Scorecard Evaluation -Students will be assessed on their participation in daily discussions on relevant matters to the topic areas.  Students will be assessed through quizzes on the subject matter as well as unit examinations.  Students will be

	<p>-How will you measure the performance of your supplier?</p> <p>-What are the various modes of transporting goods and services?</p> <p>-How can transportation modes affect the supply chain?</p> <p>-How does transportation financially impact a company?</p> <p>-What would be the most economical mode of transportation based on the needs of a company?</p> <p>-What is intermodal transportation?</p> <p>-Which criteria will be most useful when choosing a transportation</p>	<p>(RFP)          -Request for Quote (RFQ)          -Strategic Sourcing          -Sourcing          -Supplier          -Vendor          -Weighted Criteria          -Warranties and Claim Policies</p> <p><b>Transportation Mode Selection:</b>          -Commodity          -Consumer          -Courier          -Customer          -Distribution          -Expedited          -Full Truckload (FTL)          -Intermodal          -Less-Than-Truckload (LTL)          -Parcel Delivery          -Transit Time          -Transportation          -Transportation Carrier          -Transportation Mode</p>	<p>-Understand the various modes of transportation used around the world.          -Establish point of origin to the point of consumption for products on the supply chain in a report.          -Identify intermodal modes of transportation.          -Write some advantages of using intermodal transportation.          -Create a research report about transportation modes they could use to ship a product from overseas to the United States.</p>	<p>evaluated on relevant tasks in relation to job performance.</p> <p>-Research Report on the Advantages and Disadvantages of Transportation Modes          -Students will be assessed on their participation in daily discussions on relevant matters to the topic areas.</p> <p>-Students will be assessed through quizzes on the subject matter as well as unit examinations.</p> <p>-Students will be</p>
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	<p>mode? Cost, speed, reliability, capacity, etc.?</p> <p>-How can you use weighted criteria evaluation to compare different possible transportation modes and choose the most efficient and cost-effective mode(s)?</p> <p>-How will you measure the performance of your chosen transportation modes?</p>			<p>evaluated on relevant tasks in relation to job performance.</p>
	<p>-What is the difference between a manufacturing strategy and a manufacturing process?</p> <p>-How can I apply a manufacturing process to baked goods?</p> <p>-Which manufacturing strategy(s) should be applied for the best result?</p>	<p><b>Manufacturing Process Decision:</b></p> <ul style="list-style-type: none"> <li>-Assemble-to-Order (ATO)</li> <li>-Batch Process</li> <li>-Continuous Flow Process</li> <li>-Engineer-to-Order (ETO)</li> <li>-Job Shop Process</li> <li>-Line Process</li> <li>-Make-to-Order (MTO)</li> <li>-Make-to-Stock (MTS)</li> </ul>	<p>-Identify the manufacturing processes that more closely align with certain manufacturing strategies.</p> <p>-Evaluate the various manufacturing processes used in business today.</p> <p>-Create a proposal recommending a strategy to manufacture a product.</p>	<p>-Manufacturing Process Proposal Highlighting the Best Option for each Product</p> <p>-Students will be assessed on their participation in daily discussions on relevant matters to the topic areas.</p> <p>-Students will be assessed through quizzes</p>

	<ul style="list-style-type: none"> <li>-Which options should I consider when designing a warehouse?</li> <li>-Which variables affect the design of a warehouse?</li> <li>-What are the best storage options to house our products in the warehouse?</li> <li>-What variables do I need to consider when planning for aisle width?</li> <li>-Why is an effective warehouse design important?</li> <li>-How does the warehouse design affect customers?</li> <li>-What are important</li> </ul>	<ul style="list-style-type: none"> <li>-Mass Market</li> <li>-Niche Market</li> </ul> <p><b>Warehouse Design:</b></p> <ul style="list-style-type: none"> <li>-Aisle</li> <li>-Automated Guided Vehicle (AGV)</li> <li>-Barcode</li> <li>-Batch Order Selection</li> <li>-Discrete Order Selection</li> <li>-Fixed Location System</li> <li>-Fork Lift</li> <li>-Material Handling Equipment</li> <li>-Packing</li> <li>-Pallet</li> <li>-Pallet Jack</li> <li>-Perishable</li> <li>-Picking</li> <li>-Racking</li> <li>-Radio Frequency Identification (RFID)</li> </ul>	<ul style="list-style-type: none"> <li>-Explain the differences in warehouse design.</li> <li>-Identify the factors to consider when designing a warehouse.</li> <li>-Understand the differences between manual and automatic picking.</li> <li>-Compare and contrast between the various storage systems that are used in warehouses.</li> <li>-Understand how the design plan will impact the number of products that are stored.</li> <li>-Create a warehouse design plan/diagram.</li> </ul>	<p>on the subject matter as well as unit examinations.</p> <ul style="list-style-type: none"> <li>-Students will be evaluated on relevant tasks in relation to job performance.</li> </ul> <p>-Warehouse Design Plan/Diagram drawn to scale.</p> <ul style="list-style-type: none"> <li>-Students will be assessed on their participation in daily discussions on relevant matters to the topic areas.</li> <li>-Students will be assessed through quizzes on the subject matter as well as unit examinations.</li> <li>-Students will be evaluated on relevant tasks in relation to job performance.</li> </ul>
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	considerations for employees? -In what ways can the warehouse layout affect productivity?	-Random Location System -Receiving -Shipping -Staging -Storage -Throughput -Travel Aisles -Unitization -Velocity -Zone Picking		
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**VI. RESOURCES AND SUPPLEMENTAL MATERIALS**

**Textbooks & Resources**

McLaury, W. & Spiegle, E. (2017) *Fundamentals of Supply Chain Management. 2nd edition*, Dubuque, IA: Kendall Hunt Publishing

Reddy, Leo. (2022) *Supply Chain Logistics: Foundational Knowledge for Frontline Workers. 4.0 edition*, Alexandria, VA: Manufacturing Skills Standards Council

Reddy, Leo. (2022) *Supply Chain Logistics: Mid-Level Technical Knowledge for Frontline Workers. 4.0 edition*, Alexandria, VA: Manufacturing Skills Standards Council

Stock, J. & Manrodt, K. (2020) *Supply Chain Management. 1st edition*, New York, NY: McGraw Hill Education

Bowersox, D & Closs, D. (2020) *Supply Chain Logistics Management. 5th edition*, New York, NY: McGraw Hill Education

Bozarth, C. & Handfield, R. (2019) *Introduction to Operations and Supply Chain Management. 5th edition*, New York, NY: Pearson Education, Inc.

Niemeyer, R. (2013) *Fundamentals of Warehousing & Distribution-Volume 3: Warehouse & Personal Performance*, Charlotte, NC: MHI

**Supply Chain Management  
Syllabus  
Grade 10**

A. Demand Planning and Fulfillment	(10th)	S1 B3
B. Introduction to Six Sigma and Lean Manufacturing	(10th)	S2 B2
C. Business Logistics and Transportation	(10th)	S2 B2

**a. Demand Planning and Fulfillment (10th)**

Demand planning and fulfillment focuses on strategies and tools commonly used in business practices. Topics include demand forecasting, sales and operations planning, inventory management, material requirement planning, and revenue management and pricing strategies.

**b. Introduction to Six Sigma and Lean Manufacturing (10th)**

This course provides the fundamentals of six sigma, lean manufacturing, and tools and strategies to improve the performance of business processes. Case studies, team exercises, and simulations are utilized. Topics include six sigma improvement methodology and tools, lean-thinking tools and approaches, process mapping, dashboards, and other business improvement techniques. Emphasis is placed on the strategic importance of business improvement, the need for fact-based management, and how to deploy these tools in different parts of the value chain.

**c. Business Logistics and Transportation (10th)**

This course focuses on the logistics of physical distribution and supply chains. Topics include traffic routing, inventory analysis and control, warehousing, location of production and storage facilities, and transportation. An introduction to the fundamentals of logistics and transportation will also be taught. Students will also examine the design of channels of distribution, management of inventory, evaluation of transportation alternatives, information flow, facility location, outsourcing logistics operations through third-party relationships, and the rapidly expanding field of logistics information technology. Additionally, this course explores the principles of transportation with emphasis on transportation modal and intermodal operations (rail, highway, air, water, and pipeline transportation) and transportation management.

**IV. PROJECTS**

- a. Material Planning
- b. Insourcing vs. Outsourcing Decision
- c. Distribution Warehouse Network
- d. Inventory Management
- e. Lean Manufacturing
- f. Sourcing Category Management
- g. Six Sigma
- h. Transportation Freight Loading

## V. STANDARDS COVERED

- *9.3.12.TD.1 Describe the nature and scope of the Transportation, Distribution & Logistics Career Cluster and the role of transportation, distribution and logistics in society and the economy.*
- *9.3.12.TD-LOG.1 Develop solutions to provide and manage logistics services for the company and customers*
- *9.3.12.TD-LOG.2 Analyze and improve performance of logistics systems to provide logistics planning and management services.*
  
- *Career Ready Practices:*
  - *Act as a responsible and contributing community member and employee.*
  - *Attend to financial well-being.*
  - *Consider the environmental, social and economic impacts of decisions.*
  - *Demonstrate creativity and innovation.*
  - *Utilize critical thinking to make sense of problems and persevere in solving them.*
  - *Model integrity, ethical leadership and effective management.*
  - *Plan education and career paths aligned to personal goals.*
  - *Use technology to enhance productivity, increase collaboration and communicate effectively.*
  - *Work productively in teams while using cultural/global competence.*
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- *RST.9-10.1. Accurately cite strong and thorough evidence from the text to support analysis of science and technical texts, attending to precise details for explanations or descriptions.*
- *RST.9-10.2. Determine the central ideas, themes, or conclusions of a text; trace the text's explanation or depiction of a complex process, phenomenon, or concept; provide an accurate summary of the text.*
- *RST.9-10.4. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 9-10 texts and topics.*
- *WHST.9-10.4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.*
- *WHST.9-10.6. Use technology, including the Internet, to produce, share, and update writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically.*

- *WHST.9-10.7. Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.*

**Course: Logistics and Supply Chain Management II      S1    Grade 10      Unit: Demand Planning and Fulfillment**

STANDARDS	ESSENTIAL QUESTIONS	CONTENT	SKILLS	ASSESSMENTS
9.3.12.TD-LOG.2 9.3.12.TD-OPS.1 9.3.12.TD-OPS.2 9.3.12.TD-SYS.1  CRP9	<ul style="list-style-type: none"> <li>-What is the best method to identify what materials and how many of them I need to make a product?</li> <li>-What factors are involved in material planning?</li> <li>-how does material planning impact a company financially?</li> <li>-Why is it important to determine all of the components in a MRP?</li> <li>-What are the various types of BOMs used in supply chain management?</li> <li>-What factors need to be considered to plan for a master production</li> </ul>	<b>Material Planning:</b> <ul style="list-style-type: none"> <li>-Beginning Inventory</li> <li>-Bill of Materials (BOM)</li> <li>-Gross Requirements</li> <li>-Lead-Time</li> <li>-Lot Size</li> <li>-Master Production Schedule (MPS)</li> <li>-Material Requirement Plan (MRP)</li> <li>-Part Number</li> <li>-Planned Delivery</li> <li>-Planning Factor</li> <li>-Planning Parameters</li> <li>-Projected On-Hand (OH) Inventory</li> <li>-Safety Stock</li> <li>-Time Bucket</li> <li>-Unit of Measure</li> </ul>	<ul style="list-style-type: none"> <li>-Create a material list and plan to build a product.</li> <li>-Determine planning goals and objectives of the company.</li> <li>-Explain the planning responsibilities for these goals and objectives.</li> <li>-Develop documentation using tools to assist in decision making.</li> <li>-Determine the quantity needed for each component to build multiple table and chair sets.</li> <li>-Understand the various types of BOMs used in supply chain planning.</li> <li>-Create a production plan that will assist in the development of a master production schedule.</li> </ul>	<ul style="list-style-type: none"> <li>-Students will be assessed on their participation in daily discussions on relevant matters to the topic areas.</li> <li>-Students will be assessed through quizzes on the subject matter as well as unit examinations.</li> <li>-Students will be evaluated on relevant tasks in relation to job performance.</li> <li>-Students will be assessed on their Bill of Materials and Master</li> </ul>

	<p>schedule?</p> <ul style="list-style-type: none"> <li>-How can a company determine if they should insource or outsource the production of a new item?</li> <li>-How could a company increase its revenue by changing its sourcing?</li> <li>-What qualities are important when manufacturing or procuring products?</li> <li>-What factors affect sourcing decisions?</li> </ul>	<p><b>Inourcing versus Outsourcing Strategies:</b></p> <ul style="list-style-type: none"> <li>-Amortize</li> <li>-Break-even Point</li> <li>-Buy</li> <li>-Cost of Goods Sold (COGS)</li> <li>-General and Administrative (G&amp;A)</li> <li>-Expenses</li> <li>-Inourcing</li> <li>-Make</li> <li>-Make-vs-Buy Decision</li> <li>-Outsourcing</li> <li>-Variable Costs</li> </ul>	<ul style="list-style-type: none"> <li>-Understand that sales volume will affect sourcing decisions.</li> <li>-Understand the supply chain for the selected item's manufacturing.</li> <li>-Brainstorm to identify the components needed in the item's supply chain.</li> <li>-Participate in a discussion about the advantages and disadvantages of each strategy.</li> </ul>	<p>Production Schedule for Material Plans.</p> <ul style="list-style-type: none"> <li>-Debate about Inourcing/Outsourcing Recommendations</li> <li>-Students will be assessed on their participation in daily discussions on relevant matters to the topic areas.</li> <li>-Students will be assessed through quizzes on the subject matter as well as unit examinations.</li> <li>-Students will be evaluated on relevant tasks in relation to job performance.</li> </ul>
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	<p>-What modes of transportation for inbound and outbound shipments will be needed to efficiently serve the market?</p> <p>-What stakeholders do the various locations of a distribution center affect?</p> <p>-What locations should be considered based upon the market concentrations and access to transportation?</p> <p>-When it is more economical to use intermodal rail instead of trucking?</p> <p>-How does a company know what products it needs?</p> <p>-What is involved in keeping track of inventory?</p> <p>-How does a company</p>	<p><b>Distribution Warehouse Network:</b></p> <ul style="list-style-type: none"> <li>-Cost Estimate</li> <li>-Distribution Center</li> <li>-Distribution Channel</li> <li>-Geographically Dispersed</li> <li>-Hub Warehouse</li> <li>-Hub and Spoke Warehouse Network</li> <li>-Inbound Logistics</li> <li>-Labor</li> <li>-Labor Rates</li> <li>--Lead Time</li> <li>-Outbound Logistics</li> <li>-Premium Transportation</li> <li>-Spoke Warehouse</li> <li>-Transportation</li> <li>-Warehouse</li> <li>-Warehouse Network</li> </ul> <p><b>Inventory Management:</b></p> <ul style="list-style-type: none"> <li>-Economic Order Quantity (EOQ)</li> <li>-Finished Goods</li> <li>-Finished Goods Inventory</li> </ul>	<p>-Understand the differences between the various transportation modes.</p> <p>-Explain variables that impact distribution locations.</p> <p>-Research the key points of logistical planning for effective distribution site selection.</p> <p>-Present an illustration of your proposed warehouse network.</p> <p>-Calculate the costs associated for facility space, transportation, and labor.</p> <p>-Research a selected company's inventory management strategy.</p> <p>-Identify the internal operations of an inventory management system.</p> <p>-Analyze control</p>	<p>-Students will be assessed on their participation in daily discussions on relevant matters to the topic areas.</p> <p>-Students will be assessed through quizzes on the subject matter as well as unit examinations.</p> <p>-Students will be evaluated on relevant tasks in relation to job performance.</p> <p>-Students will be assessed on their Network Illustration and Cost Estimate.</p> <p>-Students will be assessed on their participation in daily discussions on relevant matters to the topic areas.</p>
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	<p>get those products?</p> <p>-Who orders the products, and how do they order them?</p> <p>-What variables directly affect the efficiency of an inventory management system?</p> <p>-How can we revise/improve our inventory management system based on feedback?</p> <p>-How can an effective warehouse network help my company?</p> <p>-How can I maintain a stable inventory level to manufacture a product?</p>	<ul style="list-style-type: none"> <li>-Inventory Management</li> <li>-Inventory Ordering System</li> <li>-Inventory Planning</li> <li>-Inventory Policies</li> <li>-Inventory Shrinkage</li> <li>-Lead Time</li> <li>-Mean Absolute Deviation (MAD)</li> <li>-Physical Inventory</li> <li>-Reorder Point</li> <li>-Reorder Quantity</li> <li>-Safety Stock</li> <li>-Stock Keeping Unit (SKU)</li> <li>-Usage</li> <li>-Work in Process (WIP)</li> </ul>	<p>procedures for effective inventory management.</p> <ul style="list-style-type: none"> <li>-Use of spreadsheet software to evaluate inventory.</li> <li>-Knowledge of Excel functions and formulas.</li> <li>-Create a recommendation for proper inventory levels which are based on set data.</li> </ul>	<ul style="list-style-type: none"> <li>-Students will be assessed through quizzes on the subject matter as well as unit examinations.</li> <li>-Students will be evaluated on relevant tasks in relation to job performance.</li> <li>-Students will be assessed on their Inventory Factor Values Excel Spreadsheet.</li> </ul>
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**Course: Logistics and Supply Chain Management II      S2    Grade 10      Unit: Introduction to Six Sigma and Lean Manufacturing/Business Logistics and Transportation**

STANDARDS	ESSENTIAL QUESTIONS	CONTENT	SKILLS	ASSESSMENTS
<p>9.3.12.TD-WAR.3</p> <p>9.3.12.TD-SYS.3</p>	<p>-What types of manufacturing strategies are there and how are</p>	<p><b>LEAN Manufacturing:</b></p> <ul style="list-style-type: none"> <li>-5S Visual Management</li> <li>-Continuous</li> </ul>	<p>-Explain the differences between the four manufacturing strategies.</p>	<p>-Students will be assessed on their participation in daily</p>

<p>9.3.12.TD-HSE.1 9.3.12.TD-HSE.2</p>	<p>they used in business? -What does the term LEAN mean for businesses? -How are businesses impacted by the use of LEAN practices? -What three elements of LEAN need to be working in unison? -What are some of the common elements of LEAN manufacturing? -What are some of the benefits of waste reduction? -What is the concept of 5-S? -How can I develop a training lesson that highlights the key elements of Lean Manufacturing?</p> <p>-What is a spend analysis? -How can I identify how much money is being spent in each MRO category?</p>	<p><b>Improvement</b> -Defect -External Customer -Internal Customer -Kaizen -Kanban -Keiretsu -Lean Layout -Lean Manufacturing -Non-Value-Added Process Step -Poka-Yoke -Process Map -Setup -Setup Time -Throughput -Value Added Process Step -Value Stream Mapping -Waste</p> <p><b>Sourcing Category Management:</b> -Bid -Category Management -Competitive Bidding Process</p>	<p>-Explain the concept of LEAN manufacturing. -Understand the impact of LEAN practices to increase efficiency. -Explain the added value of LEAN manufacturing. -Identify and understand the elements of LEAN manufacturing. -Explain the benefits of waste reductions for a company. -Understand the systematic process of S-5 as an organization of the workplace. -Create an introductory training lesson about Lean Manufacturing.</p> <p>-Define the key terms and content and use them effectively in your presentation.  -Develop the results of the spend analysis using</p>	<p>discussions on relevant matters to the topic areas.</p> <p>-Students will be assessed through quizzes on the subject matter as well as unit examinations.</p> <p>-Students will be evaluated on relevant tasks in relation to job performance.</p> <p>-Students will be assessed on their LEAN Manufacturing Training Lesson.</p> <p>-Students will be assessed on their participation in daily discussions on relevant</p>
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	<ul style="list-style-type: none"> <li>-How can I figure out how much money is being spent with each individual supplier?</li> <li>-How can I reduce sourcing costs using a spend analysis?</li> <li>-What issues can I identify by observing irregularities in the data?</li> </ul> <ul style="list-style-type: none"> <li>-What is Six Sigma?</li> <li>-What is the foundation of Six Sigma?</li> <li>-Who are the people involved in Six Sigma?</li> <li>-What are the various types of Six Sigma certifications?</li> <li>-How are these certifications different in their knowledge and expertise?</li> <li>-How does preventative</li> </ul>	<ul style="list-style-type: none"> <li>-Maintenance, Repair and Operating (MRO) Items</li> <li>-Pivot Table</li> <li>-Purchase Order</li> <li>-Spend Analysis</li> <li>-Spend Management</li> <li>-Spend Taxonomy</li> <li>-Strategic Sourcing</li> <li>-Supplier Rationalization</li> <li>-Vlookup</li> </ul> <p><b>Six Sigma:</b></p> <ul style="list-style-type: none"> <li>-Appraisal Costs</li> <li>-Benchmarking</li> <li>-Cause &amp; Effect Diagrams</li> <li>-Check Sheets</li> <li>-Control Charts</li> <li>-Defects</li> <li>-Defects per million opportunities (DPMO)</li> <li>-Define, Measure, Analyze, Design, Verify (DMADV)</li> </ul>	<p>a summary report.</p> <ul style="list-style-type: none"> <li>-Explain Six Sigma and its importance to organizations.</li> <li>-Understand the foundational concepts of Six Sigma.</li> <li>-Compare DMADV and DMAIC methodologies.</li> <li>-Research the founders of Six Sigma.</li> <li>-Compare and define the different color belts of Six Sigma.</li> <li>-Explain the requirements needed for</li> </ul>	<p>matters to the topic areas.</p> <ul style="list-style-type: none"> <li>-Students will be assessed through quizzes on the subject matter as well as unit examinations.</li> <li>-Students will be evaluated on relevant tasks in relation to job performance.</li> <li>-Students will be assessed on their spend analysis report.</li> <li>-Students will be assessed on their participation in daily discussions on relevant matters to the topic areas.</li> <li>-Students will be assessed through quizzes on the subject matter as well as unit examinations.</li> </ul>
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	<p>cost provide quality for an organization?          -How does poor quality impact an organization?          -How can I explain the basic principles of Six Sigma to others?</p>	<ul style="list-style-type: none"> <li>-Define, Measure, Analyze, Improve, Control (DMAIC)</li> <li>-Flow Diagram (also known as a Flowchart)</li> <li>-Histograms</li> <li>-Pareto Chart</li> <li>-Prevention Costs</li> <li>-Quality</li> <li>-Scatter Diagrams</li> <li>-Six Sigma</li> <li>-Standard Deviation</li> <li>-Statistical Process Control (SPC)</li> <li>-Total Quality Management (TQM)</li> <li>-Voice of the Customer (VOC)</li> </ul>	<p>each color belt.          -Explain why preventative cost impacts quality problems.          -Deliver a presentation about the Six Sigma process.</p>	<p>-Students will be evaluated on relevant tasks in relation to job performance.</p> <p>-Student assessment on Guest Lecture Presentation about the Six Sigma Process</p>
	<p>-How should a cargo aircraft be safely loaded?          -Which stakeholders are affected by aircraft cargo loading methods?          -What variables directly affect the efficiency of an aircraft cargo freight loading procedure?          -How will our proposed</p>	<p><b>Transportation Freight Loading:</b></p> <ul style="list-style-type: none"> <li>-Arm</li> <li>-Center of Gravity</li> <li>-Dangerous Goods</li> <li>-Datum</li> <li>-Department of Transportation (DOT)</li> <li>-Federal Air Regulations (FAR)</li> </ul>	<p>-List the most important safety rules to follow when loading an aircraft.          -Define the key terms and content and use them effectively in your presentation.          -Create a training document that outlines the procedure to load cargo onto aircraft.</p>	<p>-Students will be assessed on their participation in daily discussions on relevant matters to the topic areas.</p> <p>-Students will be assessed through quizzes on the subject matter as</p>

	<p>procedure for aircraft cargo freight loading methods meet the needs of various stakeholders?</p> <p>-How can we improve our aircraft cargo freight loading procedure plan to meet the needs of the various stakeholders?</p> <p>-How will we train our cargo loading personnel on the final aircraft cargo freight loading procedure?</p>	<ul style="list-style-type: none"> <li>-Federal Aviation Administration (FAA)</li> <li>-Ground Operations</li> <li>-Hazmat</li> <li>-International Air Transport Association (IATA)</li> <li>-Mass</li> <li>-Maximum Landing Weight</li> <li>-Maximum Structural Payload (MSP)</li> <li>-Maximum Take-off Weight</li> <li>-Maximum Taxi Weight</li> <li>-Moment</li> <li>-Pitch</li> <li>-Roll</li> <li>-Unit Loading Device (ULD)</li> <li>-Weight</li> <li>-Weight and Balance</li> <li>-Yaw</li> </ul>		<p>well as unit examinations.</p> <p>-Students will be evaluated on relevant tasks in relation to job performance.</p> <p>-Student assessment on the training manual.</p>
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**VI. RESOURCES AND SUPPLEMENTAL MATERIALS**

**Textbooks & Resources**

McLaury, W. & Spiegle, E. (2017) *Fundamentals of Supply Chain Management. 2nd edition*, Dubuque, IA: Kendall Hunt Publishing

Reddy, Leo. (2022) *Supply Chain Logistics: Foundational Knowledge for Frontline Workers. 4.0 edition*, Alexandria, VA: Manufacturing Skills Standards Council

Reddy, Leo. (2022) *Supply Chain Logistics: Mid-Level Technical Knowledge for Frontline Workers. 4.0 edition*, Alexandria, VA: Manufacturing Skills Standards Council

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Bowersox, D & Closs, D. (2020) *Supply Chain Logistics Management. 5th edition*, New York, NY: McGraw Hill Education

Bozarth, C. & Handfield, R. (2019) *Introduction to Operations and Supply Chain Management. 5th edition*, New York, NY: Pearson Education, Inc.

Niemeyer, R. (2013) *Fundamentals of Warehousing & Distribution-Volume 3: Warehouse & Personal Performance*, Charlotte, NC: MHI

Supply Chain Management  
Syllabus  
Grade 11

A. Supply Chain Environmental Management/Green Purchasing	(11th)	S1 B3
B. Business Analytics	(11th)	S1 B2
C. Logistics Service Management	(11th)	S2 B2

**a. Supply Chain Environmental Management/Green Purchasing (11th)**

After building a comprehensive knowledge of green supply chain and purchasing techniques, this course will allow students to participate in several applied research projects. Projects will include designing green supply chain and procurement systems and products integrated with economic, environmental, social, and ethical considerations and corporate reporting. Topics include supply chain management and procurement processes, understanding sustainability concepts, source and landfill archeology, and environmental legislation.

**b. Business Analytics (11th)**

This course provides an introduction to the field of business analytics, which is the study of the extensive use of business data, analytical tools, exploratory and predictive skills, and fact-based management to drive decisions and actions. Students will build competency in the skills needed to understand data-driven business decisions including datasets, forming predictions and inferences from data, and making optimal decisions based on datum.

**c. Service Management (11th)**

Students in service management will study opportunities in services companies, which include hospitality, education, entertainment, and healthcare, among others. Students will explore the nature of services and the qualities that precede excellence in service. Students will study the theory and practical aspects of operations.

**IV. PROJECTS**

- a. Production and Capacity Planning
- b. Ethical Sourcing and Sustainability
- c. Sales and Operations Planning
- d. Collaborative Planning



- e. Service Supply Chain
- f. Logistics Service Provider Agreement
- g. International Trade/Importing

## **V. STANDARDS COVERED**

- *9.3.12.TD.1 Describe the nature and scope of the Transportation, Distribution & Logistics Career Cluster and the role of transportation, distribution and logistics in society and the economy.*
- *9.3.12.TD.4 Identify governmental policies and procedures for transportation, distribution and logistics facilities.*
- *9.3.12.TD-HSE.2 Develop solutions to improve performance of health, safety and environmental management services.*
- *9.3.12.TD-SAL.2 Demonstrate the use of sales and ongoing service of products and services that are transportation related to promote development of existing and future clients and customers.*
- *Career Ready Practices:*
  - *Act as a responsible and contributing community member and employee.*
  - *Attend to financial well-being.*
  - *Consider the environmental, social and economic impacts of decisions.*
  - *Demonstrate creativity and innovation.*
  - *Utilize critical thinking to make sense of problems and persevere in solving them.*
  - *Model integrity, ethical leadership and effective management.*
  - *Plan education and career paths aligned to personal goals.*
  - *Use technology to enhance productivity, increase collaboration and communicate effectively.*
  - *Work productively in teams while using cultural/global competence.*
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- *RST.9-10.1. Accurately cite strong and thorough evidence from the text to support analysis of science and technical texts, attending to precise details for explanations or descriptions.*
- *RST.9-10.2. Determine the central ideas, themes, or conclusions of a text; trace the text’s explanation or depiction of a complex process, phenomenon, or concept; provide an accurate summary of the text.*
- *RST.9-10.4. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 9-10 texts and topics.*

- *WHST.9-10.4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.*
- *WHST.9-10.6. Use technology, including the Internet, to produce, share, and update writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically.*
- *WHST.9-10.7. Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.*

**Course: Global Logistics and Supply Chain Management III S1      Grade 11      Unit: Green Purchasing and Business Analytics**

STANDARDS	ESSENTIAL QUESTIONS	CONTENT	SKILLS	ASSESSMENTS
RST.11-12.1 RST.11-12.2 RST.11-12.4  WHST.11-12.4 WHST.11-12.6 WHST.11-12.7  CRP10 CRP11 CRP12	-How can I efficiently schedule manufacturing sets to meet my company's sales projections? -What is Master Production Scheduling (MPS) and how do you use this tool to plan the finished products that you will need to support your customer demands? -What information do you need to create the	<b>Production and Capacity Planning:</b> -Aggregate Production Planning -Beginning Inventory -Bill-of-Resources Capacity -Capacity Constraint -Capacity Management -Capacity Planning -Demand Planning -Finished Good -Forecast -Master Production	-Define the content key terms and concepts. -Describe the role production planning plays in a company's sales goals. -Compare and contrast between capacity and demand planning. -Describe what is a Master Production Schedule.	-Students will be assessed on their participation in daily discussions on relevant matters to the topic areas.  -Students will be assessed through quizzes on the subject matter as well as unit examinations.  -Students will

	<p>Master Production Schedule?</p> <ul style="list-style-type: none"> <li>-What is Capacity Planning and how is it used to validate the feasibility of the MPS?</li> <li>-Do you have any capacity constraints?</li> <li>-What can you do to resolve the capacity imbalances (i.e., shortages or excesses)?</li> </ul> <ul style="list-style-type: none"> <li>-How can I describe the best practices on ethical sourcing and sustainability?</li> <li>-Do you have a thorough understanding of ethical sourcing and sustainability?</li> <li>-What are the ethical sourcing and sustainability issues in the mobile phone industry?</li> <li>-What are conflict minerals?</li> </ul>	<p>Schedule (MPS)</p> <ul style="list-style-type: none"> <li>-Projected Available Balance</li> <li>-Rough-cut Capacity Planning</li> <li>-Safety Stock</li> <li>-Time Bucket</li> <li>-Time Fence</li> </ul> <p><b>Ethical Sourcing and Sustainability:</b></p> <ul style="list-style-type: none"> <li>-Boycott</li> <li>-Bribery</li> <li>-Carbon Emissions</li> <li>-Carbon Footprint</li> <li>-Conflict Minerals</li> <li>-Corporate Social Responsibility</li> <li>-Corruption</li> <li>-Environmental Damage</li> <li>-Environmental Impact</li> <li>-Ethical Sourcing</li> <li>-Forced Labor</li> <li>-Globalization</li> </ul>	<ul style="list-style-type: none"> <li>-Define the content key terms and concepts.</li> <li>-Describe the concepts of ethical sourcing and sustainability.</li> <li>-Understand the global issue of human trafficking.</li> <li>-Describe what a conflict mineral is and how it can affect business globally.</li> <li>-Create a TED talk describing best practices for ethical sourcing and sustainability.</li> </ul>	<p>satisfactorily participate in observation skills exercises.</p> <ul style="list-style-type: none"> <li>-Students will be assessed on their ability to collect information and compile into an MPS.</li> <li>-Students will complete the Master Production Schedule.</li> <li>-Students will be assessed on their participation in daily discussions on relevant matters to the topic areas.</li> <li>-Students will be assessed through quizzes on the subject matter as well as unit examinations.</li> <li>-Students will satisfactorily participate</li> </ul>
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	<ul style="list-style-type: none"> <li>-How do conflict minerals create an ethical sourcing issue in the mobile phone industry?</li> <li>-What are unfair labor practices and conditions?</li> <li>-How do unfair labor practices create an ethical sourcing issue for the company?</li> </ul> <ul style="list-style-type: none"> <li>-What steps, tools, and data are needed to operate a successful Sales and Operations Planning process manual?</li> <li>-What are the S&amp;OP process steps?</li> <li>-What do you consider the most important elements of S&amp;OP?</li> <li>-What are some of the challenges companies face when trying to implement S&amp;OP?</li> <li>-What benefits does S&amp;OP provide?</li> </ul>	<ul style="list-style-type: none"> <li>-Human Rights</li> <li>-Human Trafficking</li> <li>-Pollution</li> <li>-Resource Depletion</li> <li>-Social Impact</li> <li>-Supplier Code of Conduct</li> <li>-Sustainability</li> <li>-TED Talk</li> <li>-Utilitarianism</li> </ul> <p><b>Sales and Operations Planning:</b></p> <ul style="list-style-type: none"> <li>-Aggregate Planning</li> <li>-Backlog</li> <li>-Backorder</li> <li>-Customer Service</li> <li>-Customer Service Level</li> <li>-Demand Planning</li> <li>-Executive S&amp;OP</li> <li>-Inventory Investments</li> <li>-Pre-S&amp;OP Meeting</li> <li>-Product Family</li> <li>-Production Capability</li> <li>-Sales and Operations Planning (S&amp;OP)</li> <li>-Stockout</li> <li>-Supply Planning</li> </ul>	<ul style="list-style-type: none"> <li>-Define the content key terms and concepts.</li> <li>-Describe the concepts of</li> <li>-Make a process manual about sales and operations planning.</li> </ul>	<p>in observation skills exercises.</p> <ul style="list-style-type: none"> <li>-Students will be assessed on their ability to create a visual presentation.</li> <li>-Students will complete their studies of this unit by creating a TED Talk.</li> <li>-Students will be assessed on their participation in daily discussions on relevant matters to the topic areas.</li> <li>-Students will be assessed through quizzes on the subject matter as well as unit examinations.</li> <li>-Students will satisfactorily participate in observation skills exercises.</li> </ul>
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	<ul style="list-style-type: none"> <li>-What are the major business functions involved in the S&amp;OP process?</li> <li>-What level of data do you need to effectively run the S&amp;OP process?</li> <li>-Are there any potential downsides to S&amp;OP?</li> </ul> <ul style="list-style-type: none"> <li>-What is CPFR?</li> <li>-How can I best describe the importance and value of collaborative planning?</li> <li>-What do you consider the most important elements of CPFR?</li> <li>-What are some of the challenges companies face when trying to establish CPFR?</li> <li>-Is CPFR the right approach to use with all suppliers?</li> <li>-How does CPFR provide value for the buyer?</li> <li>-How does CPFR</li> </ul>	<p><b>Collaborative Planning:</b></p> <ul style="list-style-type: none"> <li>-Bullwhip Effect</li> <li>-Collaborative Planning, Forecasting, and Replenishment (CPFR)</li> <li>-Cycle Times</li> <li>-Electronic Data Interchange (EDI)</li> <li>-Escalation Procedures</li> <li>-Exception Management</li> <li>-Order-to-Cash</li> <li>-Planning Horizon</li> <li>-Point of Sale (POS)</li> <li>-Vendor Managed Inventory (VMI)</li> </ul>	<ul style="list-style-type: none"> <li>-Define the content key terms and concepts.</li> <li>-Describe the concept of CPFR.</li> <li>-What is the bullwhip effect, and how can it affect forecasting?</li> <li>-Compare and contrast the CPFR model to other models we have discussed.</li> <li>-Participate in a panel discussion about the advantages and disadvantages of collaborative planning.</li> </ul>	<ul style="list-style-type: none"> <li>-Students will be assessed on their ability to create a S&amp;OP Process Manual.</li> <li>-Students will create a Process Manual for S&amp;OP.</li> <li>-Students will be assessed on their participation in daily discussions on relevant matters to the topic areas.</li> <li>-Students will be assessed through quizzes on the subject matter as well as unit examinations.</li> <li>-Students will satisfactorily participate in observation skills exercises.</li> <li>-Students will be assessed on their ability</li> </ul>
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	<p>provide value for the supplier?</p> <p>How can CPFR help to reduce costs and increase the competitiveness of the buyer?</p> <p>Are there any potential downsides to CPFR?</p>			<p>to constructively participate in a panel discussion.</p> <p>-Students will participate in a panel discussion that will deal with key terms and concepts learned.</p>
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**Course: Global Logistics and Supply Chain Management III S2    Grade 11    Unit: Logistics Service Management**

STANDARDS	ESSENTIAL QUESTIONS	CONTENT	SKILLS	ASSESSMENTS
<p>9.3.12.TD-SAL.1</p> <p>9.3.12.TD-SAL.2</p>	<p>-Can workflow audits help identify service operation recommendations?</p> <p>-Do you have a thorough understanding of a service supply chain?</p> <p>-Do you have a thorough understanding of an audit of workflow analysis?</p> <p>-Have you researched</p>	<p><b>Service Supply Chain:</b></p> <p>-Balking</p> <p>-Bottleneck</p> <p>-Cross-training</p> <p>-Customer Interaction</p> <p>-Explicit Services</p> <p>-Facilitating Goods</p> <p>-Failure Point</p> <p>-Franchising</p> <p>-Implicit Services</p> <p>-Intangible</p> <p>-Queue</p>	<p>-Define the content key terms and concepts.</p> <p>-Describe the benefits of a workflow audit.</p> <p>-Understand the concept of cross training employees in a fast paced environment.</p> <p>-Describe the advantages and disadvantages to franchising.</p> <p>-Create a thorough</p>	<p>-Students will be assessed on their participation in daily discussions on relevant matters to the topic areas.</p> <p>-Students will be assessed through quizzes on the subject matter as well as unit examinations.</p>

	<p>your selected service operations?          -Have you created a Workflow Map of your selected service operations?          -What are the customer interaction points in your selected service operations?          -Are there any potential failure points in your selected service operations?          -Have you researched potential solutions to your identified failure points?</p> <p>-How can I negotiate a better deal with my service providers?          -Do you have a thorough understanding of third-party logistics?          -Do you have a thorough understanding of negotiations?          -Do you understand what a Joint Term Sheet is and</p>	<ul style="list-style-type: none"> <li>-Queue Management</li> <li>-Queuing System</li> <li>-Reneging</li> <li>-Service Blueprint</li> <li>-Service Capacity</li> <li>-Service Time</li> <li>-Workflow</li> <li>-Waiting Time</li> <li>-Workflow Analysis</li> <li>-Workflow Map (also known as a Service Blueprint)</li> </ul> <p><b>Logistics Service Provider Agreement:</b></p> <ul style="list-style-type: none"> <li>-2/10 net 30 Payment Terms</li> <li>-Closing Condition</li> <li>-Confidentiality</li> <li>-Considerations</li> <li>-Exclusivity</li> <li>-Expense</li> <li>-Inbound Logistics</li> <li>-Negotiation Walk Away</li> </ul>	<p>analysis of a workflow audit.</p> <p>-Define the content key terms and concepts.          -Describe the concept of a SLA.          -Understand the concept of a LSPA and the terms of those agreements.          -Describe the advantages and disadvantages of a 3PL provider.          -Describe the processes involved in creating and</p>	<p>-Students will satisfactorily participate in observation skills exercises.</p> <p>-Students will be assessed on their ability to collect information and compile into an Workflow audit.</p> <p>-Students will complete a Workflow Audit and present their findings.</p> <p>-Students will be assessed on their participation in daily discussions on relevant matters to the topic areas.</p> <p>-Students will be assessed through quizzes on the subject matter as well as unit</p>
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	<p>how it is used?</p> <ul style="list-style-type: none"> <li>-Do you understand what logistics services your company would like to outsource?</li> <li>-Do you understand what you must have versus what you would like to have?</li> <li>-Do you know what you are willing to pay for each logistics service?</li> <li>-Do you understand what logistics services your company offers?</li> <li>-Do you know what you are willing to charge for each logistics service?</li> </ul> <p>-How can I best illustrate the key elements of international trade compliance?</p> <p>-Do you have a thorough understanding of</p>	<ul style="list-style-type: none"> <li>-Order fulfillment</li> <li>-Order Packing</li> <li>-Order Picking</li> <li>-Outbound Logistics</li> <li>-Service Level Agreement (SLA)</li> <li>-Term Sheet</li> <li>-Third Party Logistics (3PL)</li> </ul> <p><b>International Trade and Importing:</b></p> <ul style="list-style-type: none"> <li>-Bill of Lading</li> <li>-Commercial Invoice</li> <li>-Container Security Initiative (CSI)</li> </ul>	<p>shipping an order.</p> <ul style="list-style-type: none"> <li>-Evaluate your performance in a mock negotiation for services.</li> </ul> <p>-Define the content key terms and concepts.</p> <p>-Describe the concepts of importing and exporting goods and services.</p> <p>-Describe the benefits of</p>	<p>examinations.</p> <ul style="list-style-type: none"> <li>-Students will satisfactorily participate in observation skills exercises.</li> <li>-Students will be assessed on their ability to collect information and compile it into an NPA.</li> <li>-Students will complete a Negotiation of Provider Agreement.</li> <li>-Students will be assessed on their participation in daily discussions on relevant matters to the topic areas.</li> </ul>
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	<p>international trade management, trade compliance, and importing products into the US?</p> <p>-Which key concepts about international trade management, trade compliance, and the importing products into the US will you include in your training?</p> <p>-How will you present the key concepts so that your trainees will understand them?</p> <p>-How will you use the assessment to reinforce trainees' learning?</p> <p>-Will you include a debriefing of the assessment to ensure trainees connected their experience to Lean concepts?</p>	<ul style="list-style-type: none"> <li>-Country of Origin</li> <li>-Customs Broker</li> <li>-Exports</li> <li>-Foreign Trade Zone (FTZ)</li> <li>-Global Trade Management</li> <li>-Harmonized Tariff Schedule of the United States (HTS)</li> <li>-Imports</li> <li>-International Freight Forwarder</li> <li>-International Trade Compliance</li> <li>-Importer of Record</li> <li>-Tariff</li> </ul>	<p>international trade to the global economy.</p> <p>-Create a training video and assessment test highlighting key areas of international trade.</p>	<ul style="list-style-type: none"> <li>-Students will be assessed through quizzes on the subject matter as well as unit examinations.</li> <li>-Students will satisfactorily participate in observation skills exercises.</li> <li>-Students will be assessed on their ability to collect information and compile it into their training video presentation.</li> <li>-Students will create a Training Video presentation.</li> </ul>
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**VI. RESOURCES AND SUPPLEMENTAL MATERIALS**

**Textbooks & Resources**

McLaury, W. & Spiegle, E. (2017) *Fundamentals of Supply Chain Management. 2nd edition*, Dubuque, IA: Kendall Hunt Publishing

Reddy, Leo. (2022) *Supply Chain Logistics: Foundational Knowledge for Frontline Workers. 4.0 edition*, Alexandria, VA: Manufacturing Skills Standards Council

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Niemeyer, R. (2013) *Fundamentals of Warehousing & Distribution-Volume 3: Warehouse & Personal Performance*, Charlotte, NC: MHI

Supply Chain Management  
Syllabus  
Grade 12

A. Supply Chain Risk and Disruption Management	(12th)	S1 B3
B. Business Intelligence for Supply Chain	(12th)	S1 B4
C. Strategic Supply Chain Management	(12th)	S2 B3

D. Independent Studies in Supply Chain Management

(12th) S2 B4

**a. Supply Chain Risk and Disruption Management (12th)**

Provides a broad overview of key supply chain security areas and issues in the context of homeland security. Explores the need to protect the supply chain and maintain business continuity in the wake of high-consequence, disruptive events. Students will learn to assess threats that could lead to adverse events, evaluate control alternatives and create contingency plans.

**b. Business Intelligence for Supply Chain (12th)**

This class is an overview of business intelligence in the field of supply chain management and marketing. The content addresses how to leverage business intelligence systems to define KPIs, sharpen the accuracy of forecasting and planning, track business activities, and deliver dashboards, scorecards, strategic reporting, and operational/real-time reporting to enhance decision making for supply chain and marketing.

**c. Strategic Supply Chain Management (12th)**

This course is the capstone experience for students majoring in Supply Chain and Logistics. Students will utilize software to provide real-world experience in managing supply chains and developing competitive advantage through the effective development and maintenance of logistical systems.

**d. Independent Studies in Supply Chain Management (12th)**

Students will investigate new areas and developments in theory, research and practice in Supply Chain Management. Specialized topics will vary each marking period. Course activities will include in depth activity of current topics, preparation of case analyses, research papers, and/or projects.

#### **IV. PROJECTS**

- a. Supply Chain Disruption
- b. Supplier Relationship Management
- c. Supply Chain Optimization
- d. Coronavirus Vaccine Distribution
- e. e-Commerce
- f. Reverse Logistics

#### **V. STANDARDS COVERED**

- *9.3.12.TD.2 Describe the application and use of new and emerging advanced techniques to provide solutions for transportation, distribution and logistics problems.*
- *9.3.12.TD.3 Describe the key operational activities required of successful transportation, distribution and logistics facilities.*
- *9.3.12.TD.4 Identify governmental policies and procedures for transportation, distribution and logistics facilities.*
  
- *Career Ready Practices:*
  - *Act as a responsible and contributing community member and employee.*
  - *Attend to financial well-being.*
  - *Consider the environmental, social and economic impacts of decisions.*
  - *Demonstrate creativity and innovation.*
  - *Utilize critical thinking to make sense of problems and persevere in solving them.*
  - *Model integrity, ethical leadership and effective management.*
  - *Plan education and career paths aligned to personal goals.*
  - *Use technology to enhance productivity, increase collaboration and communicate effectively.*
  - *Work productively in teams while using cultural/global competence.*

- *RST.9-10.1. Accurately cite strong and thorough evidence from the text to support analysis of science and technical texts, attending to precise details for explanations or descriptions.*
- *RST.9-10.2. Determine the central ideas, themes, or conclusions of a text; trace the text’s explanation or depiction of a complex process, phenomenon, or concept; provide an accurate summary of the text.*
- *RST.9-10.4. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 9-10 texts and topics.*
- *WHST.9-10.4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.*
- *WHST.9-10.6. Use technology, including the Internet, to produce, share, and update writing products, taking advantage of technology’s capacity to link to other information and to display information flexibly and dynamically.*
- *WHST.9-10.7. Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.*

**Course: Global Logistics and Supply Chain Management IV S1      Grade 12      Unit: Supply Chain and Disruption Management/Business Intelligence for Supply Chain**

STANDARDS	ESSENTIAL QUESTIONS	CONTENT	SKILLS	ASSESSMENTS
9.3.12.TD.6	<ul style="list-style-type: none"> <li>-How can we prepare for a product shortage?</li> <li>-What factors are contributing to the disruption in the chocolate supply chain?</li> <li>-What additional information do we need about cocoa beans and the chocolate supply chain?</li> </ul>	<p><b>Supply Chain Disruption:</b></p> <ul style="list-style-type: none"> <li>-Commodity</li> <li>-Disruption</li> <li>-Emergency Contingency Plan</li> <li>-Impact</li> <li>-Logistics</li> <li>-Probability</li> <li>-Procurement</li> <li>-Purchasing</li> </ul>	<ul style="list-style-type: none"> <li>-Define the content key terms and concepts.</li> <li>-Understand the importance of an emergency contingency plan in a global economy.</li> <li>-List the ingredients needed in the supply chain of a chocolate candy bar.</li> <li>-Compare and contrast the merits of a strategic</li> </ul>	<ul style="list-style-type: none"> <li>-Students will be assessed on their participation in daily discussions on relevant matters to the topic areas.</li> <li>-Students will be assessed through quizzes on the subject matter as well as unit</li> </ul>

	<ul style="list-style-type: none"> <li>-Which variables directly affect the viability of sources for cocoa beans?</li> <li>-Which stakeholders are affected by the disruption in the chocolate supply chain?</li> <li>-What steps or actions can we take to mitigate the impact of the shortage?</li> <li>-How does our proposed plan for mitigating the shortage meet the needs of various stakeholders?</li> <li>-What key points should be covered in our broadcast?</li> </ul> <ul style="list-style-type: none"> <li>-How can I describe the importance of Supplier Relationship Management?</li> <li>-What do you consider the most important elements of SRM?</li> <li>-What are some of the challenges companies face when trying to</li> </ul>	<ul style="list-style-type: none"> <li>-Risk</li> <li>-Risk Management</li> <li>-Risk Mitigation</li> <li>-Shortage</li> <li>-Sourcing</li> <li>-Strategic Plan</li> <li>-Tactical Plan</li> </ul> <p><b>Supplier Relationship Management:</b></p> <ul style="list-style-type: none"> <li>-Change Management</li> <li>-Collaboration</li> <li>-Continuous Improvement</li> <li>-Key Performance Indicators (KPI)</li> <li>-On-Time Delivery</li> <li>-Performance Measure</li> </ul>	<p>and tactical plan.</p> <ul style="list-style-type: none"> <li>-Deliver a recorded news broadcast explaining a product shortage and how to adapt.</li> </ul> <ul style="list-style-type: none"> <li>-Define the content key terms and concepts.</li> <li>-Describe the concept of collaboration and its usefulness in a global market.</li> <li>-List the benefits of a strategic partnership.</li> <li>-Describe some sourcing strategies that could be implemented in this</li> </ul>	<p>examinations.</p> <ul style="list-style-type: none"> <li>-Students will satisfactorily participate in observation skills exercises.</li> <li>-Students will be assessed on their ability to collect information and create a live news broadcast.</li> <li>-Students will complete the Master Production Live News Broadcast-SME Interview</li> <li>-Students will be assessed on their participation in daily discussions on relevant matters to the topic areas.</li> <li>-Students will be assessed through quizzes on the subject matter as</li> </ul>
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	<p>establish SRM?          -Is SRM the right approach to use with all suppliers?          -How does SRM provide value for the buyer?          -How does SRM provide value for the supplier?          -How can SRM help to reduce costs and increase the competitiveness of the buyer?          -Are there any potential downsides to SRM?</p> <p>-How can I show value added and non-value added process steps in a meaningful way?          -Do you have a thorough understanding of value stream mapping and supply chain optimization?          -What are the steps in the company's ordering process?</p>	<p>-Scorecard          -Sourcing Strategy          -Stakeholders          -Strategic Partnership          -Supplier          -Supplier Relationship Management</p> <p><b>Supply Chain Optimization:</b>          -Cross-Functional Team          -Current State          -Cycle Time          -Economies of Scale          -Future State          -Ideal State          -Information Flow          -Lead-Time          -Material Flow          -Non-Value-Added</p>	<p>scenario.</p> <p>-Present a factual viewpoint about the subject of Supplier Relationship Management.</p> <p>-Define the content key terms and concepts.          -Describe the concepts of cycle time and lead time and its effect on the supply chain.          -Describe how the term <i>value added</i> is utilized in logistics.          -List a few wasteful activities that companies can eliminate to become more efficient.          -Create a presentation</p>	<p>well as unit examinations.</p> <p>-Students will satisfactorily participate in observation skills exercises.</p> <p>-Students will be assessed on their ability to collect information and compile it into an outline for the Panel Discussion.</p> <p>-Students will participate in a Panel Discussion.</p> <p>-Students will be assessed on their participation in daily discussions on relevant matters to the topic areas.</p> <p>-Students will be assessed through quizzes on the subject matter as well as unit examinations.</p>
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	<p>-What are the steps in the company's lunch production process?</p> <p>-What are the steps in the company's delivery process?</p> <p>-What are the value-added steps in each of the company's processes?</p> <p>-What are the Non-Value-Added steps in each of the company's processes?</p> <p>-Have you identified any areas where the company could improve?</p> <p>-What new and emerging technologies can help overcome current logistical challenges?</p> <p>-What is e-Commerce?</p> <p>-What is order fulfillment?</p> <p>-What are all the issues facing the STORE?</p> <p>-What are the major new</p>	<p>Activities</p> <ul style="list-style-type: none"> <li>-Stakeholders</li> <li>-Throughput Time</li> <li>-Value-Added Activities</li> <li>-Value Stream Mapping</li> <li>-Waste</li> </ul> <p><b>E-Commerce Distribution Challenges:</b></p> <ul style="list-style-type: none"> <li>-Artificial Intelligence (AI)</li> <li>-Augmented Reality (AR)</li> <li>-Autonomous Guided Vehicles (AGV's)</li> <li>-Autonomous Robots</li> </ul>	<p>mapping value and non-value added steps.</p>         <p>-Define the content key terms and concepts.</p> <p>-Describe the concept of AR and how AI is utilized.</p> <p>-List the various AGV's on the market today.</p> <p>-Describe the concept of IoT and its importance in Distribution Centers.</p> <p>-Compare and contrast the economic shift from</p>	<p>-Students will satisfactorily participate in observation skills exercises.</p> <p>-Students will be assessed on their ability to collect information and compile it into a VSM.</p> <p>-Students will complete their Value Stream Mapping diagram.</p>    <p>-Students will be assessed on their participation in daily discussions on relevant matters to the topic areas.</p> <p>-Students will be assessed through quizzes on the subject matter as</p>
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	<p>innovations and technologies in logistics?</p> <p>-What innovations and/or technologies in logistics will help solve the issues facing the STORE?</p> <p>-Which new innovations and/or technologies in logistics will help to speed up delivery of customer orders?</p> <p>-Which new innovations and/or technologies in logistics will help to reduce errors and customer returns?</p> <p>-Which new innovations and/or technologies in logistics will help to reduce warehouse and/or transportation labor requirements?</p> <p>-Which new innovations and/or technologies in logistics will help to reduce work accidents and/or safety issues?</p> <p>-Are there any downsides or drawbacks to implementing any of</p>	<ul style="list-style-type: none"> <li>-Distribution Center</li> <li>-Distributed inventory</li> <li>Drones</li> <li>-e-Commerce</li> <li>-e-Fulfillment</li> <li>-Internet of Things (IoT)</li> <li>-Machine Learning (ML)</li> <li>-Order fulfillment</li> <li>-Packing</li> <li>-Picking</li> <li>-Shipping</li> </ul>	<p>brick and mortar stores to e-commerce.</p> <p>-Discuss new innovations and technology that can help overcome e-commerce challenges.</p>	<p>well as unit examinations.</p> <p>-Students will satisfactorily participate in observation skills exercises.</p> <p>-Students will be assessed on their ability to collect information and compile it into an outline for a panel discussion.</p> <p>-Students will complete a Panel Discussion about e-commerce challenges.</p>
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	these new innovations and/or technologies in logistics?			
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**Course: Global Logistics and Supply Chain Management IV S2      Grade 12      Unit: Strategic Supply Chain Management/Independent Studies in Supply Chain Management**

STANDARDS	ESSENTIAL QUESTIONS	CONTENT	SKILLS	ASSESSMENTS
9.3.12.TD-OP.3	<ul style="list-style-type: none"> <li>-How can my company deliver vaccines quickly, safely, and securely?</li> <li>-Do you understand distribution concepts in general?</li> <li>Do you understand cold chain distribution (and ultra-low temperature)?</li> <li>Do you understand transportation security?</li> <li>Do you know what time-sensitive means?</li> <li>What is meant by the "domestic market"?</li> <li>What is meant by "international markets"?</li> <li>What are all the modes of transportation?</li> </ul>	<p><b>Coronavirus Vaccine Distribution:</b></p> <ul style="list-style-type: none"> <li>-Cargo Security Measures</li> <li>-Cold Chain Distribution</li> <li>-Distribution</li> <li>-Packaging</li> <li>-Potency</li> <li>-Temperature Excursion</li> <li>-Temperature Monitoring Device (TMD)</li> <li>-Transportation</li> <li>-Transportation Mode</li> <li>Ultra-Low Temperature (ULT)</li> <li>-Vaccine</li> </ul>	<ul style="list-style-type: none"> <li>-Define the content key terms and concepts.</li> <li>-Describe the concept of cold chain distribution.</li> <li>-List the issues transporting items with cold storage.</li> <li>-Describe the security concerns with the early COVID-19 vaccine packages.</li> <li>-Compare and contrast the terms domestic and international markets.</li> <li>-Create a distribution plan that can safely and securely deliver vaccines worldwide.</li> </ul>	<ul style="list-style-type: none"> <li>-Students will be assessed on their participation in daily discussions on relevant matters to the topic areas.</li> <li>-Students will be assessed through quizzes on the subject matter as well as unit examinations.</li> <li>-Students will satisfactorily participate in observation skills exercises.</li> <li>-Students will be</li> </ul>

	<p>Which modes of transportation are the fastest, most secure, most available, etc.? Have you considered how the production output of 1 billion does per month will impact your distribution plan?</p> <p>-How will I create a cost effective returns policy that will satisfy my customers? -Do you have a thorough understanding of reverse logistics? -What aspects of reverse logistics do you need to incorporate into your returns policy? -What aspects of reverse logistics do you need to incorporate into your returns procedure? -What will you do with your product returns? Inspection? Disposal? Resale?</p>	<p><b>Reverse Logistics:</b> -Aftermarket Customer Service -Disposal -Forward Logistics (also known as Traditional Logistics -Omni-channel -Fulfillment -Point of Consumption -Point of Origin -Recycling -Remanufacturing -Refurbishing -Repairing Return Merchandise Authorization (RMA) -Returns Processing Center</p>	<p>-Define the content key terms and concepts. -Describe the concepts of forward and reverse logistics and how it is utilized in today's global market. -List the advantages of a reverse logistics program. -Describe the importance of an aftermarket customer service provider when dealing with reverse logistics. -Formulate a return policy that is customer driven.</p>	<p>assessed on their ability to collect information and compile it into their Vaccine Distribution Plan.</p> <p>-Students will complete their Vaccine Distribution Plan</p> <p>-Students will be assessed on their participation in daily discussions on relevant matters to the topic areas.</p> <p>-Students will be assessed through quizzes on the subject matter as well as unit examinations.</p> <p>-Students will satisfactorily participate in observation skills exercises.</p> <p>-Students will be</p>
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	<p>location affect a company's ability to offer fast delivery service?</p> <p>-What aspects of e-Commerce and order fulfillment do you need to incorporate into your e-Fulfillment strategy?</p> <p>-What other SCM topics are you interested in</p>	<p>-Fulfillment Services Provider</p> <p>-Kitting</p> <p>-Omni-channel</p> <p>-Fulfillment</p> <p>-Order fulfillment</p> <p>-Shipment Cut-off Time</p> <p>-Stockout</p> <p><b>-Independent Case Studies and Topics</b></p>	<p>-Describe the process of kitting and how it can affect order fulfillment.</p> <p>-Describe how stockouts can be avoided.</p> <p>-Design a distribution strategy that meets the needs of today's customer base.</p> <p>-Create a final product deliverable based on the</p>	<p>assessed through quizzes on the subject matter as well as unit examinations.</p> <p>-Students will satisfactorily participate in observation skills exercises.</p> <p>-Students will be assessed on their ability to collect information and compile it into a distribution strategy plan.</p> <p>-Students will complete their E-Fulfillment Distribution Strategy plan.</p> <p>-Presentation of chosen topic deliverable.</p>
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	learning about?	-Students choose from a selection of other Rutgers GLSCM approved projects.	student's chosen topic.	
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**VI. RESOURCES AND SUPPLEMENTAL MATERIALS**

**Textbooks & Resources**

McLaury, W. & Spiegle, E. (2017) *Fundamentals of Supply Chain Management. 2nd edition*, Dubuque, IA: Kendall Hunt Publishing

Reddy, Leo. (2022) *Supply Chain Logistics: Foundational Knowledge for Frontline Workers. 4.0 edition*, Alexandria, VA: Manufacturing Skills Standards Council

Reddy, Leo. (2022) *Supply Chain Logistics: Mid-Level Technical Knowledge for Frontline Workers. 4.0 edition*, Alexandria, VA: Manufacturing Skills Standards Council

Stock, J. & Manrodt, K. (2020) *Supply Chain Management. 1st edition*, New York, NY: McGraw Hill Education

Bowersox, D & Closs, D. (2020) *Supply Chain Logistics Management. 5th edition*, New York, NY: McGraw Hill Education

Bozarth, C. & Handfield, R. (2019) *Introduction to Operations and Supply Chain Management. 5th edition*, New York, NY: Pearson Education, Inc.

Niemeyer, R. (2013) *Fundamentals of Warehousing & Distribution-Volume 3: Warehouse & Personal Performance*, Charlotte, NC:  
MHI

CLA 4.0 (Certified Logistics Associate) ISBN: 978-0-578-39142-7

CLT 4.0 (Certified Logistics Technician) ISBN: 979-8-218-02289-1