

PROGRAM CONCENTRATION: Business and Computer Science
CAREER PATHWAY: Business Logistics Management
COURSE TITLE: Fundamentals of Logistics

Course Description: Supply Chain Management is the first course in the Business Logistics Management program of study and designed to prepare students for employment in the field of business logistics. This course will introduce students to supply chain management, e-commerce, Occupational Safety and Health Administration (OSHA) safety standards, and Environmental Protection Agency (EPA) standards for hazardous materials handling. In addition, Supply Chain Management will provide an overview of the process from receipt of inventory to the delivery of the product to the consumer. Mastery of these standards through project-based learning and leadership development activities of the Career and Technical Student Organizations will help equip students with a competitive edge for the business logistics industry.

BCS-SCM-1. Acquire an understanding of supply chain management. Students will:

- a. Discuss the history and evolution of supply chain management.
- b. Define terms related to the logistics industry, including the economy, logistics, life cycle, supply cycle, forecasting, replenishment, purchasing, e-commerce, supply chain management, inventory management, customer service, quality control, material handling, and information technology.
- c. Categorize stakeholders in a typical supply chain.
- d. Analyze the components of competitive advantage and company viability in relationship to inventory control and profitability as well as challenges facing supply chain management.
- e. Identify the four categories of supply chain management.

Academic Standards:

SSEMI2. The student will explain how the Law of Demand, the Law of Supply, prices, and profits work to determine production and distribution in a market economy.

- a. *Define the Law of Supply and the Law of Demand.*
- b. *Describe the role of buyers and sellers in determining market clearing price.*
- c. *Illustrate on a graph how supply and demand determine equilibrium price and quantity.*
- d. *Explain how prices serve as incentives in a market economy.*

BCS-SCM-2. Demonstrate an understanding of material management for supply chain management. Students will:

- a. Identify the functions involved in material management.
- b. Describe the flow of materials through the supply chain using Little's Law.
- c. Examine inventory management and list the types of inventory including Just-In-Time (JIT), First in First Out (FIFO), Last In First Out (LIFO), works in progress, etc.
- d. Explain the purpose of cycle counting as a technique in inventory management.

Academic Standards:

ELA11C2. The student demonstrates understanding of manuscript form, realizing that different forms of writing require different formats. The student:

- a. Produces writing that conforms to appropriate manuscript requirements.*
- b. Produces legible work that shows accurate spelling and correct use of the conventions of punctuation and capitalization.*
- c. Reflects appropriate format requirements, including pagination, spacing, and margins, and integration of source material with appropriate citations (i.e., in-text citations, use of direct quotations, paraphrase, and summary, and weaving of source and support materials with writer's own words, etc.).*
- d. Includes formal works cited or bibliography when applicable.*

BCS-SCM-3. Demonstrate an understanding of purchasing and distribution for supply chain management. Students will:

- a. Describe the purchasing cycle and the role of the purchasing agent.
- b. Compare and contrast purchase order and request for proposal (RFP).
- c. Construct a model of integrated logistics from purchasing, handling, storing, and distributing of materials.

Academic Standards:

SSEF2. The student will give examples of how rational decision making entails comparing the marginal benefits and the marginal costs of an action.

- b. Explain that rational decisions occur when the marginal benefits of an action equal or exceed the marginal costs.*

BCS-SCM-4. Demonstrate an understanding of the role of information technology in supply chain management. Students will:

- a. Define information technology.
- b. Define terms related to information technology in supply chain management, including Enterprise Resource Planning (ERP) System, Advanced Planning Systems (APS), Bullwhip Effect, Inter-organizational Information Systems (IOIS), and Electronic Data Interchange (EDI).
- c. Assess the importance of information management in an integrated supply chain management environment.
- d. Study and assess the importance of sharing information.
- e. Analyze the "Bullwhip Effect" on supply chain management.
- f. Describe analytical tools related to concepts of decision support systems to include the search for patterns or relationships in customer segment analysis, product life cycle forecasting and what-if analysis regarding long term product or capacity decisions.

Academic Standards:

ELA11W3. The student uses research and technology to support writing. The student

- a. Formulates clear research questions and utilizes appropriate research venues (i.e., library, electronic media, personal interview, survey) to locate and incorporate evidence from primary and secondary sources.*
- b. Uses supporting evidence from multiple sources to develop the main ideas within the body of a researched essay, a composition, or a technical document.*
- c. Synthesizes information from multiple sources and identifies complexities, discrepancies, and different perspectives found in a variety of media (i.e., almanacs, microfiche, news sources, in-depth field studies, speeches, journals, technical documents).*
- d. Integrates quotations and citations into a written text while maintaining the flow of ideas.*

BCS-SCM-5. Demonstrate an understanding of the importance of performance measurement in supply chain management. Students will:

- a. Define terms related to supply chain performance measurements, including Return on Investment (ROI), break-even analysis, cash flow, net profit, throughput, ending inventory, and balanced scorecard.
- b. Compare and contrast various metrics for build to stock (BTS) and build to order (BTO).
- c. Identify similarities between demand flexibility metrics and product development metrics.
- d. Discuss the importance of internal efficiency, demand flexibility, and product development metrics.

Academic Standards:

SSEF2. The student will give examples of how rational decision making entails comparing the marginal benefits and the marginal costs of an action.

- a. Illustrate by means of a production possibilities curve the tradeoffs between two options.*
- b. Explain that rational decisions occur when the marginal benefits of an action equal or exceed the marginal costs.*

BCS-SCM-6. Examine the use and management of Electronic Commerce (EC, e-commerce) in supply chain management. Students will:

- a. Define terms related to e-commerce.
- b. Discuss the benefits of e-commerce to organizations, consumers, and society.
- c. List the limitations of e-commerce.
- d. Identify major types of e-commerce transactions.
- e. Define e-marketplaces and list their components.
- f. Connect the roles of supply chains in e-commerce.
- g. Analyze concepts, characteristics, and models of business to business (B2B) EC.
- h. Compare and contrast legal vs. ethical issues.

Academic Standards:

ELA11LSV2. The student formulates reasoned judgments about written and oral communication in various media genres. The student delivers focused, coherent, and polished presentations that convey a clear and distinct perspective, demonstrate solid reasoning, and combine traditional rhetorical strategies of narration, exposition, persuasion, and description.

- c. Develops and applies criteria for assessing the effectiveness of the presentation, style, and content of films and other forms of electronic communication.*

BCS-SCM-7. Demonstrate an understanding of safety principles as related to supply chain management and OSHA safety standards. Students will:

- a. Identify the fundamental requirements of principal federal safety organizations, including the Occupational Safety and Health Administration (OSHA), the Environmental Protection Agency (EPA), the Nuclear Regulatory Commission (NRC), the U.S. Department of Transportation (DOT), and the Federal Aviation Administration (FAA).
- b. Explain the characteristics of a safe, clean, and orderly work environment, including hazard analysis, correcting hazards, environmental inspections, effective reporting of incidents and accidents, and a well-designed workplace environment.
- c. Categorize emergency safety procedures, such as fire prevention, electrical safety, common safety markings, and fire extinguisher class types and use.

Academic Standards:

SCSh2. Students will use standard safety practices for all classroom laboratory and field investigations.

- a. Follow correct procedures for use of scientific apparatus.*
- b. Demonstrate appropriate techniques in all laboratory situations.*
- c. Follow correct protocol for identifying and reporting safety problems and violations.*

BCS-SCM-8. Develop knowledge related to the identification of hazardous materials according to basic EPA standards. Students will:

- a. Define hazardous materials.
- b. Research and identify types of hazardous materials (hazmat).
- c. List and define available reference information relating to hazmat according to the EPA, including Manufacturer Safety Data Sheets (MSDS), and manufacturers' websites.
- d. Identify personal protective equipment (PPE) for handling hazmat and responding to hazmat situations.

Academic Standards:

SCSh3. Students will identify and investigate problems scientifically.

- a. Suggest reasonable hypotheses for identified problems.*
- b. Develop procedures for solving scientific problems.*
- c. Collect, organize and record appropriate data.*
- d. Graphically compare and analyze data points and/or summary statistics.*

- e. *Develop reasonable conclusions based on data collected.*
- f. *Evaluate whether conclusions are reasonable by reviewing the process and checking against other available information.*

BCS-SCM-9. Integrate general knowledge of the resources available on the worldwide web and in technical publications to create a case study analysis, a research paper, and presentation. Students will:

- a. Analyze current case studies related to supply chain management.
- b. Identify sources of professional publication related to supply chain management.
- c. Complete a research paper and presentation on a selected case study.

Academic Standards:

ELA11W1. The student produces writing that establishes an appropriate organizational structure, sets a context and engages the reader, maintains a coherent focus throughout, and signals a satisfying closure. The student

- a. *Establishes a clear, distinctive, and coherent thesis or perspective and maintains a consistent tone and focus throughout.*
- b. *Selects a focus, structure, and point of view relevant to the purpose, genre expectations, audience, length, and format requirements.*
- c. *Constructs arguable topic sentences, when applicable, to guide unified paragraphs.*
- d. *Uses precise language, action verbs, sensory details, appropriate modifiers, and active rather than passive voice.*
- e. *Writes texts of a length appropriate to address the topic or tell the story.*
- f. *Uses traditional structures for conveying information (i.e., chronological order, cause and effect, similarity and difference, and posing and answering a question).*
- g. *Supports statements and claims with anecdotes, descriptions, facts and statistics, and specific examples.*

Reading Across the Curriculum

Reading Standard Comment

After the elementary years, students engage in reading for learning. This process sweeps across all disciplinary domains, extending even to the area of personal learning. Students encounter a variety of informational as well as fictional texts, and they experience text in all genres and modes of discourse. In the study of various disciplines of learning (language arts, mathematics, science, social studies), students must learn through reading the communities of discourse of each of those disciplines. Each subject has its own specific vocabulary, and for students to excel in all subjects, they must learn the specific vocabulary of those subject areas in context.

Beginning with the middle grades years, students begin to self-select reading materials based on personal interests established through classroom learning. Students become curious about science, mathematics, history, and literature as they form contexts for those subjects related to their personal and classroom experiences. As students explore academic areas through reading, they develop favorite subjects and become confident in their verbal discourse about those subjects.

Reading across curriculum content develops both academic and personal interests in students. As students read, they develop both content and contextual vocabulary. They also build good habits for reading, researching, and learning. The Reading Across the Curriculum standard focuses on the academic and personal skills students acquire as they read in all areas of learning.

MRC. Students will enhance reading in all curriculum areas by:

- Reading in all curriculum areas
 - Read a minimum of 25 grade-level appropriate books per year from a variety of subject disciplines and participate in discussions related to curricular learning in all areas.
 - Read both informational and fictional texts in a variety of genres and modes of discourse.
 - Read technical texts related to various subject areas.
- Discussing books
 - Discuss messages and themes from books in all subject areas.
 - Respond to a variety of texts in multiple modes of discourse.
 - Relate messages and themes from one subject area to messages and themes in another area.
 - Evaluate the merit of texts in every subject discipline.
 - Examine author's purpose in writing.
 - Recognize the features of disciplinary texts.
- c. Building vocabulary knowledge
 - Demonstrate an understanding of contextual vocabulary in various subjects.
 - Use content vocabulary in writing and speaking.
 - Explore understanding of new words found in subject area texts.
- d. Establishing context
 - Explore life experiences related to subject area content.

- Discuss in both writing and speaking how certain words are subject area related.
- Determine strategies for finding content and contextual meaning for unknown words.

CTAE Foundation Skills

The Foundation Skills for Career, Technical and Agricultural Education (CTAE) are critical competencies that students pursuing any career pathway should exhibit to be successful. As core standards for all career pathways in all program concentrations, these skills link career, technical and agricultural education to the state's academic performance standards.

The CTAE Foundation Skills are aligned to the foundation of the U. S. Department of Education's 16 Career Clusters. Endorsed by the National Career Technical Education Foundation (NCTEF) and the National Association of State Directors of Career Technical Education Consortium (NASDCTEc), the foundation skills were developed from an analysis of all pathways in the sixteen occupational areas. These standards were identified and validated by a national advisory group of employers, secondary and postsecondary educators, labor associations, and other stakeholders. The Knowledge and Skills provide learners a broad foundation for managing lifelong learning and career transitions in a rapidly changing economy.

CTAE-FS-1 Technical Skills: Learners achieve technical content skills necessary to pursue the full range of careers for all pathways in the program concentration.

CTAE-FS-2 Academic Foundations: Learners achieve state academic standards at or above grade level.

CTAE-FS-3 Communications: Learners use various communication skills in expressing and interpreting information.

CTAE-FS-4 Problem Solving and Critical Thinking: Learners define and solve problems, and use problem-solving and improvement methods and tools.

CTAE-FS-5 Information Technology Applications: Learners use multiple information technology devices to access, organize, process, transmit, and communicate information.

CTAE-FS-6 Systems: Learners understand a variety of organizational structures and functions.

CTAE-FS-7 Safety, Health and Environment: Learners employ safety, health and environmental management systems in corporations and comprehend their importance to organizational performance and regulatory compliance.

CTAE-FS-8 Leadership and Teamwork: Learners apply leadership and teamwork skills in collaborating with others to accomplish organizational goals and objectives.

CTAE-FS-9 Ethics and Legal Responsibilities: Learners commit to work ethics, behavior, and legal responsibilities in the workplace.

CTAE-FS-10 Career Development: Learners plan and manage academic-career plans and employment relations.

CTAE-FS-11 Entrepreneurship: Learners demonstrate understanding of concepts, processes, and behaviors associated with successful entrepreneurial performance.