south dakota DEPARTMENT OF EDUCATION
Learning. Leadership. Service.

CTE Standards Unpacking
Logistics Planning & Management

Course: Logistics Planning & Management
Course Description: Logistics Planning & Management prepares students for entry into the warehouse and distribution career field. Course content emphasizes a deep understanding of the dynamics of distribution and logistics operations, the warehousing skills needed for the tracking and managing of inventory, and the problem-solving skills used by logisticians in today's complex business environments. Upon completion of this course, a proficient student will be have a thorough understanding of safety, tools, equipment, operations, processes, customer fulfillment, product lifecycle, future trends, and regulatory issues in the industry.
Career Cluster: Transportation, Distribution & Logistics
Prerequisites: N/A
Program of Study Application: Logistics Planning & Management is a cluster course in the Transportation, Distribution and Logistics pathway.

<table>
<tr><td colspan="3">INDICATOR #LPM 1: Students will recognize occupational safety guidelines.</td></tr>
<tr><td colspan="3">SUB-INDICATOR 1.1 (Webb Level: 1 Recall): Demonstrate safety practices as identified in Occupational Safety and Health Administration (OSHA) and Environmental Protection Agency (EPA) requirements</td></tr>
<tr><td>Knowledge (Factual):
-Osha policies

-SDS (Safety Data Sheets)

-Dangerous good handling

-Organization skills

-Emergency Response Guidebook published by the U.S. Department of Transportation.</td><td>Understand (Conceptual):
-Value of maintaining safety portfolio records

-Importance of Osha policies

-Consequences of misinterpretation SDS (Safety Data Sheets)</td><td>Do (Application):
-Adhere to responsibilities, regulations, and OSHA policies regarding reporting of accidents and observed hazards, and regarding emergency response procedures.

-Interpret Safety Data Sheets (SDS) to determine any hazards related to materials handled. Use appropriate signs and symbols to identify hazardous materials within warehouses and during transportation of the materials.</td></tr>
</table>

		-Maintain a portfolio record of written safety examinations and equipment examination for which the student has passed an operational checkout by the instructor. -Identify dangerous goods and discuss how they influence warehouse and transportation decisions. -Determine the appropriate corrective actions if faced with a hazardous situation, as outlined by the *Emergency Response Guidebook* published by the U.S. Department of Transportation.

Benchmarks:
Students will be assessed on their ability to:

- Use appropriate signs and symbols to identify hazardous materials within warehouses/classroom and during transportation of the materials.
- Make a report of a role-played accident and observed hazards

Academic Connections

ELA Literacy and/or Math Standard (if applicable, Science and/or Social Studies Standard):	**Sample Performance Task Aligned to the Academic Standard(s):**
W4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.	Students will write an accident report

INDICATOR #LPM 2: **Students will analyze and categorize Logistics and Transportation Operations.**		
SUB-INDICATOR 2.2 (Webb Level: 2 Skill/Concept): Research the four subdivisions of logistics in light of organizational management practices		
SUB-INDICATOR 2.3 (Webb Level: 3 Strategic Thinking): Synthesize information from textbook, print and online industry sources		
SUB-INDICATOR 2.3 (Webb Level: 3 Strategic Thinking): Describe tradeoffs that occur between transportation and inventory costs		
SUB-INDICATOR 2.3 (Webb Level: 3 Strategic Thinking): Demonstrate the ability to calculate and explain to others the purchase cost, ordering cost, and holding cost for a given material or product within the supply chain		
SUB-INDICATOR 2.3 (Webb Level: 3 Strategic Thinking): Perform inventory calculations to minimize costs as would a logistics manager for a given company		
Knowledge (Factual): -Four major subdivisions of logistic -Just-in-Time (JIT) strategy, lean dynamics, and Kanban systems. -Economic Order Quantity (EOP) -Reorder Point (ROP) -Algebraic reasoning and appropriate units, determine the economic order quantity (EOQ) and reorder point (ROP	**Understand (Conceptual):** -Variation of requirements such as forecasting, scheduling, and transportation between the 4 branches of logistics -Consequences of decisions within the realm of logistics	**Do (Application):** -Explain and discuss similarities and differences between the subdivisions of logistics -List a number of activities that lie within the realm of logistics -Explain when it is more profitable to use more expensive transportation and maintain smaller inventory, and when it is more advantageous to use cheaper transportation and maintain larger inventories. -Discuss the application of key concepts such as Just-in-Time (JIT) strategy, lean dynamics, and Kanban systems. -Determine total cost as a function of other costs and demonstrate the effects on profit for a

		specified price and quantity. -Using algebraic reasoning and appropriate units, determine the economic order quantity (EOQ) and reorder point (ROP) for a given product. Research forecasting models for the specified product and to understand how companies predict EOQ and ROP using logistics management.

Benchmarks:
Students will be assessed on their ability to:

- Students will create an artifact illustrating the 4 branches of logistics (ex. Poster, website, powerpoint)
- Students will create an artifact illustrating the sub-divisions of Logistics(ex. video, computer simulation)

Academic Connections

ELA Literacy and/or Math Standard (if applicable, Science and/or Social Studies Standard):	**Sample Performance Task Aligned to the Academic Standard(s):**
SL4 Present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance, and style are appropriate to purpose, audience, and a range or formal and informal tasks	Students will discuss in a round robin format the subdivisions of logistics
A-CED1. Create equations and inequalities in one variable and use them to solve problems.	Students will simulate logistics process by determining the economic order quantity (EOQ) and reorder point (ROP) for a given product

south dakota
DEPARTMENT OF EDUCATION
Learning. Leadership. Service.

INDICATOR #LPM 3: **Students will learn warehousing practices used in logistics and management.**		
SUB-INDICATOR 3.3 (Webb Level: 3 Strategic Thinking): Compare and contrast the warehousing requirements for a variety of different products		
SUB-INDICATOR 3.3 (Webb Level: 3 Strategic Thinking): Describe various warehouse layouts and equipment used to move materials in each		
SUB-INDICATOR 3.2 (Webb Level: 2 Skill/Concept): List categories of aisle spacing and describe the advantages and disadvantages of each		
SUB-INDICATOR 3.2 (Webb Level: 2 Skill/Concept): Demonstrate the ability to complete and interpret warehouse documents including, but not limited to, packing slips, bills of lading, advance shipment notices, distribution sheets, pick lists, invoices, special orders, and inventory forms		
SUB-INDICATOR 3.2 (Webb Level: 2 Skill/Concept): Differentiate between bulk and rack storage, and indicate situations when each is employed.		
Knowledge (Factual): -Subassemblies -Warehouse layouts -Warehouse Equipment -Aisle spacing Categories -Warehouse documents -Bulk and rack storage,	**Understand (Conceptual):** -Significance of effective strategies for warehousing different products -Consequences of using proper warehouse equipment use -Impact of correct Aisle spacing -How to complete and interpret warehouse documents	**Do (Application):** -Select appropriate warehouse layout for a variety of product (Subassemblies Perishable foods Hazardous chemicals Large items like furniture and appliances School supplies Seasonal items) -Describe the advantages and disadvantages of aisle spacing. -Demonstrate the ability to complete and interpret warehouse documents including, but not limited to, packing slips, bills of lading, advance shipment notices, distribution sheets, pick lists, invoices, special orders, and inventory forms

		-Differentiate between bulk and rack storage and indicate situations when each is employed.

Benchmarks:
Students will be assessed on their ability to:

- Students will calculate the appropriate aisle spacing for a given product
- Students will complete warehouse documents for an order.
- Describe the advantages and disadvantages of bulk and rack storage.

Academic Connections

ELA Literacy and/or Math Standard (if applicable, Science and/or Social Studies Standard):	**Sample Performance Task Aligned to the Academic Standard(s):**
G-GPE 7. Use coordinates to compute perimeters of polygons and areas of triangles and rectangles, e.g., using the distance formula	Students will calculate the distance between aisle using the dimensions of the product and the space available
SL4. Present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance, and style are appropriate to purpose, audience, and a range or formal and informal tasks	Students will describe advantages and disadvantages of various types of storage

INDICATOR #LPM 4: **Students will learn regulations associated with Logistics and Management.**
SUB-INDICATOR 4.1 (Webb Level: 4 Extended Thinking): List international, national, state, and local agencies and organizations that regulate some part of the supply chain and the role played by each. Indicate over what areas each agency has jurisdiction
SUB-INDICATOR 4.2 (Webb Level: 3 Strategic Thinking): Analyze the impact of international trade agreements on logistics decisions

south dakota DEPARTMENT OF EDUCATION
Learning. Leadership. Service.

SUB-INDICATOR 4.3 (Webb Level: 2 Skill/Concept): Research International Commercial Terms (INCOTERMS®) developed by the International Chamber of Commerce		
Knowledge (Factual): -International, national, state, and local agencies and organizations that regulate some part of the supply chain -Supply chain -Jurisdiction -International trade agreements -International Commercial Terms (INCOTERMS®) -Three letter standard terms (DAT, DAP) https://en.portal.santandertrade.com/bank-with-us/incoterms-2010	**Understand (Conceptual):** -Role played by international, national, state, and local agencies and organizations in the supply chain -Variation between Delivered at terminal (DAT) Delivered at Place of Destination (DAP)	**Do (Application):** -List international, national, state, and local agencies and organizations that regulate some part of the supply chain and the role played by each. Indicate over what areas each agency has jurisdiction -Analyze the impact of international trade agreements on logistics decisions -Research International Commercial Terms (INCOTERMS®) developed by the International Chamber of Commerce -Create a table or chart to indicate what each of the three letter standard terms means by delineating the respective obligations of the buyer and seller involved in the delivery of goods from the seller to the buyer.

Benchmarks:

Students will be assessed on their ability to:

- Students will create an artifact that illustrates the role of international, national, state, and local agencies and organizations that regulate some part of the supply chain
- Students will create diagram that illustrate the meaning of Jurisdiction
- Students will apply International Commercial Terms (INCOTERMS) to a business scenario

south dakota DEPARTMENT OF EDUCATION
Learning. Leadership. Service.

Academic Connections	
ELA Literacy and/or Math Standard (if applicable, Science and/or Social Studies Standard): SL4. Present information, findings, and supporting evidence, conveying a clear and distinct perspective, such that listeners can follow the line of reasoning, alternative or opposing perspectives are addressed, and the organization, development, substance, and style are appropriate to purpose, audience, and a range or formal and informal tasks	**Sample Performance Task Aligned to the Academic Standard(s):** Students will role play the parts of logistics used in a business scenario

INDICATOR #LPM 5: **Students will learn problem solving trends associated with Logistics and Management.**		
SUB-INDICATOR 5.1 (Webb Level: 3 Strategic Thinking): Solve given problems related to transportation of goods and warehousing by evaluating data and presenting solutions or recommending appropriate decisions		
SUB-INDICATOR 5.2 (Webb Level: 3 Strategic Thinking): Plan for the storage, movement, and delivery of a specified good or service from one location to another		
Knowledge (Factual): -Warehousing -carbon footprint -hazardous goods -Routes and modes of transportation -Distribution center -logistics data	**Understand (Conceptual):** -Selecting the appropriate techniques for optimizing warehouse usage -Impact of carbon footprint -Consequences of handling hazardous goods -Choosing the appropriate software used in logistics -Proper selection of transportation for domestic and abroad orders	**Do (Application):** -Use spreadsheets and/or other software in calculating "what if" scenarios as appropriate. Types of problems should include scenarios such as: Selecting routes and modes of transportation between a distribution center and various markets a. Calculating the carbon footprint of similar products shipped from different locations and by different modes of transportation

		b. Optimizing warehouse usage c. Planning for the moving and handling of hazardous goods d. Analyzing the impact of natural disasters on supply chain e. Developing strategies for working toward the sustainable use of specific materials and modes of transportation -Using logistics data and applying concepts learned in the course, justify the tradeoff decisions (i.e., mode of transport, holding time, delivery constraints such as fuel cost) in a proposed plan, coherently explaining the logic behind each choice as if presenting to a senior manager.

Benchmarks:

Students will be assessed on their ability to:

- Students will create a diagram illustrating the different ways to identify and move hazardous goods
- Students will create an artifact illustrating a computer program used within logistics.
- Students will calculate the carbon foot print of the logistics system
- Outline a plan for fulfilling an order for a personal computer by a fixed date and transporting it through customs to a purchaser in a foreign country.

Academic Connections

ELA Literacy and/or Math Standard (if applicable, Science and/or Social Studies Standard):	**Sample Performance Task Aligned to the Academic Standard(s):**
W7. 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.	Students will write plan for fulfilling an international order
A-CED1. Create equations and inequalities in one variable and use them to solve problems.	Students will calculate the carbon footprint of their logistics chain

INDICATOR #LPM 6: **Students will learn trends associated with Logistics and Management.**		
SUB-INDICATOR 6.1 (Webb Level: 3 Strategic Thinking): Analyze case studies of the logistics operations of various retail companies to see how they plan for and adjust their operations to remain competitive		
SUB-INDICATOR 6.2 (Webb Level: 4 Extended Thinking): Using websites and journals from professional organizations related to transportation, distribution and logistics, identify trends that are impacting local, regional, national, and international supply chains		
Knowledge (Factual): -Regional company -Company operations -Professional organizations websites and journals	**Understand (Conceptual):** -Variation of supply chains will impact delivery -How rising cost trends affect decision making -Professional organizations websites and journals illustrate trends -Specific company operations to remain competitive	**Do (Application):** -Compare a regional company with companies such as Amazon, Walmart, and Kroger -Examine trends that could include such factors as rising fuel costs, movements toward fully automated warehouses, and greening the supply chain. -Summarize research in an informative essay that

		includes: Description of the trend and explanation of how it affects the supply chain, examples of how various businesses are responding to the trend, and an outline of the information that must be considered before a business implements any change, including a formal cost-benefit analysis.

Benchmarks:
Students will be assessed on their ability to:

- Write an essay on trends that affect supply chain
- Create an artifact on how businesses are responding to trends in a supply chain (ex . create a video, powerpoint, diagram)

Academic Connections	
ELA Literacy and/or Math Standard (if applicable, Science and/or Social Studies Standard):	**Sample Performance Task Aligned to the Academic Standard(s):**
W7. 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.	Students will write a report explaining the current trends in supply chain management

Additional Resources
Please list any resources (e.g., websites, teaching guides, etc.) that would help teachers as they plan to teach these new standards.