# 2023 Logistics and Supply Chain

Program CIP: 52.0203 – Transportation Logistics, Materials, and Supply Chain Management

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The Research and Curriculum Unit (RCU), located in Starkville, as part of Mississippi State University (MSU), was established to foster educational enhancements and innovations. In keeping with the land-grant mission of MSU, the RCU is dedicated to improving the quality of life for Mississippians. The RCU enhances the intellectual and professional development of Mississippi students and educators while applying knowledge and educational research to the lives of the people of the state. The RCU works within the contexts of curriculum development and revision, research, assessment, professional development, and industrial training.

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# Acknowledgments

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Mr. Michael D. Kent, interim state superintendent of education
Ms. Rosemary G. Aultman, chair
Mr. Glen V. East, vice-chair
Ms. Mary Werner
Dr. Ronnie L. McGehee
Dr. Wendi Barrett
Mr. Matt Miller
Mr. Bill Jacobs
Ms. Micah Hill, student representative
Mr. Charlie Fruge', student representative

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# Standards

Standards and alignment crosswalks are referenced in the appendix. Depending on the curriculum, these crosswalks should identify alignment to the standards mentioned below, as well as possible related academic topics as required in the Subject Area Testing Program in Algebra I, Biology I, English II, and U.S. History from 1877, which could be integrated into the content of the units. Mississippi's CTE logistics and supply chain is aligned to the following standards:

**Manufacturing Skill Standards Council Standards—Logistics 2021 "Industry 4.0" Edition**
These industry-recognized, nationally portable CLA and CLT credentials help prepare individuals for careers in the rapidly growing and changing world of global supply chain logistics. MSSC was mandated to establish the industry-defined core skill standards and certifications needed for frontline work (entry-level through frontline supervisor) common across all sectors of manufacturing. MSSC's Work Standards for Logistics are organized around two key activity areas: The Foundational Certified Logistics Associate (CLA) and The Mid-Level Technical Certified Logistics Technician (CLT). The standards were extensively researched and reviewed by leaders in the logistics industry, secondary and postsecondary instructors, and university specialists and are used with permission. msscusa.org/certified-logistics-technician-clt/

**College- and Career-Readiness Standards**
College- and career-readiness standards emphasize critical thinking, teamwork, and problem-solving skills. Students will learn the skills and abilities demanded by the workforce of today and the future. Mississippi adopted Mississippi College- and Career-Readiness Standards (MCCRS) to provide a consistent, clear understanding of what students are expected to learn and so teachers and parents know what they need to do to help them.
mdek12.org/oae/college-and-career-readiness-standards

**International Society for Technology in Education Standards (ISTE)**
Reprinted with permission from *ISTE Standards for Students* (2016). All rights reserved. Permission does not constitute an endorsement by ISTE.
iste.org

**Framework for 21st Century Learning**
In defining 21st-century learning, the Partnership for 21st Century Skills has embraced key themes and skill areas that represent the essential knowledge for the 21st century: global awareness; financial, economic, business, and entrepreneurial literacy; civic literacy; health literacy; environmental literacy; learning and innovation skills; information, media, and technology skills; and life and career skills.
battelleforkids.org/networks/p21/frameworks-resources

# Preface

Secondary CTE programs in Mississippi face many challenges resulting from sweeping educational reforms at the national and state levels. Schools and teachers are increasingly being held accountable for providing applied learning activities to every student in the classroom. This accountability is measured through increased requirements for mastery and attainment of competency as documented through both formative and summative assessments. This document provides information, tools, and solutions that will aid students, teachers, and schools in creating and implementing applied, interactive, and innovative lessons. Through best practices, alignment with national standards and certifications, community partnerships, and a hands-on, student-centered concept, educators will be able to truly engage students in meaningful and collaborative learning opportunities.

The courses in this document reflect the statutory requirements as found in Section 37-3-49, *Mississippi Code of 1972*, as amended (Section 37-3-46). In addition, this curriculum reflects guidelines imposed by federal and state mandates (Laws, 1988, Ch. 487, §14; Laws, 1991, Ch. 423, §1; Laws, 1992, Ch. 519, §4 eff. from and after July 1, 1992; Strengthening Career and Technical Education for the 21st Century Act, 2019 [Perkins V]; and Every Student Succeeds Act, 2015).

# Mississippi Teacher Professional Resources

The following are resources for Mississippi teachers:

Curriculum, Assessment, Professional Learning
: Program resources can be found at the RCU's website, rcu.msstate.edu.

Learning Management System: An Online Resource
: Learning management system information can be found at the RCU's website, under Professional Learning.

Should you need additional instructions, contact the RCU at 662.325.2510 or helpdesk@rcu.msstate.edu.

# Executive Summary

**Pathway Description**
The Logistics and Supply Chain pathway introduces students to the global field of supply chain technology. It includes instructional experiences related to the industrial and commercial logistical processes while also introducing secondary-level students to the safety standards and processes of various industrial or commercial settings when storing, moving, shipping, or inventorying commercial goods and equipment. Those who successfully complete the competencies in this pathway and actively participate in the learning exercises will possess certifications toward becoming a professional logistician.

**College, Career, and Certifications**
Under the authority of the Manufacturing Skill Standards Council (MSSC), the online logistics certificate program consists of two parts: The Foundational-Level Certified Logistics Associate (CLA)® Certificate and the Mid-Level Certified Logistics Technician Certification (CLT). This certification recognizes individuals who demonstrate mastery of the core competencies of material handling at the front-line (entry-level to front-line supervisor) through successful completion of the logistics certification assessments. The goal of the MSSC CLA/CLT certification program is to raise the level of performance of certified logistics technicians both to assist individuals in finding higher-wage jobs and to help employers ensure their workforce increases the company's productivity and competitiveness. MSSC CLA/CLT is an industrial certification that can prove useful for entry-level high school graduates to achieve gainful professional logistician-related occupations. All competencies and suggested performance indicators in the logistics and supply chain course are driven by the MSSC content standards.

**Grade Level and Class Size Recommendations**
It is recommended that students enter this program as either freshmen, sophomores, or juniors. Exceptions to this are a district-level decision based on class size, enrollment numbers, student maturity, and CTE delivery method. This is a hands-on, lab- or shop-based course. Therefore, a maximum of 15 students is recommended per class with only one class with the teacher at a time.

**Student Prerequisites**
For students to experience success in the program, the following student prerequisites are suggested:

1. C or higher in English (the previous year)
2. C or higher in high school-level math (last course taken or the instructor can specify the level of math instruction needed)
3. Instructor approval and Test of Adult Basic Education (TABE) reading score (eighth grade or higher)

**or**

1. TABE reading and math score (eighth grade or higher)
2. Instructor approval

**or**

1. Instructor approval

**Assessment**
The latest assessment blueprint for the curriculum can be found at rcu.msstate.edu/curriculum/curriculumdownload.

**Applied Academic Credit**
The latest academic credit information can be found at mdek12.org/ese/approved-course-for-the-secondary-schools.

**Teacher Licensure**
The latest teacher licensure information can be found at mdek12.org/oel/apply-for-an-educator-license.

**Professional Learning**
If you have specific questions about the content of any training sessions provided, please contact the RCU at 662.325.2510 or helpdesk@rcu.msstate.edu.

# Course Outlines

**Option 1—Four 1-Carnegie-Unit Courses**

This curriculum consists of four 1-credit courses, which should be completed in the following sequence:

1. **Fundamentals of Logistics and Supply Chain—Course Code: 997302**
2. **Fundamentals of Material Handling—Course Code: 997303**
3. **Advanced Material Handling—Course Code: 997304**
4. **Advanced Logistics and Supply Chain—Course Code: 997305**

**Course Description: Fundamentals of Logistics and Supply Chain**
This course identifies the fundamental ideas surrounding national and global logistics. It instructs students in the development of leadership skills, best practices, employability skills, and operational safety within the workplace environment. Fundamentals of Logistics and Supply Chain covers a basic knowledge of the Occupational Safety and Health Act (OSHA) regulated safety guidelines regarding materials-handling equipment and technology. It introduces students to an overview of supply chain automation, transportation, and distribution/fulfillment. This course takes into consideration the history and the importance of basic modes of transportation to distribute items within the global supply chain. It also introduces terms such as marketing mix, warehousing layouts, Lean logistics, and just in time (JIT), as well as first in, first out (FIFO), and last in, first out (LIFO) storage techniques. Students are given the opportunity to discover processes concerning procurement, inventory management, and storage systems used in an industrial setting.

**Course Description: Fundamentals of Material Handling**
This course emphasizes the appropriate procedures and regulations that logisticians must follow when receiving and stocking industrial materials. Fundamentals of Material Handling guides students through determining proper receiving and unloading shipment procedures and teaches students the importance of reconciling inventory discrepancies, executing inventory transactions, and stabilizing a product to prepare it properly to ship. They will prepare a bill of lading, use weights, determine measurements, and perform conversions of those weights and measurements to prepare industrial materials for picking, packing, and shipping. This course presents students with the integration of emerging technologies into timesaving, cost-effective processes that create an efficient workflow for industrial logistics and the supply chain in general, while outlining emerging technologies such as: 5G, artificial intelligence, industrial internet of things (IIoT), autonomous robots, augmented reality, data analytics, biometrics, cyber security, and remote learning.

**Course Description: Advanced Material Handling**
This course focuses on supply chain concepts concerning national and global logistical procedures and regulations. Advanced Material Handling establishes the necessary leadership skills, best practices, employability skills, and operational safety precautions within the logistics industrial setting. Students will demonstrate the use of technologies involving barcoding, voice picking, and spreadsheet applications to assist in inventorying materials while incorporating

radio technology and introducing processes such as the warehouse management system, enterprise resource planning, and logistics execution systems. This course also places the students in management-style scenarios concerning distribution/fulfillment centers and warehouse facilities. Advanced Material Handling emphasizes organizational structures, functional areas, technological impacts, seasonal operations, utilizing and conserving human resources, staging, and cross-docking inventory.

**Course Description: Advanced Logistics and Supply Chain**
This course integrates the concepts and functions regarding advanced logistics, supply chain automation, and intermodal operations. Some of those advanced concepts include transportation management systems (TMS), third-party logistics providers (3PLs), and the global supply chain management system (SCMS). Students will be informed of variable hazards and delays for each mode of transport within the scope of the logistics and supply chain industrial workplace. Advanced Logistics and Supply Chain provides an explanation of the role that the federal department of transportation plays in the inspection process, import/export rules, and relevant documentation. This course will explain a variety of laws associated with U.S. and international intermodal transport while also explaining the due diligence we must have when examining environmental safety and sustainability. It also emphasizes the need to attain a "green" industrial setting both nationally and globally. This course displays the development and the forward-thinking of emerging technologies such as: 5G, artificial intelligence, industrial internet of things (IIoT), autonomous robots, augmented reality, data analytics, biometrics, cyber security, and remote learning. Students will gain a deeper perspective regarding these innovative, cutting-edge technologies within the logistics and supply chain industrial setting.

**Fundamentals of Logistics and Supply Chain—Course Code: 997302**

| Unit | Unit Title | Hours |
|---|---|---|
| 1 | Orientation, Leadership, and Employability Skills | 25 |
| 2 | Workplace and Operational Safety | 35 |
| 3 | Overview of Supply Chain Automation, Transportation, and Distribution/Fulfillment | 15 |
| 4 | Basic Material Handling Equipment and Technology | 35 |
| 5 | Procurement, Inventory Management, and Storage Systems | 30 |
| **Total** | | **140** |

**Fundamentals of Material Handling—Course Code: 997303**

| Unit | Unit Title | Hours |
|---|---|---|
| 6 | Receiving and Stocking Procedures | 50 |
| 7 | Pick, Pack, and Ship Operations | 55 |
| 8 | Emerging Technologies | 35 |
| **Total** | | **140** |

**Advanced Material Handling—Course Code: 997304**

| Unit | Unit Title | Hours |
|---|---|---|
| 9 | Orientation, Leadership, Employability Skills, Safety, and Logistics Review | 40 |
| 10 | Advanced Material Handling, Storage Equipment, and Supply Chain Technologies | 50 |
| 11 | Managing Distribution/Fulfillment Centers and Warehouse Facilities | 50 |
| **Total** | | **140** |

**Advanced Logistics and Supply Chain—Course Code: 997305**

| Unit | Unit Title | Hours |
|---|---|---|
| 12 | Advanced Logistics, Supply Chain Automation, and Intermodal Operations | 70 |
| 13 | Environmental Safety and Sustainability | 25 |
| 14 | Advanced Emerging Technologies | 45 |
| **Total** | | **140** |

**Option 2—Two 2-Carnegie-Unit Courses**

This curriculum consists of two 2-credit courses, which should be completed in the following sequence:

1. **Logistics and Supply Chain I—Course Code: 997300**
2. **Logistics and Supply Chain II—Course Code: 997301**

**Course Description: Logistics and Supply Chain I**
This course identifies the fundamental ideas regarding national and global logistics and the supply chain. Logistics and Supply Chain I instructs students in the development of leadership skills, best practices, employability skills, and operational safety within the workplace environment. The basics of safety guidelines regarding materials-handling equipment and technology is included in this course as well, while also introducing students to an overview of supply chain automation, transportation, and distribution/fulfillment. Students are given the opportunity to discover processes concerning procurement, inventory management, and storage systems used in an industrial setting. It also emphasizes the appropriate procedures and regulations that logisticians must follow when receiving and stocking industrial materials. This course guides students through determining proper procedures. These procedures guide operations when working within the cycle of goods and services regarding picking, packing, and shipping. Logistics and Supply Chain I presents students with the assimilation of emerging technologies into timesaving, cost-effective processes that create an efficient workflow for industrial logistics and the supply chain in general.

**Course Description: Logistics and Supply Chain II**
This course focuses on the reevaluation of supply chain concepts concerning national and global logistics procedures and regulations. Logistics and Supply Chain II assesses and establishes the necessary leadership skills, best practices, employability skills, and operational safety precautions within the logistics industrial setting, while allowing students to demonstrate the use of technologies involving barcoding, voice picking, and spreadsheet applications to assist in inventorying materials. This course also incorporates radio technology and processes such as warehouse management systems, enterprise resource planning, and logistics execution systems. It also places students in management-style scenarios connected with distribution/fulfillment centers and warehouse facilities. Logistics and Supply Chain II emphasizes organizational structure, functional areas, technological impacts, seasonal operations, utilizing and conserving human resources, staging, and cross-docking inventory, while integrating the concepts and functions regarding advanced logistics, supply chain automation, and intermodal operations. Some of those advanced concepts include transportation management systems (TMS), third-party logistics providers (3PLs), and the supply chain management system (SCMS). Various hazards and delays for each mode of transport will be discussed within the scope of the logistics and supply chain industrial workplace. It also provides an explanation of the role that the federal department of transportation plays in the inspection process, import/export rules, and relevant documentation. Logistics and Supply Chain II examines environmental safety and sustainability. It also displays the development and the forward-thinking of emerging technologies such as: 5G, artificial intelligence, industrial internet of things (IIoT), autonomous robots, augmented reality, data analytics, biometrics, cyber security, and remote learning.

**Course Name: Logistics and Supply Chain I—Course Code: 997300**

| Unit | Unit Title | Hours |
|---|---|---|
| 1 | Orientation, Leadership, and Employability Skills | 25 |
| 2 | Workplace and Operational Safety | 35 |
| 3 | Overview of Supply Chain Automation, Transportation, and Distribution/Fulfillment | 15 |
| 4 | Basic Material Handling Equipment and Technology | 35 |
| 5 | Procurement, Inventory Management, and Storage Systems | 30 |
| 6 | Receiving and Stocking Procedures | 50 |
| 7 | Pick, Pack, and Ship Operations | 55 |
| 8 | Emerging Technologies | 35 |
| **Total** | | **280** |

**Course Name: Logistics and Supply Chain II—Course Code: 997301**

| Unit | Unit Title | Hours |
|---|---|---|
| 9 | Orientation, Leadership, Employability Skills, Safety, and Logistics Review | 40 |
| 10 | Advanced Material Handling, Storage Equipment, and Supply Chain Technologies | 50 |
| 11 | Managing Distribution/Fulfillment Centers and Warehouse Facilities | 50 |
| 12 | Advanced Logistics, Supply Chain Automation, and Intermodal Operations | 70 |
| 13 | Environmental Safety and Sustainability | 25 |
| 14 | Advanced Emerging Technologies | 45 |
| **Total** | | **280** |

# Career Pathway Outlook

**Overview**
This Logistics and Supply Chain course offers an opportunity to discover career choices that focus on distribution/fulfillment, storage, and transporting of commercial and non-commercial products. Supply chain-related career fields include operations, inventory management, shipping, business, sales, and military logistics. People employed within these career fields, in general, sustain and enrich our lives through the provision of industrial, commercial, and residential necessities on a global scale.

The industrial internet of things (IIoT) and emerging technologies within the logistics and supply chain professional world have become indispensable. They have enabled exponential cost-effectiveness within the fulfillment of goods both nationally and globally. These emerging technologies include 5G, artificial intelligence, autonomous robots, augmented reality, data analytics, biometrics, cyber security, and remote learning. According to Forbes.com, smart infrastructure driven by new vehicle technology will change how cargo moves. As the internet of things (IoT) continues to be utilized, these new capabilities will change how decisions are made, what routes to take, how fleets are managed, and how distribution/fulfillment centers will manage the storage and flow of their product.

**Needs of the Future Workforce**
Data for logistics and supply chain career opportunities in Mississippi, compiled from the Mississippi Department of Employment Security (2022), is listed below.

Table 1.1: Current and Projected Occupation Report

| Description | Jobs, 2018 | Projected Jobs, 2028 | Change (Number) | Change (Percent) | Average Hourly Earnings, 2022 |
|---|---|---|---|---|---|
| Transportation and Material Moving Occupations | 105,930 | 111,460 | 5,530 | 5.2% | $17.68 |
| Laborers and Freight, Stock, and Material Movers, Hand | 31,760 | 34,480 | 2,720 | 8.6% | $14.29 |
| Transportation Inspectors | 200 | 200 | 0 | 0% | $33.46 |
| Motor Vehicle Operators, All Other | 130 | 130 | 0 | 0% | $15.20 |
| Transportation, Storage, and Distribution Managers | 1,050 | 1,090 | 40 | 3.8% | $37.50 |
| Logisticians | 770 | 790 | 20 | 2.6% | $31.76 |
| Cargo and Freight Agents | 190 | 200 | 10 | 5.3% | $22.55 |
| Couriers and Messengers | 580 | 620 | 40 | 6.9% | $13.19 |

| | | | | | |
|---|---|---|---|---|---|
| Production, Planning, and Expediting Clerks | 2,180 | 2,240 | 60 | 2.8% | $22.19 |
| Industrial Truck and Tractor Operators | 8,590 | 9,020 | 430 | 5.0 % | $16.64 |

*Source*: Mississippi Department of Employment Security; mdes.ms.gov (2022).

**Perkins V Requirements and Academic Infusion**

The logistics and supply chain curriculum meets Perkins V requirements of introducing students to and preparing them for high-skill, high-wage occupations in logistics and supply chain fields. It also offers students a program of study, including secondary, postsecondary, and institutions of higher learning courses, which will further prepare them for logistics and supply chain careers. Additionally, this curriculum is integrated with academic college- and career-readiness standards. Lastly, it focuses on ongoing and meaningful professional development for teachers as well as relationships with industry.

**Transition to Postsecondary Education**

The latest articulation information for secondary to postsecondary can be found at the Mississippi Community College Board website, mccb.edu.

**Best Practices**

*Innovative Instructional Technologies*

Classrooms should be equipped with tools that will teach today's digital learners through applicable and modern practices. The Logistics and Supply Chain educator's goal should be to include teaching strategies that incorporate current technology. To make use of the latest online communication tools—wikis, blogs, podcasts, and social media platforms, for example—the classroom teacher is encouraged to use a learning management system that introduces students to education in an online environment and places more of the responsibility of learning on the student.

*Differentiated Instruction*

Students learn in a variety of ways, and numerous factors—students' background, emotional health, and circumstances, for example—create unique learners. By providing various teaching and assessment strategies, students with various learning preferences can have more opportunities to succeed.

*CTE Student Organizations*

Teachers should investigate opportunities to sponsor a student organization. There are several available in Mississippi that will foster the types of learning expected from the Logistics and Supply Chain curriculum. SkillsUSA and TSA are the student organizations with many outlets for both logistics and supply chain. Student organizations provide participants and members with growth opportunities and competitive events. They also open the doors to the world of logistics and supply chain and scholarship opportunities.

*Cooperative Learning*

Cooperative learning can help students understand topics when independent learning cannot. Therefore, you will see several opportunities in the Logistics and Supply Chain curriculum for group work. To function in today's workforce, students need to be able to work collaboratively with others and solve problems without excessive conflict. The Logistics and Supply Chain curriculum provides opportunities for students to work together and help each other complete complex tasks. There are many field experiences within the Logistics and Supply Chain curriculum that will allow and encourage collaboration with professionals currently in the logistics and supply chain field.

*Work-Based Learning*

Work-based learning is an extension of understanding competencies taught in the Logistics and Supply Chain classroom. This curriculum is designed in a way that necessitates active involvement by the students in the community around them and the global environment. These real-world connections and applications link all types of students to knowledge, skills, and professional dispositions. Work-based learning should encompass ongoing and increasingly more complex involvement with local companies and logistics and supply chain professionals. Thus, supervised collaboration and immersion into logistics and supply chain around the students are keys to students' success, knowledge, and skills development.

# Professional Organizations

American Production and Inventory Control Society (APICS)/Association for Supply Chain Management (ASCM)
www.ascm.org

Manufacturing Skill Standards Council (MSSC)
www.msscusa.org

Material Handling Industry (MHI) - The Industry That Makes the Supply Chain Work
www.mhi.org

Occupational Safety and Health Administration (OSHA)
www.osha.gov

# Using This Document

**Competencies and Suggested Objectives**
A competency represents a general concept or performance that students are expected to master as a requirement for satisfactorily completing a unit. Students will be expected to receive instruction on all competencies. The suggested objectives represent the enabling and supporting knowledge and performances that will indicate mastery of the competency at the course level.

**Teacher Resources**
Teacher resources for this curriculum may be found in multiple places. Many program areas All teachers should request to be added to the Canvas Resource Guide for their course. For questions or to be added to the guide, send a Help Desk ticket to the RCU by emailing helpdesk@rcu.msstate.edu.

**Perkins V Quality Indicators and Enrichment Material**
Some of the units may include an enrichment section at the end. This material will greatly enhance the learning experiences of students. If the Logistics and Supply Chain program is using a national certification, work-based learning, or another measure of accountability that aligns with Perkins V as a quality indicator, this material could very well be assessed on that quality indicator. It is the responsibility of the teacher to ensure all competencies for the selected quality indicator are covered throughout the year.

# Unit 1: Orientation, Leadership, and Employability Skills

| **Competencies and Suggested Objectives** |
|---|
| 1. Identify and describe local program and career and technical center policies and procedures. DOK 1, 2<br>a. Describe local program and career and technical center policies and procedures, including dress code, attendance, academic requirements, discipline, and transportation regulations.<br>b. Describe local school rules found in the student handbook.<br>c. Describe laboratory and facilities associated with the program. |
| 2. List and describe employment opportunities and responsibilities. DOK 1, 2<br>a. Describe employment opportunities, including potential earnings, employee benefits, job availability, places of employment, working conditions, and educational requirements.<br>b. Describe basic employee responsibilities. |
| 3. Explore and discuss leadership skills and personal development opportunities provided by student organizations, including SkillsUSA. DOK 1, 2<br>a. Demonstrate effective team building and leadership skills.<br>b. Practice appropriate workplace ethics.<br>c. Participate in team-building activities.<br>d. Discuss the attributes of effective leadership.<br>e. Define common terms associated with soft skills or employability skills. |
| 4. Demonstrate the ability to follow verbal and written instructions while communicating effectively in on-the-job situations. DOK 2<br>a. Describe different types of communication methods.<br>b. Demonstrate the ability to follow basic sets of instructions. |
| 5. Utilize basic word processing skills to demonstrate résumé and cover letter development. DOK 2<br>a. Explain the differences between functional, chronological, and combination résumés.<br>b. Develop a professional cover letter.<br>c. Develop a functional résumé. |
| 6. Demonstrate proper interviewing techniques. DOK 2<br>a. Identify types of interviews.<br>b. Participate in a panel interview. |
| 7. Demonstrate basic and intermediate math skills. DOK 2<br>a. Demonstrate counting and simple math skills without the use of a calculator.<br>b. Utilize a calculator to determine the solutions to intermediate math problems. |

# Unit 2: Workplace and Operational Safety

| **Competencies and Suggested Objectives** |
|---|
| 1. Identify and explain the basics of safety in a distribution/fulfillment facility. DOK 2<br>a. Identify and discuss common causes of accidents and injuries in a distribution/fulfillment facility.<br>b. Explore and apply basic first aid techniques (i.e., CPR/First Aid Certification).<br>c. Identify, define, and incorporate safety and ergonomics into all activities.<br>d. Identify and demonstrate the proper use of personal protective equipment (PPE).<br>e. Identify and demonstrate proper lifting techniques.<br>f. Identify types of fire extinguishers and understand how to use them appropriately.<br>g. Identify safety symbols and explain how to effectively handle associated hazardous materials.<br>h. Introduction to the Occupational Safety and Health Act (i.e., OSHA 10 General Industry).<br>i. Explain right-to-know laws.<br>j. Introduce and create Safety Data Sheets (SDS) and interpret meaning.<br>k. Explain the need for a mandatory safety training program.<br>l. Demonstrate safe use of basic hand tools used in a distribution/fulfillment center.<br>m. Identify, assess, and correct the most common safety risks including slips, trips, and falls.<br>n. Define common terms associated with safety in the workplace.<br>o. Discuss and demonstrate “lockout/tagout” procedures. |

# Unit 3: Overview of Supply Chain Automation, Transportation, and Distribution/Fulfillment

| **Competencies and Suggested Objectives** |
|---|
| 1. Describe the use of supply chain technology and identify the basic supply chain components as identified by industry. DOK 2, 3<br>a. Create a product flow chart beginning with a raw material supplier and then continuing until the consumer obtains the product.<br>b. Explain the role of the global supply chain throughout each step within the flow chart.<br>c. Explain the theory of supply and demand and how it affects a global supply chain.<br>d. Explain operational processes and identify the consequences of a broken supply chain.<br>e. Define and review common terms associated with supply chain automation. |
| 2. Define and apply the basic concept of transportation. DOK 2<br>a. Identify the basic modes of transportation.<br>b. Identify and explain selection factors and criteria used in choosing a transport mode and provide examples.<br>c. Examine the history of transportation and explain the similarities and differences in past and present modes.<br>d. Define and apply common terms associated with transportation. |
| 3. Define and discuss the basic concept of distribution/fulfillment. DOK 2<br>a. Define distribution/fulfillment and explain how it fits into a global supply chain.<br>b. Describe the importance of distribution/fulfillment as a component in the marketing mix (i.e., product, price, promotion, and placement).<br>c. Discuss the role of a distribution/fulfillment center and how it meets consumer demand.<br>d. Define differences in warehousing and distribution/fulfillment.<br>e. Define the various layouts of warehousing and distribution/fulfillment centers.<br>f. Identify the functions of warehousing and distribution/fulfillment centers.<br>g. Define and apply common terms associated with distribution/fulfillment. |
| 4. Show an understanding of the efficiencies and process improvement methodologies. DOK 2<br>a. Define the concept of Lean logistics and provide examples.<br>b. Define the concept of just in time (JIT).<br>c. Define and analyze the concepts and appropriate uses of first in, first out (FIFO) and last in, first out (LIFO). |
| 5. Demonstrate knowledge of global supply chain operations. DOK 1<br>a. Utilize maps to locate states, cities, regions, and countries.<br>b. Identify states through postal abbreviations.<br>c. Identify major regional, national, and international ports. |

# Unit 4: Basic Material Handling Equipment and Technology

| **Competencies and Suggested Objectives** |
|---|
| 1. Discuss and compare the various types and uses of basic material handling equipment (MHE) and technology. DOK 2, 3<br>a. Identify and describe different types of skids, crates, and pallets and their attributes.<br>b. Identify and demonstrate the types of hand-operated pieces of warehouse equipment.<br>c. Identify the various types and characteristics of powered industrial trucks.<br>d. Demonstrate the inspection of and safe operating procedures for powered industrial trucks.<br>e. Identify and discuss preventive and corrective maintenance procedures for manual and powered industrial equipment.<br>f. Identify and discuss the various types of overhead handling equipment.<br>g. Identify and discuss types of conveyor systems.<br>h. Identify and discuss various types of automated MHE and automated guided vehicles (AGV).<br>i. Select appropriate MHE for specific situations and functions.<br>j. Define and apply common terms associated with material handling. |

# Unit 5: Procurement, Inventory Management, and Storage Systems

| **Competencies and Suggested Objectives** |
|---|
| 1. Identify and describe the fundamental concepts of procurement. DOK 2, 3<br>a. Describe the buying or purchasing process.<br>b. Develop various buying/purchasing policies.<br>c. Locate, review, and complete various purchasing documentation.<br>d. Explain the concept of "demand planning" and material requirements planning (MRP).<br>e. Utilize catalogs and internet resources to locate items and compare pricing.<br>f. Define and apply common terms associated with procurement and purchasing. |
| 2. Identify and describe the fundamental concepts of inventory management. DOK 2<br>a. Explain various types of and distinguish the characteristics of inventory.<br>b. Identify and discuss various inventory control systems.<br>c. Define and demonstrate physical inventory and the "cycle counting" process.<br>d. Explain the concept of an "ABC analysis."<br>e. Explain inventory shrinkage.<br>f. Process returns of inventory to vendors.<br>g. Explain the concept and processes of "reverse logistics."<br>h. Discuss inventory management procedures and the use of warehouse management systems (WMS).<br>i. Define the concept of movement as it relates to warehouse operations, inventory, and MHE.<br>j. Calculate "re-order points" then define and demonstrate the "min/max" concept.<br>k. Explain the "80/20" rule of inventory.<br>l. Define and apply common terms associated with inventory and inventory management. |
| 3. Identify and describe the fundamental concepts of inventory storage systems. DOK 2<br>a. Discuss the factors of selecting the appropriate type of storage system.<br>b. Describe the various types of storage materials and equipment utilized in a distribution/fulfillment center.<br>c. Identify and discuss different types of storage methods.<br>d. Describe the use of location identification as a method of inventory storage.<br>e. Discuss the various methods of establishing locations.<br>f. Define and apply common terms associated with storage. |

# Unit 6: Receiving and Stocking Procedures

| **Competencies and Suggested Objectives** |
|---|
| 1. Discuss and demonstrate proper procedures regarding receiving. DOK 2, 3<br>a. Identify and discuss the steps involved in receiving shipments.<br>b. Develop procedures for unloading shipments.<br>c. Develop the process for inspecting in-bound merchandise for damage.<br>d. Receiving inventory transactions.<br>e. Identify documents used during the receiving process.<br>f. Reconcile inventory discrepancies against receiving documents.<br>g. Process refused shipments using Returned Materials Authorization (RMA).<br>h. Execute inventory transactions to update the Warehouse Management System (WMS).<br>i. Utilize proper tools for assisting in inventory management processes (i.e., reports, barcode readers, and computers).<br>j. Explain how and why staging may be utilized during the receiving process.<br>k. Demonstrate proper procedures for receiving inventory.<br>l. Define and apply terms commonly associated with the receiving process. |
| 2. Discuss and demonstrate proper procedures regarding stocking. DOK 2, 3<br>a. Demonstrate proper procedures for stocking inventory.<br>b. Execute inventory transactions to update the WMS.<br>c. Identify the locations of and demonstrate the process of replenishments.<br>d. Define and apply terms commonly associated with the stocking process. |

# Unit 7: Pick, Pack, and Ship Operations

| **Competencies and Suggested Objectives** |
|---|
| 1. Identify and demonstrate picking procedures. DOK 2, 3<br>a. Identify units of measure.<br>b. Explain orders processing.<br>c. Complete the physical order-picking process using material handling equipment.<br>d. Explain backorders or shortages.<br>e. Describe the function and components of a pick list.<br>f. Utilize tools in performing a pick (i.e., barcode readers).<br>g. Identify and describe the various types of picking processes.<br>h. Describe the process of kitting.<br>i. Discuss and demonstrate the use of labeling systems in a pick, pack, and ship operation.<br>j. Define and apply terms commonly associated with the picking process. |
| 2. Identify and demonstrate packing procedures. DOK 2<br>a. Identify and discuss types of boxes and sealers used in the packing process.<br>b. Identify various types of dunnage and demonstrate their use.<br>c. Develop proper packing procedures to include a packing list.<br>d. Complete packing of case shipments.<br>e. Palletize and stretch-wrap shipments.<br>f. Identify pallet designs and patterns.<br>g. Identify types of equipment utilized in the packing process.<br>h. Describe and demonstrate the process of "cubing a pallet."<br>i. Identify types of load stabilization products and methods.<br>j. Determine types of loads (i.e., full truck load [FTL] and less than truck load [LTL]).<br>k. Define and apply terms commonly associated with packing operations. |
| 3. Identify and describe procedures for various shipment types. DOK 2, 3<br>a. Use tables of weights, measurements, and conversions.<br>b. Discuss attributes used in carrier selection.<br>c. Identify the information on common carrier shipping labels.<br>d. Explain the concept of tracking numbers.<br>e. Discuss staging as a process in the shipping activity.<br>f. Identify procedures for international shipments.<br>g. Identify procedures for shipments of hazardous materials.<br>h. Complete shipments for small-package carriers.<br>i. Prepare a bill of lading.<br>j. Recognize various types of transportation and shipping documents.<br>k. Define and apply terms commonly associated with the U.S. and international shipping operations. |

# Unit 8: Emerging Technologies

| **Competencies and Suggested Objectives** |
| --- |
| 1. Introduce and describe emerging technologies used within the global marketplace. DOK 1, 2<br>a. 5G<br>b. Artificial intelligence<br>c. Industrial internet of things (IIoT)<br>d. Autonomous robots<br>e. Augmented reality<br>f. Data analytics<br>g. Biometrics<br>h. Cyber security<br>i. Remote learning<br>j. Other technologies |

# Unit 9: Orientation, Leadership, Employability Skills, Safety, and Logistics Review

| **Competencies and Suggested Objectives** |
|---|
| 1. Demonstrate employability skills. DOK 1<br>a. Update personal résumé.<br>b. Participate in a panel interview.<br>c. Demonstrate team-building skills. |
| 2. Discuss safety in the workplace. DOK 2<br>a. Identify potential hazards in the workplace.<br>b. Identify PPE specific to the logistics industry.<br>c. Demonstrate safe operations of MHE.<br>d. Discuss OSHA safety requirements for logistics. |
| 3. Discuss components of supply chain and logistics operations. DOK 2<br>a. Describe supply chain technology.<br>b. Identify modes of transportation and their specific use in logistics.<br>c. Describe the distribution/fulfillment process. |
| 4. Describe the operations, functions, and components of a distribution/fulfillment center. DOK 2<br>a. Identify and discuss various types of MHE.<br>b. Describe procurement as a function of the purchasing department.<br>c. Describe the activities associated with inventory management.<br>d. Describe the processes of receiving, stocking, and putting away.<br>e. Describe a typical pick, pack, and ship operation. |

# Unit 10: Advanced Material Handling, Storage Equipment, and Supply Chain Technologies

| **Competencies and Suggested Objectives** |
|---|
| 1. Demonstrate an understanding of advanced material handling and storage equipment. DOK 2<br>a. Identify and discuss the types of automated guided vehicles (AGV) available throughout the global supply chain.<br>b. Identify and discuss the various types of automated conveyor and sorting systems.<br>c. Identify the types of shuttle and robotics systems used in warehousing. |
| 2. Demonstrate an understanding of advanced supply chain technologies and applications. DOK 2<br>a. Discuss and demonstrate the use of barcoding technology.<br>b. Describe "voice picking" as a tool for the picking process.<br>c. Identify and discuss the use of radio frequency technology in operations.<br>d. Describe the functions of a Warehouse Management System (WMS).<br>e. Use WMS as applicable in operations.<br>f. Describe the functions of an Enterprise Resource Planning (ERP) system and how it relates to WMS.<br>g. Discuss the use of WMS and Logistics Execution Systems (LES).<br>h. Discuss the pros and cons of radio frequency identification (RFID) as a viable source of technology in a warehouse.<br>i. Demonstrate the use of spreadsheet applications in determining inventory consumption, shipping production, and various other information reporting purposes. |

# Unit 11: Managing Distribution/Fulfillment Centers and Warehouse Facilities

| **Competencies and Suggested Objectives** |
|---|
| 1. Identify and explain various aspects of facility design and management. DOK 1, 2, 3<br>a. Recognize and identify various facility layouts and designs.<br>b. Explain facility-management practices.<br>c. Describe the role of management in quality control practices.<br>d. Explain the organizational structure of warehouse management.<br>e. Explain the nature of management/supervisory training.<br>f. Identify ways that technology impacts business.<br>g. Plan and organize the work efforts of others.<br>h. Explain the concept and operations of a third-party logistics (3PL) service provider.<br>i. Identify the trends in industry that affect 3PL operations.<br>j. Identify and explain the functional areas and operations of a distribution/fulfillment center.<br>k. Produce and analyze various productivity reports for a distribution/fulfillment operation.<br>l. Prepare and present an operational status report for senior management.<br>m. Discuss management of peaks and valleys, surges, and seasonal operations regarding distribution/fulfillment center operations.<br>n. Identify the various types of warehouse and distribution/fulfillment centers, and then discuss their specific uses.<br>o. Identify and explain the human resources and skills necessary to operate a fully functional distribution/fulfillment center.<br>p. Describe and demonstrate advanced inventory management functions to eliminate stock outages.<br>q. Identify and discuss various software and services utilized to help support distribution/fulfillment operations.<br>r. Explain the concept and use of “staging” of inventory in distribution/fulfillment operations.<br>s. Explain the concept and use of “cross-docking” of inventory in distribution/fulfillment operations.<br>t. Explain the concept of “protection” as it relates to distribution/fulfillment and warehouse operations and inventory. |

# Unit 12: Advanced Logistics, Supply Chain Automation, and Intermodal Operations

| **Competencies and Suggested Objectives** |
|---|
| 1. Discuss advanced logistics concepts and functions. DOK 2<br>a. Identify current industry trends in logistics.<br>b. Identify and discuss major international logistics global facilities.<br>c. Identify and discuss the use of Transportation Management Systems (TMS).<br>d. Discuss the types and uses of certifications in the logistics industry.<br>e. Discuss the impact of government regulations on the transportation industry. |
| 2. Identify and discuss advanced supply chain automation concepts and functions. DOK 2<br>a. Identify and describe the components of the global supply chain.<br>b. Explore the relationships between supply chain components.<br>c. Identify and describe the purposes of Third-Party Logistics Providers (3PLs).<br>d. Define and discuss globalization of the supply chain.<br>e. Identify and discuss industry trends that affect supply chain operations.<br>f. Identify and discuss government regulations that affect the supply chain.<br>g. Identify and explain current trends in the supply chain field concerning automation.<br>h. Identify applications and technologies used to enhance supply chain management (SCM) operations.<br>i. Describe the functions and major processes of a Supply Chain Management System (SCMS), including planning and forecasting, warehouse and inventory management, and transportation management.<br>j. Discuss the types and values of certifications in the supply chain industry. |
| 3. Identify and describe the different aspects of intermodal transportation. DOK 2<br>a. Recall and discuss the various modes of transportation.<br>b. Identify attributes of intermodal selection through cost-benefit analyses.<br>c. Determine a cost per container for various intermodal methods.<br>d. Prepare a layout of an intermodal facility and identify the major components.<br>e. Identify potential hazards and delays for each mode of transport.<br>f. Identify and explain various types of freight and intermodal consulting agencies, such as freight brokers.<br>g. Discuss various import/export rules, documentation, and laws associated with U.S. and international intermodal transport.<br>h. Identify the various marine ports throughout the region.<br>i. Identify the various intermodal rail/truck facilities throughout the region.<br>j. Identify the capacity capabilities of the various transportation modes, including marine cargo ship types and barges.<br>k. Explain the role of the federal department of transportation in the inspection process of intermodal transport for all modes of transport. |

# Unit 13: Environmental Safety and Sustainability

| **Competencies and Suggested Objectives** |
| --- |
| 1. Identify and discuss various aspects of environmental safety and sustainability. DOK 1, 2<br>a. Describe the operations of a "green" industrial setting.<br>b. Discuss U.S. government and international regulations involving environmental safety.<br>c. Discuss the importance of sustainability regarding industry and business. |

# Unit 14: Advanced Emerging Technologies

| **Competencies and Suggested Objectives** |
|---|
| 1. Compare and contrast the differences among various emerging technologies used within the global marketplace. DOK 2, 3<br>a. 5G<br>b. Artificial intelligence<br>c. Industrial internet of things (IIoT)<br>d. Autonomous robots<br>e. Augmented reality<br>f. Data analytics<br>g. Biometrics<br>h. Cyber security<br>i. Remote learning<br>j. Other technologies |

# Student Competency Profile

**Student's Name: _____**

This record is intended to serve as a method of noting student achievement of the competencies in each unit. It can be duplicated for each student, and it can serve as a cumulative record of competencies achieved in the course.

In the blank before each competency, place the date on which the student mastered the competency.

| | | |
|---|---|---|
| **Unit 1: Orientation, Leadership, and Employability Skills** | | |
| | 1. | Identify and describe local program and career and technical center policies and procedures. |
| | 2. | List and describe employment opportunities and responsibilities. |
| | 3. | Explore and discuss leadership skills and personal development opportunities provided by student organizations, including SkillsUSA. |
| | 4. | Demonstrate the ability to follow verbal and written instructions while communicating effectively in on-the-job situations. |
| | 5. | Utilize basic word processing skills to demonstrate résumé and cover letter development. |
| | 6. | Demonstrate proper interviewing techniques. |
| | 7. | Demonstrate basic and intermediate math skills. |
| **Unit 2: Workplace and Operational Safety** | | |
| | 1. | Identify and explain the basics of safety in a distribution/fulfillment facility. |
| **Unit 3: Overview of Supply Chain Automation, Transportation, and Distribution/Fulfillment** | | |
| | 1. | Describe the use of supply chain technology and identify the basic supply chain components as identified by industry. |
| | 2. | Define and apply the basic concept of transportation. |
| | 3. | Define and discuss the basic concept of distribution/fulfillment. |
| | 4. | Show an understanding of the efficiencies and process improvement methodologies. |
| | 5. | Demonstrate knowledge of global supply chain operations. |
| **Unit 4: Basic Material Handling Equipment and Technology** | | |
| | 1. | Discuss and compare the various types and uses of basic material handling equipment (MHE) and technology. |
| **Unit 5: Procurement, Inventory Management, and Storage Systems** | | |
| | 1. | Identify and describe the fundamental concepts of procurement. |
| | 2. | Identify and describe the fundamental concepts of inventory management. |

| | | |
|---|---|---|
| | 3. | Identify and describe the fundamental concepts of inventory storage systems. |
| **Unit 6: Receiving and Stocking Procedures** | | |
| | 1. | Discuss and demonstrate proper procedures regarding receiving. |
| | 2. | Discuss and demonstrate proper procedures regarding stocking. |
| **Unit 7: Pick, Pack, and Ship Operations** | | |
| | 1. | Identify and demonstrate picking procedures. |
| | 2. | Identify and demonstrate packing procedures. |
| | 3. | Identify and describe procedures for various shipment types. |
| **Unit 8: Emerging Technologies** | | |
| | 1. | Introduce and describe emerging technologies used within the global marketplace. |
| **Unit 9: Orientation, Leadership, Employability Skills, Safety, and Logistics Review** | | |
| | 1. | Demonstrate employability skills. |
| | 2. | Discuss safety in the workplace. |
| | 3. | Discuss components of supply chain and logistics operations. |
| | 4. | Describe the operations, functions, and components of a distribution/fulfillment center. |
| **Unit 10: Advanced Material Handling, Storage Equipment, and Supply Chain Technologies** | | |
| | 1. | Demonstrate an understanding of advanced material handling and storage equipment. |
| | 2. | Demonstrate an understanding of advanced supply chain technologies and applications. |
| **Unit 11: Managing Distribution/Fulfillment Centers and Warehouse Facilities** | | |
| | 1. | Identify and explain various aspects of facility design and management. |
| **Unit 12: Advanced Logistics, Supply Chain Automation, and Intermodal Operations** | | |
| | 1. | Discuss advanced logistics concepts and functions. |
| | 2. | Identify and discuss advanced supply chain automation concepts and functions. |
| | 3. | Identify and describe the different aspects of intermodal transportation. |
| **Unit 13: Environmental Safety and Sustainability** | | |
| | 1. | Identify and discuss various aspects of environmental safety and sustainability. |
| **Unit 14: Advanced Emerging Technologies** | | |
| | 1. | Compare and contrast the differences among various emerging technologies used within the global marketplace. |

# Appendix A: Manufacturing Skill Standards Council Standards—Logistics 2021 "Industry 4.0" Edition

| | Units | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
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| CLT – 7F | | | | | | X | X | X | | | | | X | | |
| CLT – 7G | | X | | | | | | | | | | | X | X | |
| CLT – 8A | | | | X | | | | X | | | | | X | X | |
| CLT – 8B | | | | X | | | | X | | | | | X | X | |
| CLT – 8C | | | | | | | X | X | | | | | | | |
| CLT – 8D | | | X | X | X | X | X | X | | | X | | | | |
| CLT – 8E | | | | | | | X | X | | | | | | | |
| CLT – 8F | | | | | | | | X | | | | | X | | |
| CLT – 8G | | X | | | | | | | | | | | X | | |
| CLT – 8H | | | | | | | | X | | | | | | | |
| CLT – 8I | | | | | | | | | | | | | X | | |
| CLT – 8J | | X | | X | | | | X | | X | | | X | | |
| CLT – 8K | | | | | | | X | X | | | | | | | |
| CLT – 8L | | X | | | | X | X | X | | | | X | X | X | |
| CLT – 8M | | X | | | | | | | | | | | X | X | |
| CLT – 9A | | | | | | | | X | | | | | | | |
| CLT – 9B | | | | | | | | X | | | | | | | |
| CLT – 9C | | | | | | | | X | | | | | | | |

## Manufacturing Skill Standards Council (MSSC) - The Foundational-Level Certified Logistics Associate (CLA)

**CLA1 Demonstrate an understanding of the various roles in the global supply chain logistics life cycle**

1. Demonstrates clear understanding of how the product and logistics life cycle affects the company's viability, profitability, and international competitiveness
2. Exhibits clear understanding of how one's role affects other parts of the product life cycle
3. Understands various transportation options
4. Applies clear understanding of the basic principles of cost effectiveness and productivity enhancements
5. Understands productivity measures in logistics operations

**CLA2 Demonstrate an understanding of the logistics environment**

1. Exhibits clear understanding of security requirements and regulations (e.g., CTPAT, FAST, Homeland Security, etc.) applicable to the logistics environment
2. Applies clear understanding of the environmental impact of logistics activities
3. Demonstrates clear understanding of the physical layout of the logistics environment (e.g., warehouse physical layout, etc.)
4. Understands supply chain logistics terminology and nomenclature.
5. Describe Cybersecurity
6. Describe Biometrics

**CLA3 Operate and use equipment**

1. Recognizes and understands uses of different types of material handling and packaging equipment
2. Understands methods for securing vehicles and cargo
3. Operates forklifts, tractors, hand trucks and dollies safely
4. Operates conveyor systems safely and within operational guidelines
5. Operates automated storage systems in a manner that assures efficiency and safety
6. Understands preventive and corrective maintenance programs for machines and equipment

7. Demonstrates understanding of test equipment and tools
8. Describe Autonomous Robots
9. Describe Augmented Reality

**CLA4 Practice safety principles**

1. Participates in all national, state, and local safety training requirements
2. Is aware of, understands and complies with relevant safety standards (such as OSHA, DOT, ANSI, etc.)
3. Maintains a clean and orderly work area
4. Demonstrates emergency procedures to be applied in the event of an incident or accident
5. Demonstrates procedures to be applied to safely stop unsafe processes

**CLA5 Practice safety principles in the handling of materials and operation of equipment**

1. Applies safe material handling procedures
2. Understands material handling techniques for moving materials and cargo in a safe manner
3. Understands safety concepts, principles and practices related to the operation of automated machines and/or process
4. Demonstrates safe lifting and carrying practices
5. Identifies and complies with safety markings displayed on containers and cargoes
6. Identifies, monitors, and reports potential work hazards, out-of-compliance conditions, and safety concerns immediately
7. Demonstrates knowledge and uses appropriate personal protective equipment

**CLA6 Practice's quality control principles**

1. Understands quality improvement roles and responsibilities within an organization
2. Understands quality systems such as SPC, Six Sigma, TQM, Lean Management, PDCA and relevant ISO standards
3. Participates in quality control programs and initiatives
4. Explains difference between preventative and corrective maintenance actions
5. Understands corrective action procedures and methods for dealing with and avoiding future occurrence of non-conformances
6. Uses established procedures to promptly document and communicate quality problems or issues
7. Participates in quality audit process
8. Presents quality improvement recommendations in a clear and concise manner
9. Describe Data Analytics

**CLA7 Employ's work communication practices**

1. Facilitates communication between shifts by providing input about completed work, work that remains to be completed and shift problems or issues
2. Communicates appropriate information to both internal (i.e., coworkers, supervisors, management, etc.) and external customers
3. Clearly and effectively communicates thoughts, ideas, and information orally and in writing
4. Employs communication practices to solve interpersonal problems
5. Communication reflects a clear understanding and accurate use of logistics

nomenclature and terminology
6. Elicits clear statements of customer requirements and specifications
7. Applies appropriate actions for handling internal and external customer complaints
8. Describe Remote Learning

**CLA8 Practice's teamwork and good workplace behavior to solve problems**

1. Demonstrates ethical and responsible behavior at work through the appropriate:
   a. Use of company IT systems
   b. Handling of tools and equipment
   c. Handling of proprietary information
   d. Communications with co-workers, management, customers, and suppliers
2. Understands and follows company's Code of Conduct
3. Demonstrates an understanding of work requirements, agreements, and goal setting concepts
4. Applies problem solving tools and procedures to identify problems and suggest potential solutions
5. Works in a team environment to solve problems
6. Demonstrates characteristics of an effective team member in a logistics operation
7. Understands principles for aligning team goals to customer and business needs

**CLA9 Uses relevant computer systems and applications to increase productivity**

1. Demonstrates effective use of computer systems and software applications (i.e., internet browser, email, word processing, spreadsheet, presentation) to fulfill roles and responsibilities
2. Demonstrate an understanding of common software systems (e.g., Order Management System, Warehouse Management System, etc.) used in a logistics operation
3. Demonstrates an understanding of the basic technology used to capture and store information in logistics operations (scanners, sensors, etc.)
4. Demonstrates an understanding of advanced technology used to capture and store information in logistics operations (RFID, etc.)
5. Understands processes and technologies, which will impact supply chain operations such as omni-channel distribution, real-time tracking of products and packages, same-day, and real-time location delivery
6. Describe 5G technology
7. Describe Industrial Internet of Things (IIOT)
8. Describe Artificial Intelligence (AI)

**Manufacturing Skill Standards Council (MSSC) - The Mid-Level Certified Logistics Technician (CLT)**

**CLT1 Receive products**

1. Understands procedures and importance of receiving to production planning, production, and inventory control
2. Inspects seals and trailer number of inbound trucks prior to entry into the yard and prior to unloading products
3. Understands gate pass protocol and site clearances
4. Understands various physical methods of material identification
5. Verifies documents (e.g., bill of lading, packing lists, etc.) against products being delivered
6. Conducts breakdown of bill of lading to establish proof of delivery
7. Secures trucks to ensure safe unloading of products
8. Inspects load conditions prior to unloading products
9. Ensures that products are unloaded according to relevant governmental regulations, company policies and safe work practices
10. Checks products (e.g., overage, shortage, and damages) while they are being unloaded
11. Identifies damaged products
12. Processes inbound discrepancy reported (i.e., overage, shortage and damages) when necessary
13. Uses and interprets logistics forms (e.g., bill of lading, manifests, etc.)

**CLT2 Stock products**

1. Understands proper material storage techniques based on product life, risk of damage, hazards, weight, and size
2. Understands storage planning methods based on the characteristics of the material
3. Understands safe handling, storage, and movement practices
4. Stocks products in assigned locations
5. Determines most effective means to segregate allocated items
6. Routes products in automatic back orders straight to shipping staging area

**CLT3 Process product orders**

1. Understands methods for identifying customer requirements
2. Understands various picking processes (e.g., repack, carton and bulk) and how they impact warehouse operations
3. Understands order cycle
4. Inspects pick tickets
5. Pulls from storage products identified in pick tickets
6. Stages products pulled for shipping
7. Understands logistics forms (i.e., order forms, purchase orders, pick lists)
8. Conducts audits to ensure pulled products are as ordered (e.g., right count and condition)
9. Processes paperwork to develop packing manifest

**CLT4 Prepare packages for shipment and ship products**

1. Uses appropriate packing materials to package products based on products size, weight, function, and design

2. Uses appropriate packaging tools best suited for handling and packaging products
3. Protect products from weather
4. Verifies that outbound product counts are accurate, and products are free from defect
5. Understands logistics forms (e.g., manifests)
6. Verifies outbound products against customer orders
7. Verifies that products are appropriately labeled in accordance with domestic and international regulations and company policy
8. Verifies that the right packages are being loaded in the right trailer
9. Verifies that packages are securely loaded into trailers based on safe loading procedures

**CLT5 Maintain control of inventory**

1. Understands how inventory control affects overall operations
2. Maintains inventory accuracy and record keeping
3. Applies appropriate inventory maintenance procedures to manage surplus, slow moving, and obsolete stock
4. Applies FIFO and LIFO techniques consistent with established organizational policy and practice
5. Understands impact that effective stock rotation, shelf life and special products characteristics can have on cost effectiveness
6. Understands value of timely replenishment
7. Uses material identification systems to optimize inventory levels for overstock and under stock
8. Deploys proper handling controls for returned products according to established procedures
9. Understands various methods for recording and tracking inventory (e.g., cataloging, microchips, computer files and tracking systems)
10. Understands various inventory counting methods
11. Understands various electronic identification tools (bar coding, scanners, microchips, RFID)
12. Maintains accurate records of returned products

**CLT6 Handle hazardous materials in a safe manner**

1. Understands classification and safe handling of hazardous materials including the Global Harmonization System
2. Understands the methods for shipping and routing dangerous goods
3. Unloads and loads hazardous materials according to relevant governmental regulations, company policies and safe work practices
4. Transfers and stores hazardous materials in proper storage locations per relevant governmental regulations, company policies and safe work practices
5. Identifies hazardous materials in shipping documentation

**CLT7 Evaluate transportation modes**

1. Understands traffic management
2. Understands common transportation methods used to transport goods and cargo including rail, marine, road, air, pipeline, and intermodal
3. Understands factors used in evaluating transportation modes to determine optimum choices considering cost, safety, customer requirements, nature of

shipment and timeliness.

4. Understands how to use and maintain files related to various performance trends of different transportation modes to permit rapid decision making
5. Understands procedures for handling in-transit damages and claims
6. Completes all required transportation documents in accordance with company and transporter requirements
7. Understands federal, state, and international transportation regulations and agencies

**CLT8 Perform dispatch, routing, and tracking operations**

1. Understands terms and basic elements of customs regulations including country of origin, NAFTA, FTZ, tariffs/duties and permits
2. Understands customs documentation requirements
3. Understands correct routing procedures
4. Understands materials classification for routing
5. Prepares inbound and outbound shipment receipts and documentation
6. Evaluates consignment loads to identify type, capacity, and compatibility of cargo
7. Maintains effective records of cargo/container movement
8. Verifies that vehicle loads do not exceed legal weight limits
9. Tracks trailer and container movement within the yard, including monitoring and minimizing detention costs
10. Coordinates multiple transportation mode transfers
11. Distributes loads and build trucks to ensure vehicle loads do not exceed legal weight limits
12. Ensures required documentation is prepared and maintained in accordance with government import/export regulations, including documentation provided by third-party intermediaries
13. Identifies governing agencies responsible for import/export regulation enforcement

**CLT9 Understand U.S. measurements and metric system conversions**

1. Demonstrates working knowledge of U.S. measurement systems
2. Understands how to convert U.S. measurements to and from the metric system
3. Determines accuracy and precision when measuring weight and volume