Transportation, Distribution and Logistics Career Cluster
Cluster Knowledge and Skill Statements

The following Cluster (Foundation) Knowledge and Skill Chart provides statements that apply to all careers in the Transportation, Distribution and Logistics Cluster. Persons preparing for careers in the Transportation, Distribution and Logistics Cluster should be able to demonstrate these skills in addition to those found on the Essential Knowledge and Skills Chart. The Pathway Knowledge and Skill Charts are available in separate documents.

Cluster Topic TRC01	**ACADEMIC FOUNDATIONS:** *Achieve additional academic knowledge and skills required to pursue the full range of career and postsecondary education opportunities within a career cluster.*
	No additional statements in this topic beyond those found in the Essential Knowledge and Skills Chart.

Cluster Topic TRC02	**COMMUNICATIONS:** *Use oral and written communication skills in creating, expressing and interpreting information and ideas including technical terminology and information.*
	No additional statements in this topic beyond those found in the Essential Knowledge and Skills Chart.

Cluster Topic TRC03	**PROBLEM-SOLVING AND CRITICAL THINKING:** *Solve problems using critical thinking skills (analyze, synthesize, and evaluate) independently and in teams. Solve problems using creativity and innovation.*

TRC03.01	**Formulate ideas, proposals and solutions to transportation, distribution and/or logistics related problems in order to ensure effective and efficient delivery of products or services to targeted consumers.**
TRC03.01.01	Clarify the problems or issues to be addressed.
TRC03.01.02	Identify constraints and parameters related to the problem presented.
TRC03.01.03	Formulate a set of objectives for the solution that address the key issues presented.
TRC03.01.04	Analyze available information and statistical data related to the problem or issue.
TRC03.01.05	Synthesize alternative ideas, proposals, and solutions that would solve the problem.
TRC03.01.06	Evaluate possible outcomes from implementation of alternative solutions.
TRC03.01.07	Appraise the best solution based on factors such as risk involved, cost incurred, and benefits gained.
TRC03.01.08	Present a proposed solution to a client along with the logic and rationale for selecting the solution.
TRC03.02	**Analyze and evaluate ideas, proposals, and solutions to transportation, distribution and logistics related problems in order to select the best deliverable to meet business objectives.**

TRC03.02.01	Confirm definition of problem and objectives for the proposed solution.
TRC03.02.02	Appraise the validity of the constraints and parameters presented in the proposal.
TRC03.02.03	Evaluate the accuracy of the basic assumptions outlined in the proposal.
TRC03.02.04	Appraise the quality of information used to support solution.
TRC03.02.05	Evaluate the data analysis techniques and data presented in support of the proposed solution.
TRC03.02.06	Evaluate the logic and reasoning used to develop the proposed solution.
TRC03.02.07	Assess the potential impact of the risks, costs, and benefits of testing and implementing the proposed solution.
TRC03.02.08	Make recommendations on supporting, changing, or not supporting the proposed solution based upon sound reasoning and data.

TRC03.03   **Develop, implement and evaluate solutions to transportation, distribution or logistics related performance problems using a structured problem-solving process in order to improve business functioning.**

TRC03.03.01	Describe the performance problem completely and accurately using data, graphs and charts.
TRC03.03.02	Develop and represent a comprehensive mapping of potential root and indirect causes using commonly accepted mapping methods such as the a fishbone diagram and/or flowchart.
TRC03.03.03	Analyze the features, benefits and constraints associated with alternative solutions to the performance issue.
TRC03.03.04	Select best solutions for further testing based upon available data and historical information.
TRC03.03.05	Formulate an implementation strategy for one of the solutions that considers multiple variables such as time, costs, scope, and quality.
TRC03.03.06	Monitor selected solution performance through data collection and analysis.
TRC03.03.07	Manage implementation of the selected solution using the prescribed strategic plan.
TRC03.03.08	Evaluate performance of solution implemented over time based upon data collected and analyzed throughout implementation.

Cluster Topic TRC04	**INFORMATION TECHNOLOGY APPLICATIONS:** *Use information technology tools specific to the career cluster to access, manage, integrate, and create information.*

TRC04.01   **Demonstrate the effective use of computer based equipment (containing embedded computers, or processors) to control electromechanical devices commonly used in conducting work within the TDL industry.**

TRC04.01.01	Execute the steps involved in the operation of a computer driven machine to accomplish a common work tasks.
Sample Indicators	Operate equipment and machine with assistance.
	Secure needed supplies and resources.
	Follow power-up and log-on procedures.
	Interact with/respond to system messages using console device.
	Run applications/jobs in accordance with processing procedures.
	Follow log-off and power-down procedure(s).
TRC04.01.02	Interpret installation and operation manuals in order to install and operate a computer driven machine/equipment.
Sample Indicators	Access needed information using appropriate reference materials.
TRC04.01.03	Troubleshoot computer driven equipment and machines and access relevant support sources as-needed.
Sample Indicators	Test system using diagnostic tools/software.
	Repair/replace malfunctioning hardware.
	Reinstall software as needed.
	Recover data and/or files.
	Restore system to normal operating standards.
	Complete failure/trouble reports correctly.
	Access in-house or external support as needed.

TRC04.02   **Utilize geographic information systems software common to the transportation, distribution and logistics industry to coordinate and facilitate business related tasks.**

TRC04.02.01	Execute procedures involved in using Geographic Information System/ Global Positions System (GIS/GPS) applications to perform various work functions.
Sample Indicators	Create maps.
	Locate people or things.
	Identify best route for travel.

Cluster Topic TRC05	**SYSTEMS:** *Understand roles within teams, work units, departments, organizations, inter-organizational systems, and the larger environment. Identify how key organizational systems affect organizational performance and the quality of products and services. Understand global context of industries and careers.*

TRC05.01   **Analyze and summarize the various roles and major business functions involved in a TDL organization as a way to demonstrate understanding of the industry as a system.**

TRC05.01.01	Summarize past and present trends related to the mission of TDL organizations.
TRC05.01.02	Compare and contrast the various roles TDL organizations take on within the overarching industry.
TRC05.01.03	Compare and contrast the various roles played by critical customers, suppliers, and stakeholders within a TDL organization.
TRC05.01.04	Summarize the major competitive challenges faced by TDL organizations in the industry today and in the future.

TRC05.01.05	Summarize the various major internal job functions and organizational structures found among TDL organizations.
TRC05.02	**Monitor, analyze and improve performance within a TDL organization using metrics common to the TDL community as a way to demonstrate understanding of how organizations manage and improve business functioning.**
TRC05.02.01	State how metrics for financial performance such as profitability, cost reduction and asset utilization may be utilized to identify areas for improvement in improve business functioning.
TRC05.02.02	State how metrics for market performance such as customer and sales/service growth may be used to identify areas for improvement in business functioning.
TRC05.02.03	State how metrics for service and internal operations performance may be used to identify areas for improvement in business functioning (e.g., customer satisfaction, service quality, cycle time).
TRC05.02.04	State how metrics for organizational health, safety and environmental compliance may be used to identify areas for improvement in business functioning.
TRC05.03	**Demonstrate understanding of important trends influencing the TDL system by assessing and summarizing the impact of various economic, social and technological changes on a TDL organization and its role in the TDL industry.**
TRC05.03.01	State how an economic change such as economic growth/decline, income growth, consumer confidence, interest rates, and fuel and material costs may impact a hypothetical business decision.
TRC05.03.02	State how a social change as indicated by a measure of consumer attitudes, consumer preferences, demographics and/or population shifts may impact a hypothetical business decision.
TRC05.03.03	Summarize how various technological changes, including changes in transportation and information technology, may impact business functioning today and in the future.
TRC05.04	**Implement and evaluate risk management strategies to prevent and reduce various risks and exposures within a TDL organization as a way to demonstrate understanding of risk management as a tool for improving performance.**
TRC05.04.01	Summarize a rationale for implementing a risk management program within an organization.
TRC05.04.02	State the potential impact various loss exposures such as property, liability, personnel and net income may have on business functioning should there be a loss.
TRC05.04.03	Summarize various approaches for managing organizational risks.

TRC05.05	**Demonstrate an understanding of the impact regulations have on business functioning by analyzing and summarizing the roles and functions of government in regulating and supporting TDL organizations within the industry.**
TRC05.05.01	Summarize the role government plays in regulating domestic transportation operations.
TRC05.05.02	Summarize various government policies created to regulate international transportation operations.
TRC05.05.03	Summarize the impact of government policy on public transportation infrastructure management.
TRC05.05.04	Summarize the impact of government policy on health, safety and environmental management in an organization.
TRC05.06	**Manage ongoing customer relationships with both internal and external TDL customer groups in order to maintain ongoing business.**
TRC05.06.01	Generate a list of potential customer needs and requirements based upon information gathered through client interactions.
TRC05.06.02	Generate a list of next steps that will fulfill customer requirements and produce customer satisfaction.
TRC05.06.03	State how to appropriately respond to customer problems and complains in an effective and efficient manner.
TRC05.07	**Develop and manage plans and budgets to accomplish TDL organizational goals and objectives.**
TRC05.07.01	Develop a work plan and budget that effectively and efficiently allocates people and resources using relevant data about the organization and/or workgroup.
TRC05.07.02	Develop a report that summarizes the key information about the performance and utilization of resources within an organization and/or workgroup.
TRC05.07.03	Based upon organization and/or workgroup data, modify a program of work and related budgets to improve alignment with a TDL organization's goals and objectives.
TRC05.08	**Develop plans for improving a TDL organization's performance in the areas of customer service and operations in order to achieve acceptable levels of customer satisfaction.**
TRC05.08.01	Compare and contrast critical performance issues associated with customer service and operations.
TRC05.08.02	Summarize opportunities for improvement in the areas of customer service and operations.
TRC05.08.03	Execute the steps involved in a structured problem-solving process while developing a plan for improving customer service and operations performance.

TRC05.09   **Assess and implement measures to demonstrate compliance with organizational policies and government laws and regulations common to organizations in the TDL community.**

TRC05.09.01   Interpret relevant organizational policies and government laws and regulations for specific functions within a TDL organization.

TRC05.09.02   Assess compliance with policies and regulations using data and information from relevant reports and sources within the organization.

TRC05.09.03   Recommend improvements for compliance in an area found to be deficient based upon information produced during an assessment of compliance.

Cluster Topic TRC06	**SAFETY, HEALTH AND ENVIRONMENTAL:** *Understand the importance of health, safety, and environmental management systems in organizations and their importance to organizational performance and regulatory compliance. Follow organizational policies and procedures and contribute to continuous improvement in performance and compliance.*

TRC06.01   **Assess and implement measures to maintain safe and healthful working conditions in a TDL organization.**

TRC06.01.01   Assess workplace conditions with regard to safety and health of employees using data collected through observations and experience.

Sample Indicators   Identify the types of risk of injury/illness at work.
Identify those who are susceptible to risk of injury/illness at work.
Describe ways to positively impact occupational safety and health.

TRC06.01.02   Recommend improvements for issues related to the safety and health of employees based upon an assessment of the workplace conditions.

TRC06.02   **Complete work tasks in accordance with applicable employer rules concerning occupational safety and health common to the TDL industry in order to insure employee rights and employer obligations.**

TRC06.02.01   Demonstrate knowledge and understanding of rules and laws designed to promote safety and health in the workplace.

Sample Indicators   Identify key rights of employees related to occupational safety and health.

Identify the responsibilities of employers related to occupational safety and health.

Explain the role of government agencies in providing a safe workplace.

TRC06.03   **Assess and implement methods to reduce sources of workplace hazards common in the TDL industry in order to promote a safe and accident free working environment.**

TRC06.03.01   Demonstrate the steps involved in preventing workplace hazards.

Sample Indicators   Identify and describe common hazards in the workplace.

Identify and describe major sources of information about hazards in the workplace (e.g., MSDS, work procedures, exposure control plans, training materials, labels, and signage).

Identify sources of combustible/flammable materials, fire and emergencies to establish a fire safe environment.

Interpret safety signs and symbols.

TRC06.03.02   List and describe common sources of office, warehouse and worksite accidents We do not agree with adding this, we see this as a task.

TRC06.04   Assess and control health hazards common to the TDL industry in order to promote a healthy working environment.

TRC06.04.01   Demonstrate compliance with protocols established for maintaining a healthy workplace based on an assessment of hazards.

Sample Indicators   Identify procedures necessary for maintaining a safe work area.

Identify methods to correct common hazards.

Identify methods for disposing of hazardous materials.

Demonstrate principals of safe physical movement to avoid slips, trips, and spills.

Inspect and use protective equipment (PPE).

TRC06.04.02   List and describe common sources of group health issues in the workplace.

TRC06.05   Describe the regulatory areas common to the TDL industry in order to demonstrate an understanding of key protocols for protecting health, safety and the environment.

TRC06.05.01   Summarize the major areas addressed in health and safety laws and regulations.

TRC06.05.02   Summarize the major areas addressed in environmental management laws and regulations.

TRC06.06   Analyze and explain major aspects and benefits promoted by implementing health, safety and environmental management systems in a TDL organization.

TRC06.06.01   Describe the major components of a health, safety and environmental management system.

TRC06.06.02   State the role and summarize the benefits of each component in a health, safety and environmental management system.

TRC06.07   Analyze and explain how government agencies promote compliance and improved health, safety and environmental performance in TDL organizations.

TRC06.07.01   State the major measures and types of data utilized by government agencies to measure and monitor health, safety and environmental risks and performance.

TRC06.07.02   Compare and contrast the various services through which government agencies provide assistance in ensuring compliance and improved performance in an organization.

TRC06.08	**We recommend eliminating this section. Analyze and explain the methods employed by TDL organizations to promote improved health, safety and environmental performance in order to understand how organizations individual approach improved performance in important areas.**
TRC06.08.01	State the major metrics and types of data utilized by organizations to measure and monitor health, safety, and environmental risks and performance.
TRC06.08.02	Compare and contrast various methods and protocols organizations establish to improve performance in protecting the areas of health, safety and the environment.
TRC06.09	**Execute health, safety and environmental procedures and protocols established within the TDL organization.**
TRC06.09.01	Identify and utilize common sources of information to maintain knowledge of organizational safety, health and environmental management policies and procedures.
TRC06.09.02	Execute organizational environmental policies and procedures.
TRC06.09.03	Educate and orient other workers regarding organizational safety, health and environmental policies and procedures using a variety of methods such as, job-aids, posters and presentations.
TRC06.09.04	Execute the procedures involved in a protocol for maintaining a safe, healthful and environmentally friendly work area.
TRC06.09.05	State common safety, health and environmental hazards to be avoided in the workplace.
TRC06.09.06	Perform regular audits and inspections to maintain compliance with safety, health and environmental regulations.
TRC06.09.07	Execute common methods and protocols for maintaining documentation on compliance with safety, health and environmental regulations.
TRC06.09.08	Assess and document health, safety and environmental problems using common forms and protocols.
TRC06.09.09	Document the steps involved in an accident/incident investigation.
TRC06.10	**Evaluate current practices and develop a comprehensive plan to improve health, safety, and environmental performance.**
TRC06.10.01	Identify and describe the most critical performance problems related to health, safety and the environment.
TRC06.10.02	Identify opportunities for improvement of performance related to the problems found in an assessment of health, safety and environmental issues.
TRC06.10.03	We recommend deleting this item. Execute a structured problem-solving process to develop a plan for improving performance in protecting general health, safety and environmental concerns.

Cluster Topic TRC07	**LEADERSHIP AND TEAMWORK:** *Use leadership and teamwork skills in collaborating with others to accomplish organizational goals and objectives.*
	No additional statements in this topic beyond those found in the Essential Knowledge and Skills Chart.

Cluster Topic TRC08	**ETHICS AND LEGAL RESPONSIBILITIES:** *Know and understand the importance of professional ethics and legal responsibilities.*

TRC08.01	**Analyze and summarize the legal responsibilities associated with different roles and functions within TDL organizations as a way to demonstrate awareness of the influence laws and regulations have on ethics in the workplace.**
TRC08.01.01	Summarize the legal responsibility an employee has regarding compliance with government laws and regulations.
TRC08.01.02	Summarize the major governmental laws and regulations that define legal responsibilities for different roles and functions within an organization including legislation associated with commercial operations, consumers, health, safety, environmental protection and employment practices.
TRC08.02	**Understanding cooperate policies in light of ethical and legal responsibilities.**
TRC08.02.01	Compare and contrast the differences between ethical and legal responsibilities for different roles and functions within an organization.
TRC08.02.02	State the relationship between the employers expectations for demonstrating ethics and personal responsibility in the workplace and the various behaviors that express compliance with expectations.
TRC08.02.03	Compare and contrast differences in how various workplaces apply personal or professional ethics.
TRC08.02.04	Summarize the differences in ethical and legal responsibilities among various roles and functions within a TDL organization as a way to demonstrate awareness of how laws and regulations related to ethics are applied in workplace settings.
TRC08.03	**Evaluate and apply strategies for responding to unethical or illegal actions of individuals and organizations in the TDL industry in order to demonstrate how to respond to unethical situations.**
TRC08.03.01	Compare and contrast the results achieved from implementing alternative strategies for responding to unethical or illegal actions.
TRC08.03.02	Recommend procedures and rationale for applying the best strategy after thorough consideration of alternatives.

Cluster Topic TRC09	**EMPLOYABILITY AND CAREER DEVELOPMENT:** *Know and understand the importance of employability skills. Explore, plan, and effectively manage careers. Know and understand the importance of entrepreneurship skills.*
TRC09.01	**Evaluate and apply written organizational policies, rules and procedures in order to function ethically and effectively within the workplace.**
TRC09.01.01	Locate appropriate information on organizational policies in handbooks and manuals.
Sample Indicators	Identify the contents of various organizational publications.
	Select the appropriate document (s) as reference for the situation.
TRC09.01.02	Analyze how specific organizational policies and rules, if applied, may influence specific situations in the workplace.
Sample Indicators	Locate and identify specific organizational policy, rule or procedure to assist with a given situation.
	Explain specific organizational policy, rule or procedure to improve a given situation.
TRC09.02	**Assess and evaluate career opportunities in one or more TDL career pathways to broaden awareness of careers available in the industries related to the career cluster.**
TRC09.02.01	Research and match career opportunities based upon their fit with personal career goals.
Sample Indicators	Locate and interpret career information for at least one career cluster.
	Identify job requirements for career pathways.
	Identify educational and credentialing requirements for career cluster and pathways.
TRC09.02.02	Match personal interests and aptitudes to careers when researching opportunities within the pathways.
Sample Indicators	Identify personal interests and aptitudes.
	Identify job requirements and characteristics of selected careers.
	Compare personal interests and aptitudes with job requirements and characteristics of career selected.
	Modify career goals based on results of personal interests and aptitudes with career requirements and characteristics.
Cluster Topic TRC10	**TECHNICAL SKILLS:** *Use the technical knowledge and skills required to pursue the targeted careers for all pathways in the career cluster, including knowledge of design, operation, and maintenance of technological systems critical to the career cluster.*
TRC10.01	**Analyze and assess the various roles and functions of necessary transportation-related technological systems used in the TDL community in order to demonstrate awareness of technical skills associated with the TDL industry.**
TRC10.01.01	Compare and contrast key features of various supply chain or transit systems that transport people and freight.

TRC10.01.02	Compare and contrast key features of various systems for transportation information support systems.
TRC10.01.03	Evaluate the effectiveness of different features provided by various TDL information technology applications.

TRC10.02 **Measure, analyze and manage the output of technological systems in order to enhance performance and reliability of timing, cost projecting, and forecasting within transportation operations.**

TRC10.02.01	Summarize the concept of reliability and its usefulness in evaluating technical system performance.
TRC10.02.02	Summarize how reliability and overall system performance is measured and monitored.
TRC10.02.03	Summarize the importance of extracting accurate data from technological systems to improve the performance and forecasting of TDL organizations.
TRC10.02.04	Summarize the impact a technological system with poor reliability may have on performance within a TDL organization.
TRC10.02.05	Summarize methods employees can use to contribute to improved reliability and performance such as, design, selection, maintenance and operation/utilization.

TRC10.03 **Summarize the potential impact technological systems may have on health, safety and environmental risks in order to demonstrate an understanding of the impact a technical system can have in managing compliance.**

TRC10.03.01	Summarize the major heath, safety and environmental risks and potential impacts associated with various technological systems.
TRC10.03.02	Compare and contrast various processes for managing health, safety and environmental risks and impacts within an organization.

TRC10.04 **Evaluate and recommend a technological system for implementation in a TDL organization in order to demonstrate an understanding of the factors involved in selecting an appropriate system to manage risk and compliance.**

TRC10.04.01	Summarize organizational requirements and selection criteria for technological systems.
TRC10.04.02	Assess alternative technological systems based upon a set of requirements and selection criteria.
TRC10.04.03	Recommend technological system that best fits the organization in light of the corporate and regulatory requirements identified.

TRC10.05 **Participate in efforts to improve the utilization and performance of technological systems to provide the correct data needed to make informed decisions dealing with managing risk and compliance.**

TRC10.05.01	Summarize and prioritize reliability and performance problems based upon data collected during implementation of the technological system.
TRC10.05.02	Synthesize opportunities for improving performance based upon a prioritized list of reliability and performance problems associated with the technological system.
TRC10.05.03	Execute a structured problem-solving process to develop a plan for improving performance in prioritized areas.