Transportation and Distribution Logistics Career Cluster

1. Describe the nature and scope of the Transportation, Distribution & Logistics Career Cluster and the role of transportation, distribution and logistics in society and the economy.

   **TD 1.1**: Describe the various roles and major business functions of a TDL organization.
   *Sample Indicators:*
   - Compare and contrast the various roles played by critical customers, suppliers and stakeholders within a TDL organization.
   - Summarize past and present trends related to the mission of TDL organizations.
   - Describe the major competitive challenges faced by TDL organizations.
   - Identify the major internal job functions and organizational structures found among TDL organizations.

   **TD 1.2**: Summarize trends and challenges faced by TDL organizations.
   *Sample Indicators:*
   - Describe past and present trends related to the mission of TDL organizations.
   - Identify the major competitive challenges faced by TDL organizations in the industry today and in the future.
   - State how an economic change such as economic growth/decline, income growth, consumer confidence, interest rates, and fuel and material costs may impact TDL business decisions.
   - Describe how a social change such as consumer attitudes, consumer preferences and population shifts may impact a TDL business.
   - Explain the impact of CNG, hybrids and electric propulsion systems.

   **TD 1.3**: Identify the major modes of transportation and their role in society.
   *Sample Indicators:*
   - Give an example of each mode of transportation.
   - Compare and contrast key features of systems that transport people and freight.

   **TD 1.4**: Describe how transportation systems and the infrastructure are provided.
   *Sample Indicators:*
   - Explain the impact of public funds (local, state and federal) on transportation systems and infrastructure.
   - Identify the role of the FAA and other transportation agencies on transportation systems.

2. Describe the application and use of new and emerging advanced techniques to provide solutions for transportation, distribution and logistics problems.

   **TD 2.1**: Execute the steps involved in the operation of a computer-driven machine to accomplish 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).

TD 2.2: 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.

TD 2.3: 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.

TD 2.4: 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.

TD 2.5: Demonstrate an understanding of transportation models for individuals and for optimizing distribution networks.

Sample Indicators:
- Distinguish between various transportation models for individuals.
- Apply the best option of distribution networks to a given situation.

3. Describe the key operational activities required of successful transportation, distribution and logistics facilities.

TD 3.1: Utilize financial data to determine profitability, cost reduction and asset utilization.
Sample Indicators:
- Review and evaluate financial reports.
- Provide recommendations for customer sales/service growth.
- Evaluate internal operations to make improvements.
- Extract accurate data from technological systems to improve the performance and forecasting of TDL organizations.

TD 3.2: Evaluate risk management strategies to prevent and reduce various risks and exposures within a TDL organization.
Sample Indicators:
- State the potential impact various loss exposures such as property, liability and personnel may have on a business.

TD 3.3: Manage ongoing customer relationships, internally and externally, to maintain business.
Sample Indicators:
- Generate a list of potential customer needs and requirements.
- Compare and contrast critical performance issues associated with customer service and operations.
- List next steps that will fulfill customer requirements and produce customer satisfaction.
- Respond to customer problems and complaints in an effective and efficient manner.

TD 3.4: Develop and manage plans and budgets to accomplish TDL organizational goals and objectives.
Sample Indicators:
- Develop a work plan and budget that allocates people and resources efficiently.
- Develop a report that summarizes the key information about the performance and utilization of resources within an organization.
- Revise a program of work and related budgets to improve alignment with a TDL organization’s goals and objectives.

TD 3.5: Evaluate and apply written organizational policies, rules and procedures.
Sample Indicators:
- Locate appropriate information on organizational policies in handbooks and manuals.
- Explain a specific organizational policy, rule, or procedure to improve a given situation.
- Demonstrate how to respond to unethical situations.

4. Identify governmental policies and procedures for transportation, distribution and logistics facilities.

TD 4.1: Summarize the role government plays in regulating domestic transportation operations.
Sample Indicators:
- Describe the legal responsibility an employee has regarding compliance with government laws and regulations.
TD 4.2: Summarize various government policies created to regulate international transportation operations.
Sample Indicators:
- Describe one government policy regarding the regulation of international transportation operations.

TD 4.3: Summarize the impact of government policy on public transportation infrastructure management.
Sample Indicators:
- Give an example of how a government policy affects public transportation infrastructure management.

TD 4.4: Summarize the impact of government policy on health, safety, and environmental management in an organization.
Sample Indicators:
- Recommend improvements for compliance in an area found to be deficient.

TD 4.5: Describe the importance of corporate policies regarding ethical and legal responsibilities for a TDL organization.
Sample Indicators:
- Compare and contrast the differences in ethical and legal responsibilities for the different positions within an organization; i.e., employer or employee.

5. Describe transportation, distribution and logistics employee rights and responsibilities and employers' obligations concerning occupational safety and health.

TD 5.1: 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.
- Describe how the major areas addressed in environmental laws and regulations affect the TDL organizations.
- Explain how the government collects, monitors, and utilizes data to assess health, safety and environmental performance of TDL organizations.

TD 5.2: Assess workplace conditions through observations and experience.
Sample Indicators:
- Identify the types of risk of injury/illness at work.
- Identify and describe common hazards in the workplace.
- Interpret safety signs and symbols.
Identify and describe major sources of information about hazards in the workplace (e.g., MSDS, work procedures, training materials)

Identify methods for disposing of hazardous materials.

**TD 5.3:** Execute health, safety, and environmental procedures in a TDL organization.

*Sample Indicators:*
- Educate workers regarding organizational safety, health, and environmental policies and procedures.
- Conduct audits and inspections to assure compliance with safety, health and environmental regulations.
- Maintain a system that documents compliance with safety, health and environmental regulations.
- Document the steps involved in an accident/incident investigation.

**6. Describe career opportunities and means to achieve those opportunities in each of the Transportation, Distribution & Logistics Career Pathways.**

**TD 6.1:** 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 Pathway.
- Identify job requirements for Career Pathways.
- Identify educational and credentialing requirements for Career Cluster and Career Pathways.

**TD 6.2:** 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.

**Facility & Mobile Equipment Maintenance Career Pathway (TD-MTN)**

**1. Develop preventative maintenance plans and systems to keep facility and mobile equipment inventory in operation.**

**TD-MTN 1.1:** Develop preventive maintenance plans and systems to meet business and equipment manufacturer requirements.

*Sample Indicators:*
- Identify performance/reliability requirements for the use of facilities and equipment.
• Review and analyze facilities and equipment documentation to determine preventive maintenance requirements.
• Review safety and environmental regulations and policies to include HAZMAT to determine adequacy and compliance.
• Review performance/reliability and maintenance records to determine the efficacy of current systems and methods.
• Develop routine maintenance procedures and schedules to satisfy the performance/reliability requirements.
• Develop emergency maintenance procedures to satisfy the performance requirements.
• Determine equipment/material/supply and labor requirements for the procedures and schedules developed to satisfy performance/reliability requirements.
• Develop purchasing plans and inventory levels for supplies/parts needed to satisfy the developed procedures and schedules.
• Determine people and resources to satisfy the schedule and reliability requirements.
• Develop written preventative maintenance plans that satisfy the reliability requirements.
• Write and present suggested preventative maintenance plans.

TD-MTN 1.2: Apply strategies used to monitor and evaluate the performance of maintenance plans and systems.
Sample Indicators:
• Monitor and maintain information on facilities and equipment use and reliability.
• Monitor and maintain information on the implementation and operation of preventive maintenance systems, including compliance with safety and environmental requirements (e.g., records, logs).
• Monitor and maintain information on the availability of parts/materials/supplies and the management of inventory levels.
• Evaluate maintenance plan and system performance and identify problems.
• Develop reports on system implementation and performance.
• Present and explain report.

2. Design ways to improve facility and equipment system performance.

TD-MTN 2.1: Develop plans for improving facilities/equipment/system performance.
Sample Indicators:
• Review maintenance reports on performance of current facilities, equipment, and the maintenance and reliability system.
• Analyze and evaluate professional literature on new products/technology/methods with higher levels of reliability and performance.
• Identify potential areas for improvement.
• Analyze costs and benefits of alternative strategies (e.g., buy new equipment, upgrade equipment, change maintenance system) for improving performance.
• Develop written improvement plan with recommendations.
• Present and explain plan.

TD-MTN 2.2: Execute repair plans for facilities and mobile equipment.
Sample Indicators:
• Document all repairs to equipment.
• Conduct periodic inspections of engines, powertrains, brakes, suspension systems, etc.
• Schedule oil sample analysis.
• Record any electronic fault codes that have been logged.

TD-MTN 2.3: Develop and execute repair plans based upon an assessment of the facility/equipment inventory.
Sample Indicators:
• Identify and describe facility and mobile equipment reliability/performance problems.
• Determine causes of reliability/performance problems of facilities, equipment, subsystems, and/or components including electrical/electronic, fluid power, and mechanical systems and computer control systems.
• Determine repair procedures and equipment, materials, parts, supplies, and labor requirements to accomplish repairs.
• Develop written plans (e.g., repair plan forms).
• Write complete description of repair and counseling.

Health, Safety & Environmental Management Career Pathway (TD-HSE)

1. Describe the health, safety and environmental rules and regulations in transportation, distribution and logistics workplaces.

TD-HSE 1.1: Conduct audits and inspections and evaluate compliance with company policies and government laws and regulations.
Sample Indicators:
• Develop compliance checklist for conducting audits and inspections.
• Develop audit/inspection process/procedures and schedule.
• Conduct audits and inspections.
• Document audit/inspection findings and make recommendations (e.g., report, memo).
• Present and explain findings and recommendations (e.g., business meetings).

TD-HSE 1.2: Develop and update safety, health, and environmental management systems including policies, procedures, and documentation.
Sample Indicators:
• Compile and review current systems including policies, procedures, and documentation.
• Review current compliance problems (e.g., audit/inspection findings, documentation systems).
• Review health/safety and environmental hazard analyses and incidence reports.
• Identify changing government laws and regulations to include homeland security.
- Determine need for revising company policies, procedures, and systems.
- Develop report with recommended revisions.
- Present and explain recommended revisions (e.g., business meetings).

**TD-HSE 1.3:** Manage the ongoing implementation of health, safety, and environmental policies, procedures, and documentation systems including development of communication plans that promote and support the effort.

*Sample Indicators:*
- Prepare information and materials to promote awareness and advocate a safe and healthy work environment.
- Develop workplace materials and documentation tools to support system implementation and management.
- Prepare training materials for providing new employee orientation and recurrent training and support (including required employee training).
- Conduct employee training.
- Evaluate the effectiveness of promotional and support materials and employee training.
- Document communication, support, and training activities, and recommend improvements.
- Present and explain report and recommendations (e.g., business meetings).

**TD-HSE 1.4:** Analyze potential hazards and risks and develop processes to prevent and/or manage health, safety, and environmental emergencies.

*Sample Indicators:*
- Review current policies and procedures for emergency response.
- Review reports/documentation on emergency responses and emergency response drills.
- Review government laws and regulations.
- Revise/update current policies and procedures for emergency response.
- Develop communication, training, and support materials.
- Conduct training and emergency response drills.
- Develop report on updated policies, procedures, documentation, training, and drills and recommend next steps.
- Present and explain report and recommendations (e.g., business meetings).

2. **Develop solutions to improve performance of health, safety and environmental management services.**

**TD-HSE 2.1:** Develop strategies to improve safety, health, and environmental system performance.

*Sample Indicators:*
- Compile and analyze data on safety, health, and environmental performance.
- Identify most critical improvement opportunities.
- Identify and evaluate alternative improvement strategies/solutions.
- Recommend improvement strategies.
• Develop report on performance and improvement strategies.
• Present and explain report and recommendations (e.g., business meetings).

**TD-HSE 2.2:** Conduct health, safety, and environmental incident investigations.

*Sample Indicators:*
• Develop comprehensive description/documentation of incident(s) and notify relevant authorities.
• Conduct root cause analysis and identify causes of incident.
• Identify and evaluate potential solutions.
• Develop recommendations for corrective action.
• Develop report on incident findings and recommended corrective actions.
• Present and explain report and recommendations (e.g., business meetings).

**TD-HSE 2.3:** Conduct safety, health, and environmental analyses to evaluate and manage risks associated with equipment and material utilization as well as work processes.

*Sample Indicators:*
• Develop comprehensive description/documentation of hazards in the workplace.
• Conduct hazard analysis and review of potential hazard reduction/elimination strategies.
• Develop recommendations for hazard reduction or elimination.
• Develop report on hazard analysis findings and recommended corrective actions.
• Present and explain report and recommendations (e.g., business meetings).

**Logistics Planning & Management Services Pathway (TD-LOG)**

1. Develop solutions to provide and manage logistics services for the company and customers.

**TD-LOG 1.1:** Assess company/customer needs and requirements using a structured process.

*Sample Indicators:*
• Identify services that meet customer requirements.
• Determine service requirements.
• Estimate/forecast the demand for services.
• Document (e.g., report, memo, tables) customer requirements and service demand.
• Present and explain information on customer requirements and service demand (e.g., business meetings).

**TD-LOG 1.2:** Assess the options for locating facilities and services within available logistics networks.

*Sample Indicators:*
• Develop criteria for location decisions.
• Identify the general region(s) for locations.
• Identify and map potential locations.
• Evaluate alternative locations and determine service level and cost differences.
Select locations.
Document (e.g., report, memo, tables) evaluation process and location decisions.
Present and explain information on location process and decisions (e.g., business meetings).

TD-LOG 1.3: Develop transportation plans including costs, routes, and schedules for transporting people and goods.
Sample Indicators:
- Determine origin and destination points for routing.
- Determine load levels and transportation requirements for goods and/or people.
- Determine availability of qualified operators and required transportation equipment.
- Develop routes to meet service and time requirements at lowest cost.
- Develop plans and schedules (including times, operators, equipment, and related resources) that meet service/time requirements at lowest costs.
- Develop transportation plan (e.g., report, memo, tables) including routing and scheduling.
- Present transportation plan (e.g., business meetings).

TD-LOG 1.4: Develop warehousing/storage solutions that meet needs and requirements.
Sample Indicators:
- Determine selection criteria for warehousing services (e.g., loading, storing, consolidating).
- Identify possible warehousing providers.
- Develop bid specifications for providers.
- Request bids from providers.
- Evaluate bids and select provider(s).
- Document (e.g., report, memo, tables) warehousing solution.
- Present and explain information on warehousing solutions (e.g., business meetings).

TD-LOG 1.5: Develop packaging and material handling solutions to meet needs and requirements including HAZMAT requirements.
Sample Indicators:
- Determine packaging, transporting, storage and handling requirements.
- Identify alternative solutions.
- Evaluate alternative solutions.
- Select most cost-effective solution.
- Document (e.g., report, memo, tables) evaluation process and selection decision.
- Present and explain information on packaging and material handling solutions (e.g., business meetings).

TD-LOG 1.6: Develop documentation and information flow requirements and solutions.
Sample Indicators:
- Determine required documentation to meet regulatory/legal requirements.
- Determine additional customer documentation and information flow requirements.
- Develop document package and proposed process for providing information to designated parties to meet legal and customer requirements.
- Document (e.g., report, memo, tables) documentation and information flow requirements and how documentation package and plan meets these requirements.
- Present and explain documentation and information flow solutions (e.g., business meetings).

TD-LOG 1.7: Develop documentation and other requirements for international transportation and logistics.
Sample Indicators:
- Determine required documentation to meet regulatory/legal requirements for international transportation.
- Determine additional customer documentation and information flow requirements.
- Develop document package and proposed process for providing information to designated parties to meet legal and customer requirements to include homeland security requirements.
- Document (e.g., report, memo, tables) international requirements.
- Present and explain information on international requirements (e.g., business meetings).

TD-LOG 1.8: Develop and negotiate contracts for logistics planning and management services.
Sample Indicators:
- Determine logistics and planning services to be bid and contracted.
- Develop proposal and review selection criteria.
- Identify possible service providers.
- Develop bid specifications for providers.
- Request bids from providers.
- Evaluate bids and select provider(s).
- Document (e.g., report, memo, tables) evaluation process and selection decision.
- Present and explain information on process and decisions (e.g., business meetings).

TD-LOG 1.9: Select mode/modes of transportation needed to meet identified company/customer needs and requirements.
Sample Indicators:
- Identify all possible modes.
- Develop criteria for selecting mode(s).
- Select most cost-effective mode(s) based on evaluation criteria.
- Document (e.g., report, memo, tables) evaluation process and selection decision.
- Present and explain information on process and decisions (e.g., business meetings).

TD-LOG 1.10: Recommend the carriers to use for various transportation modes given the customer needs and requirements.
Sample Indicators:
- Determine selection criteria for carriers.
- Identify possible carriers for selected mode(s).
Develop bid specifications for carriers.
Request bids from carriers.
Evaluate bids and select carrier(s).
Document (e.g., report, memo, tables) evaluation process and selection decision.
Present and explain information on selection process and decisions (e.g., business meetings).

2. Analyze and improve performance of logistics systems to provide logistics planning and management services.

**TD-LOG 2.1:** Assess and analyze data used to monitor and report on the performance of logistics systems.
*Sample Indicators:*
- Develop performance measures and determine data requirements for monitoring performance.
- Collect and organize performance data in database.
- Establish performance targets/standards for monitoring performance.
- Analyze performance relative to targets/standards and identify performance problems.
- Document and report system performance trends and problems using graphs/charts (e.g., reports, memos).
- Present and explain information on system performance (e.g., business meetings).

**TD-LOG 2.2:** Develop short-term and long-term logistics demand forecasts.
*Sample Indicators:*
- Determine most appropriate forecasting method.
- Identify factors/variables for developing forecasting models.
- Determine data requirements.
- Gather and organize data into database.
- Develop and evaluate forecasts.
- Document forecasts using graphs and charts in written reports.
- Present and explain information on forecasting process and results (e.g., business meetings).

**TD-LOG 2.3:** Evaluate risk factors and social and economic trends affecting logistics systems.
*Sample Indicators:*
- Evaluate the potential risks associated with national or global political and government policy changes to include new homeland security requirements.
- Evaluate the potential risks of national or global social and cultural changes to include homeland security implications.
- Evaluate the potential risks of national or global technological changes.
- Evaluate the potential risks of national or global economic changes.
- Document evaluation of risk factors and implications for revising logistics solutions in written reports.
- Present and explain information on risks and implications (e.g., business meetings).
TD-LOG 2.4: Evaluate compliance with documentation and other requirements for international transportation and logistics.

Sample Indicators:
- Develop compliance checklist for international and homeland security requirements.
- Develop compliance review process for evaluating compliance.
- Conduct compliance review.
- Document compliance findings and make recommendations in writing (e.g., report, memo).
- Present and explain information on compliance (e.g., business meetings).

TD-LOG 2.5: Evaluate performance and contract compliance of contractors and service providers.

Sample Indicators:
- Identify performance and contract compliance requirements in contracts/agreements.
- Collect and organize contractor performance data into database.
- Analyze performance data.
- Develop compliance checklist and review procedure for other contract requirements.
- Conduct compliance review.
- Document findings in written reports/memos.
- Present and explain information on contractor performance (e.g., business meetings).

TD-LOG 2.6: Develop strategies to improve quality and service of logistics while reducing costs.

Sample Indicators:
- Determine performance gaps and improvement priorities.
- Identify and evaluate causes of performance gaps.
- Identify and evaluate potential solutions.
- Determine most appropriate solutions.
- Document causes and recommended solutions in written reports.
- Present and explain information on improvement solutions (e.g., business meetings).

Sales and Service Career Pathway (TD-SAL)

1. Analyze the ongoing performance of transportation, logistics and distribution-related sales and service operations.

TD-SAL 1.1: Assess sales growth opportunities for new products and services.

Sample Indicators:
- Analyze changing customer/market needs.
- Evaluate impacts of social, economic, and technological changes on future customer needs.
- Identify potential product/service features and mixes and pricing strategies to meet future needs.
- Evaluate competitor products/services and pricing strategies.
- Determine future demand for potential products and services.
- Identify most promising products and services.
- Develop report on recommended new products and services.
- Present and explain report (e.g., business meetings).

TD-SAL 1.2: Develop plans to meet sales goals with existing products and services.
Sample Indicators:
- Compile and analyze historical sales performance (e.g., spreadsheets, graphs).
- Develop sales goals and forecasts for sales period that meet business requirements.
- Develop promotion, pricing, sales strategies to meet sales goals.
- Develop sales plan report.
- Present and explain report (e.g., business meetings).

TD-SAL 1.3: Assess the viability of existing product lines and services.
Sample Indicators:
- Analyze customer/client needs and wants.
- Determine future demand for existing product line/service.
- Review features and pricing for competitiveness.

2. Demonstrate the use of sales and ongoing service of products and services that are transportation related to promote development of existing and future clients and customers.

TD-SAL 1.1: Apply strategies and techniques used to sell logistics and transportation products and services.
Sample Indicators:
- Establish customer relationship.
- Determine customer needs.
- Describe and explain alternative products and services and pricing (e.g., logistics services, transportation equipment, travel/routing arrangements).
- Assist customer in making decisions.
- Close customer sale.
- Complete sales transaction.
- Prepare sales documents (e.g., contracts, sales documents, travel arrangements/tickets).
- Present and explain sales documents to customer.

TD-SAL 1.2: Apply strategies and techniques used to provide high-quality ongoing customer service.
Sample Indicators:
- Greet customer.
- Determine customer needs.
- Locate and confirm customer contact and sales information.
- Determine and explain status of customer orders/purchases, transportation arrangements, and schedules.
- Identify potential or actual problems in providing customer products/services according to agreed arrangements and schedules.
• Develop solutions to meet customer needs.
• Document customer service solutions (e.g., memo, report).
• Present and explain solution to customer and sales/customer service team.

Transportation Operations Career Pathway (TD-OPS)

1. Demonstrate the use of sales and ongoing service of products and services that are transportation related to promote development of existing and future clients and customers.

TD-OPS 1:1: Develop transportation plans including routes and schedules for transporting people and goods.
Sample Indicators:
• Determine origin and destination points for routing.
• Determine load levels and transportation requirements for goods and/or people.
• Determine availability of qualified operators and required transportation equipment.
• Develop routes to meet service and time requirements at lowest cost.
• Develop plans and schedules (including times, operators, equipment, and related resources) that meet service/time requirements at lowest costs.
• Develop transportation plans (e.g., report, memo, tables) including routing and scheduling.
• Present transportation plans (e.g., business meetings).

TD-OPS 1:2: Apply protocols to monitor and adjust transportation plans to meet customer requirements.
Sample Indicators:
• Review current plans, routes, and schedules.
• Analyze information on the movement of people/goods according to plans and schedules.
• Determine need to adjust/review plans, routes, and schedules in response to changing conditions and customer requirements.
• Revise transportation plans (e.g., report, memo, tables/charts) including routing and scheduling.
• Present revised plans (e.g., business meetings).

TD-OPS 1:3: Apply strategies for managing traffic flow at transportation hubs, facilities and staging areas.
Sample Indicators:
• Develop/review plans and schedules for arrival, loading/staging, and departure at transportation facility.
• Analyze current status of scheduled arrivals and departures relative to plans.
• Determine need to adjust/review staging/loading arrangements at the facility.
• Revise traffic flow and staging plans and schedules (e.g., report, memo, charts/tables).
• Present revised plans (e.g., team meetings).
TD-OPS 1:4: Negotiate contracts for transportation operations services.

Sample Indicators:
- Determine transportation services to be bid and contracted.
- Develop proposal and review/selection criteria.
- Identify possible service providers.
- Develop bid specifications for providers.
- Request bids from providers.
- Evaluate bids and select provider(s).
- Document (e.g., report, memo, tables) evaluation process and selection decision.
- Present and explain information on process and decisions (e.g., business meetings).

2. Analyze performance of transportation operations in order to improve quality and service levels and increase efficiency.

TD-OPS 2.1: Apply strategies and protocols used to monitor and report on the performance of transportation operations.

Sample Indicators:
- Develop performance measures and determine data requirements for monitoring performance.
- Collect and organize performance data in database.
- Establish performance targets/standards for monitoring performance.
- Analyze performance relative to targets/standards and identify performance problems.
- Document and report system performance trends and problems using graphs/charts (e.g., reports, memos).
- Present and explain information on performance (e.g., business meetings).

TD-OPS 2.2: Develop strategies based upon data collected that will improve quality and service levels while reducing costs.

Sample Indicators:
- Determine performance gaps and improvement opportunities (e.g., on-time delivery, yields, capacity utilization, costs).
- Identify and evaluate causes of performance gaps.
- Identify and evaluate potential solutions (e.g., routing, scheduling, equipment upgrades, operator training).
- Determine most appropriate solutions.
- Document causes and recommended solutions in written reports.
- Present and explain proposed solutions (e.g., business meetings).

3. Comply with policies, laws and regulations in order to maintain safety, security and health and mitigate the economic and environmental risk of transportation operations.
TD-OPS 3.1: Apply techniques used to monitor and evaluate compliance with company policies and government laws and regulations with special attention to HAZMAT and Homeland Security requirements.

Sample Indicators:
- Develop compliance checklist for conducting review.
- Develop compliance review process.
- Conduct compliance review.
- Document compliance findings and make recommendations (e.g., report, memo).
- Present and explain compliance findings and recommendations (e.g., business meetings).

TD-OPS 3.2: Revise company policies, procedures, and information/documentation systems to improve compliance with changing customer/business requirements (e.g., quality systems) and government laws and regulations (e.g., health, safety, environment).

Sample Indicators:
- Review current compliance problems (e.g., compliance review findings).
- Identify changing customer/business requirements and government laws and regulations, especially those related to HAZMAT and homeland security.
- Determine need for revising company policies, procedures, and systems.
- Develop report with recommended revisions.
- Present and explain recommended revisions (e.g., business meetings).

Transportation Systems/Infrastructure Planning, Management & Regulation Career Pathway (TD-SYS)

1. Develop plans to maintain and/or improve the transportation infrastructure.

TD-SYS 1.1: Develop plans to maintain transportation infrastructure.

Sample Indicators:
- Review and analyze maintenance requirements of infrastructure.
- Monitor and analyze the usage and conditions of transportation infrastructure.
- Develop maintenance plans including schedules, material and labor requirements, and budgets.
- Present and explain plans (e.g., business meetings).
- Assess impact of climate change, changing demographics, and energy cost.

TD-SYS 1.2: Develop plans for new, improved, or discontinued transportation infrastructure (e.g., highways, airports, train terminals, ports, intermodal facilities).

Sample Indicators:
- Analyze changing customer/market needs and requirements.
- Explain local, state, and federal political influences and impact on requirements to include homeland security implications.
- Determine the key features and capabilities of public infrastructure to meet these requirements.
- Develop projections of the demand for and utilization of infrastructure.
2. Assess, plan and manage the implementation of transportation services.

**TD-SYS 2.1:** Apply strategies used to monitor and report on the performance of transit operations.

*Sample Indicators:*
- Analyze changing customer/market needs and requirements.
- Determine the key features and capabilities of services to meet requirements.
- Develop projections of the demand for and utilization of services.
- Evaluate the costs and benefits of public transportation services (including economic, social, environmental).
- Develop plans for public transportation services including projected routes and schedules and related infrastructure and equipment requirements.
- Present and explain plans (e.g., public meetings).

**TD-SYS 2.2:** Develop strategies to improve service levels and quality and reduce costs.

*Sample Indicators:*
- Develop performance measures and determine data requirements for monitoring performance.
- Collect and organize performance data in database.
- Establish performance targets/standards for monitoring performance.
- Analyze performance relative to targets/standards and identify performance problems.
- Document and report system performance trends and problems using graphs/charts (e.g., reports, memos).
- Present and explain information on performance (e.g., business meetings).

**TD-SYS 2.3:** Develop plans for new, improved, or discontinued transportation services including transit transportation services.

*Sample Indicators:*
- Analyze changing customer/market needs and requirements.
- Determine the key features and capabilities of services to meet requirements.
- Develop projections of the demand for and utilization of services.
- Evaluate the costs and benefits of public transportation services (including economic, social, environmental).
- Develop plans for public transportation services including projected routes and schedules and related infrastructure and equipment requirements.
- Present and explain plans (e.g., public meetings).
3. Describe ways to improve the system utilization, flow, safety and environmental performance of transportation systems.

**TD-SYS 3.1:** Develop plans to improve system utilization and traffic flow.

*Sample Indicators:*
- Determine performance gaps and improvement opportunities (e.g., on schedule, ridership, capacity utilization, costs).
- Identify and evaluate causes of performance gaps.
- Identify and evaluate potential solutions (e.g., routing, scheduling, equipment upgrades, operator training).
- Determine most appropriate solutions.
- Document causes and recommended solutions in written reports.
- Present and explain proposed solutions (e.g., business meetings).
- Identify uses of new technology for improving efficiency of the system.

**TD-SYS 3.2:** Develop plans to improve safety and environmental performance of carriers and safety conditions in transportation systems.

*Sample Indicators:*
- Analyze the safety and environmental performance of carriers and safety conditions in transportation systems.
- Determine major problem areas such as homeland security, hazardous materials and crash rates.
- Identify and evaluate alternative solutions.
- Develop plans to improve safety and environmental performance.
- Present and explain plans (e.g., public meetings).
- Determine finance and funding component of proposed solutions.

**Warehousing & Distribution Center Operations Pathway (TD-WAR)**

1. Demonstrate efficient and effective warehouse and distribution center operations.

**TD-WAR 1.1:** Develop packaging, storage, and handling solutions for goods and materials.

*Sample Indicators:*
- Determine potential risks or damage from normal rigors including compression, shock, drop, moisture, corrosion, vibration, temperature and motion to include HAZMAT risks during transportation and handling.
- Determine potential hazards to other goods and materials and health, safety, and environmental risks.
- Determine size, weight, and shape requirements for packaging solutions.
- Determine best handling and storage methods and additional packaging requirements for these methods.
- Determine customer visual design and appearance requirements including handling information, warnings, display requirements, and required documentation.
• Determine other customer functional requirements including display/presentation and assembly and use requirements.
• Develop and test alternative packaging solutions and document test results.
• Document and develop prototypes of proposed packaging solution meeting requirements.
• Present and explain solution to customers (e.g., business meetings).
• Identify and map potential locations.
• Evaluate alternative locations and determine service level and cost differences.
• Select locations.
• Document (e.g., report, memo, tables) evaluation process and location decisions.

TD-WAR 1.2: Develop warehousing solutions to meet customer and business requirements.
Sample Indicators:
• Determine customer requirements for warehousing services including processing, handling, and storing goods and materials including additional logistics and information services (e.g., reviewing customer compliance manuals).
• Project short-term and long-term demand for warehousing services including the volume and flow of goods and materials to and from warehouse(s).
• Determine and map warehouse location(s).
• Determine size and configuration of warehouse structure and infrastructure requirements and develop external layout plan (e.g., access roads, lots, dock configuration).
• Develop internal layout plan including areas for processing incoming and outgoing products, cross-docking, and storage.
• Select material handling and storage equipment.
• Develop policies and procedures for processing goods and materials that meet customer requirements and comply in government regulations.
• Determine documentation and information requirements for managing warehouse operations.
• Develop report on proposed warehousing solution.
• Present and explain information on warehousing solution (e.g., business meetings).

TD-WAR 1.3: Process incoming goods and materials using standardized protocols and procedures.
Sample Indicators:
• Determine scheduled volume and flow of incoming products for day/week.
• Determine equipment and staffing requirements and develop traffic management and work schedules.
• Select space for storing or cross-docking of incoming products.
• Develop instructions and related documentation (e.g., labels) for internal processing/storage.
• Confirm documentation (e.g., bill of lading, packing lists, MSDS sheets) and seals on incoming products and accept shipments.
• Unload and confirm quantity and contents of shipments and inspect for damage/hazards.
• Move to storage and cross-docking areas.
• Complete documentation on incoming processing and condition of products.
• Complete daily/weekly reports for customers and business on processing activities and inventory.
• Present and explain reports at business meetings.

**TD-WAR 1.4:** Process outbound shipments using standardized protocols and procedures.

*Sample Indicators:*
- Determine scheduled volume and flow of outbound products for day/week.
- Determine equipment and staffing requirements and develop traffic management and work schedules.
- Develop instructions for picking, moving, unitizing, and packaging outbound shipment.
- Develop and package shipping documentation (e.g., bill of lading, packing lists, international documentation, placards, MSDS sheets).
- Pick, assemble, and package orders and load and secure them within containers and transport equipment (e.g., truck trailers, rail cars).
- Transfer and process documentation with transporter.
- Complete documentation on outbound processing.
- Complete daily/weekly reports for customers and business on processing activities and inventory.
- Present and explain reports at business meetings.

**TD-WAR 1.5:** Manage inventory according to company policies and customer requirements.

*Sample Indicators:*
- Forecast demand for products and materials for shipping.
- Determine required inventory levels to meet projected demand and maintain customer defined service levels (e.g., safety stock levels).
- Project incoming shipment level and schedules to maintain inventory levels.
- Conduct inventory control audits and develop inventory control reports.
- Develop reports on inventory management and control to include HAZMAT requirements.
- Present and explain information on location process and decisions (e.g., business meetings).

2. Describe ways to improve the performance of warehouse and distribution operations.

**TD-WAR 2.1:** Develop a plan to improve warehousing operations systems, processes and procedures.

*Sample Indicators:*
- Compile warehouse performance data.
- Analyze performance relative to targets/standards and identify performance problems.
- Document and report system performance trends and problems using graphs/charts (e.g., reports, memos).
- Identify potential solutions.
- Evaluate and select best solutions.
- Present and explain information on system performance and proposed solutions (e.g., business meetings).
TD-WAR 2.2: Identify and document improvements recommended in the performance and reliability of material handling equipment and management information systems.

Sample Indicators:
- Compile warehouse equipment/system performance and reliability data.
- Analyze performance relative to targets/standards and identify performance problems.
- Document and report system performance trends and problems using graphs/charts (e.g., reports, memos).
- Identify potential solutions.
- Evaluate and select best solutions.
- Present and explain information on performance/reliability and proposed solutions (e.g., business meetings).

3. Analyze compliance with company policies and government laws and regulations in warehouse and distribution operations.

TD-WAR 3.1: Apply protocols and procedures to maintain compliance with and performance of security and loss prevention systems.

Sample Indicators:
- Analyze changes in government laws and regulations (e.g., control of hazardous materials) and new customer requirements and determine required system changes.
- Conduct inventory control, security/loss prevention reviews and audits to determine level of conformity.
- Compile and analyze damage and loss data and audit findings.
- Determine causes of system failures.
- Identify and evaluate alternative solutions.
- Develop report on system performance and proposed solutions.
- Present and explain report in business meetings.

TD-WAR 3.2: Apply protocols and procedures to maintain compliance with and performance of quality management systems.

Sample Indicators:
- Analyze changes in government laws and regulations (e.g., government procurement, homeland security) and new customer requirements (e.g., ISO 9000) and determine required system changes.
- Conduct quality reviews and audits to determine level of conformity.
- Compile and analyze quality failure cost data and audit findings.
- Determine causes of system failures.
- Identify and evaluate alternative solutions.
- Develop report on system performance and proposed solutions.
- Present and explain report in business meetings.
TD-WAR 3.3: Apply protocols and procedures to maintain compliance with and performance of health, safety, and environmental management system requirements.

Sample Indicators:
- Analyze changes in government laws and regulations and new customer requirements and determine required system changes.
- Conduct health, safety, and environmental reviews/audits to determine level of conformity.
- Compile and analyze health, safety, and environmental incidence data and audit findings.
- Determine causes of system failures.
- Identify and evaluate alternative solutions.
- Develop report on system performance and proposed solutions.
- Present and explain report in business meetings.