



**Transportation, Distribution and Logistics Career Cluster
 Transportation Systems/Infrastructure
 Planning, Management and Regulation Pathway
 Knowledge and Skill Statements**

The Pathway Knowledge and Skills Chart describes what all/most learners/workers need to know and be able to do to demonstrate competence within a career pathway. Following the pathway description, there are four sets of knowledge and skill expectations:

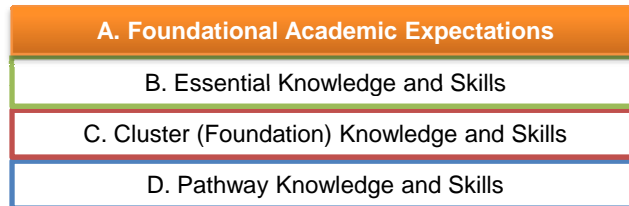


PATHWAY DESCRIPTION

Transportation Systems/Infrastructure Planning, Management and Regulation Pathway: Careers in the Transportation Systems/Infrastructure Planning, Management and Regulation pathway deal with all aspects of the design and operation of our public transportation systems – road, air, sea and rail. These functions are primarily the responsibility of people who are employed by federal, state and local transportation agencies. Many businesses work to assist these agencies in their efforts.

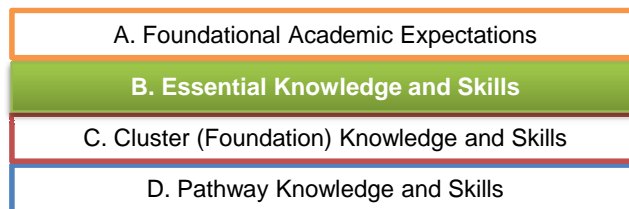
A. FOUNDATIONAL ACADEMIC EXPECTATIONS

All secondary students should meet their state’s academic standards. All Essential Cluster and Pathway Knowledge and Skills are predicated on the assumption that foundational academic skills have been attained. Some knowledge and skill statements will further define critical linkages and applications of academics in the cluster and/or pathway.



B. ESSENTIAL KNOWLEDGE AND SKILLS

The following Essential Knowledge and Skill statements apply to careers in all clusters and pathways. Persons preparing for careers in this pathway should be able to demonstrate these skills in the context of this cluster and pathway.



**Essential Topic
 ESS01**

ACADEMIC FOUNDATIONS: *Achieve additional academic knowledge and skills required to pursue the full range of career and postsecondary education opportunities within a career cluster.*



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ESS01.01 Complete required training, education, and certification to prepare for employment in a particular career field.

- ESS01.01.01 Identify training, education and certification requirements for occupational choice.
- ESS01.01.02 Participate in career-related training and/or degree programs.
- ESS01.01.03 Pass certification tests to qualify for licensure and/or certification in chosen occupational area.

ESS01.02 Demonstrate language arts knowledge and skills required to pursue the full range of post-secondary education and career opportunities.

- ESS01.02.01 Model behaviors that demonstrate active listening.
- ESS01.02.02 Adapt language for audience, purpose, situation. (i.e. diction/structure, style).
- ESS01.02.03 Organize oral and written information.
- ESS01.02.04 Compose focused copy for a variety of written documents such as agendas, audio-visuals, bibliographies, drafts, forms/documents, notes, oral presentations, reports, and technical terminology.
- ESS01.02.05 Edit copy to create focused written documents such as agendas, audio-visuals, bibliographies, drafts, forms/documents, notes, oral presentations, reports, and technical terminology.
- ESS01.02.06 Comprehend key elements of oral and written information such as cause/effect, comparisons/contrasts, conclusions, context, purpose, charts/tables/graphs, evaluation/critiques, mood, persuasive text, sequence, summaries, and technical subject matter.
- ESS01.02.07 Evaluate oral and written information for accuracy, adequacy/sufficiency, appropriateness, clarity, conclusions/solutions, fact/opinion, propaganda, relevancy, validity, and relationship of ideas.
- ESS01.02.08 Identify assumptions, purpose, outcomes/solutions, and propaganda techniques.
- ESS01.02.09 Predict potential outcomes and/or solutions based on oral and written information regarding trends.
- ESS01.02.10 Present formal and informal speeches including discussion, information requests, interpretation, and persuasive arguments.

ESS01.03 Demonstrate mathematics knowledge and skills required to pursue the full range of post-secondary education and career opportunities.

- ESS01.03.01 Identify whole numbers, decimals, and fractions.
- ESS01.03.02 Demonstrate knowledge of basic arithmetic operations such as addition, subtraction, multiplication, and division.
- ESS01.03.03 Demonstrate use of relational expressions such as equal to, not equal, greater than, less than, etc.
- ESS01.03.04 Apply data and measurements to solve a problem.
- ESS01.03.05 Analyze mathematical problem statements for missing and/or irrelevant data.



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ESS01.03.06 Construct charts/tables/graphs from functions and data.

ESS01.03.07 Analyze data when interpreting operational documents.

ESS01.04 Demonstrate science knowledge and skills required to pursue the full range of post-secondary and career education opportunities.

ESS01.04.01 Evaluate scientific constructs including conclusions, conflicting data, controls, data, inferences, limitations, questions, sources of errors, and variables.

ESS01.04.02 Apply scientific methods in qualitative and quantitative analysis, data gathering, direct and indirect observation, predictions, and problem identification.

Essential Topic **COMMUNICATIONS: Use oral and written communication skills in creating, expressing and interpreting information and ideas including technical terminology and information.**
ESS02

ESS02.01 Select and employ appropriate reading and communication strategies to learn and use technical concepts and vocabulary in practice.

ESS02.01.01 Determine the most appropriate reading strategy for identifying the overarching purpose of a text (i.e. skimming, reading for detail, reading for meaning or critical analysis).

ESS02.01.02 Demonstrate use of content, technical concepts and vocabulary when analyzing information and following directions.

ESS02.01.03 Select the reading strategy or strategies needed to fully comprehend the content within a written document (i.e., skimming, reading for detail, reading for meaning or critical analysis).

ESS02.01.04 Interpret information, data, and observations to apply information learned from reading to actual practice.

ESS02.01.05 Transcribe information, data, and observations to apply information learned from reading to actual practice.

ESS02.01.06 Communicate information, data, and observations to apply information learned from reading to actual practice.

ESS02.02 Demonstrate use of the concepts, strategies, and systems for obtaining and conveying ideas and information to enhance communication in the workplace.

ESS02.02.01 Employ verbal skills when obtaining and conveying information.

ESS02.02.02 Record information needed to present a report on a given topic or problem.

ESS02.02.03 Write internal and external business correspondence that conveys and/or obtains information effectively.

ESS02.02.04 Communicate with other employees to clarify workplace objectives.

ESS02.02.05 Communicate effectively with customers and employees to foster positive relationships.



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- ESS02.03** **Locate, organize and reference written information from various sources to communicate with co-workers and clients/participants.**
- ESS02.03.01 Locate written information used to communicate with co-workers and customers.
 - ESS02.03.02 Organize information to use in written and oral communications.
 - ESS02.03.03 Reference the sources of information.
- ESS02.04** **Evaluate and use information resources to accomplish specific occupational tasks.**
- ESS02.04.01 Use informational texts, Internet web sites, and/or technical materials to review and apply information sources for occupational tasks.
 - ESS02.04.02 Evaluate the reliability of information from informational texts, Internet Web sites, and/or technical materials and resources.
- ESS02.05** **Use correct grammar, punctuation and terminology to write and edit documents.**
- ESS02.05.01 Compose multi-paragraph documents clearly, succinctly, and accurately.
 - ESS02.05.02 Use descriptions of audience and purpose when preparing and editing written documents.
 - ESS02.05.03 Use correct grammar, spelling, punctuation, and capitalization when preparing written documents.
- ESS02.06** **Develop and deliver formal and informal presentations using appropriate media to engage and inform audiences.**
- ESS02.06.01 Prepare oral presentations to provide information for specific purposes and audiences.
 - ESS02.06.02 Identify support materials that will enhance an oral presentation.
 - ESS02.06.03 Prepare support materials that will enhance an oral presentation.
 - ESS02.06.04 Deliver an oral presentation that sustains listeners' attention and interest.
 - ESS02.06.05 Align presentation strategies to the intended audience.
 - ESS02.06.06 Implement multi-media strategies for presentations.
- ESS02.07** **Interpret verbal and nonverbal cues/behaviors to enhance communication with co-workers and clients/participants.**
- ESS02.07.01 Interpret verbal behaviors when communicating with clients and co-workers.
 - ESS02.07.02 Interpret nonverbal behaviors when communicating with clients and co-workers.
- ESS02.08** **Apply active listening skills to obtain and clarify information.**
- ESS02.08.01 Interpret a given verbal message/information.
 - ESS02.08.02 Respond with restatement and clarification techniques to clarify information.
- ESS02.09** **Develop and interpret tables, charts, and figures to support written and oral communications.**



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- ESS02.09.01 Create tables, charts, and figures to support written and oral communications.
- ESS02.09.02 Interpret tables, charts, and figures used to support written and oral communication.

ESS02.10 Listen to and speak with diverse individuals to enhance communication skills.

- ESS02.10.01 Apply factors and strategies for communicating with a diverse workforce.
- ESS02.10.02 Demonstrate ability to communicate and resolve conflicts within a diverse workforce.

ESS02.11 Exhibit public relations skills to increase internal and external customer/client satisfaction.

- ESS02.11.01 Communicate effectively when developing positive customer/client relationships.

Essential Topic
ESS03

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.*

ESS03.01 Employ critical thinking skills independently and in teams to solve problems and make decisions (e.g., analyze, synthesize and evaluate).

- ESS03.01.01 Identify common tasks that require employees to use problem-solving skills.
- ESS03.01.02 Analyze elements of a problem to develop creative solutions.
- ESS03.01.03 Describe the value of using problem-solving and critical thinking skills to improve a situation or process.
- ESS03.01.04 Create ideas, proposals, and solutions to problems.
- ESS03.01.05 Evaluate ideas, proposals, and solutions to problems.
- ESS03.01.06 Use structured problem-solving methods when developing proposals and solutions.
- ESS03.01.07 Generate new and creative ideas to solve problems by brainstorming possible solutions.
- ESS03.01.08 Critically analyze information to determine value to the problem-solving task.
- ESS03.01.09 Guide individuals through the process of recognizing concerns and making informed decisions.
- ESS03.01.10 Identify alternatives using a variety of problem-solving and critical thinking skills.
- ESS03.01.11 Evaluate alternatives using a variety of problem-solving and critical thinking skills.

ESS03.02 Employ critical thinking and interpersonal skills to resolve conflicts with staff and/or customers.

- ESS03.02.01 Analyze situations and behaviors that affect conflict management.



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- ESS03.02.02 Determine best options/outcomes for conflict resolution using critical thinking skills.
- ESS03.02.03 Identify with others' feelings, needs, and concerns.
- ESS03.02.04 Implement stress management techniques.
- ESS03.02.05 Resolve conflicts with/for customers using conflict resolution skills.
- ESS03.02.06 Implement conflict resolution skills to address staff issues/problems.

ESS03.03 **Identify, write and monitor workplace performance goals to guide progress in assigned areas of responsibility and accountability.**

- ESS03.03.01 Write realistic performance goals, objectives and action plans.
- ESS03.03.02 Monitor performance goals and adjust as necessary.
- ESS03.03.03 Recognize goal achievement using appropriate rewards in the workplace.

ESS03.03.04 Communicate goal achievement with managers and co-workers.

ESS03.04 **Conduct technical research to gather information necessary for decision-making.**

- ESS03.04.01 Align the information gathered to the needs of the audience.
- ESS03.04.02 Gather technical information and data using a variety of resources.
- ESS03.04.03 Analyze information and data for value to the research objectives.
- ESS03.04.04 Evaluate information and data to determine value to research objectives.

Essential Topic
ESS04 **INFORMATION TECHNOLOGY APPLICATIONS: *Use information technology tools specific to the career cluster to access, manage, integrate, and create information.***

ESS04.01 **Use Personal Information Management (PIM) applications to increase workplace efficiency.**

- ESS04.01.01 Manage personal schedules and contact information.
- ESS04.01.02 Create memos and notes.

ESS04.02 **Employ technological tools to expedite workflow.**

- ESS04.02.01 Use information technology tools to manage and perform work responsibilities.

ESS04.03 **Operate electronic mail applications to communicate within a workplace.**

- ESS04.03.01 Use email to share files and documents.
- ESS04.03.02 Identify the functions and purpose of email systems.
- ESS04.03.03 Use email to communicate within and across organizations.

ESS04.04 **Operate Internet applications to perform workplace tasks.**

- ESS04.04.01 Access and navigate Internet (e.g., use a web browser).
- ESS04.04.02 Search for information and resources.
- ESS04.04.03 Evaluate Internet resources for reliability and validity.

ESS04.05 **Operate writing and publishing applications to prepare business communications.**

- ESS04.05.01 Prepare simple documents and other business communications.



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ESS04.05.02 Prepare reports and other business communications by integrating graphics and other non-text elements.

ESS04.05.03 Prepare complex multi-media publications.

ESS04.06

Operate presentation applications to prepare presentations.

ESS04.06.01 Prepare presentations for training, sales and information sharing.

ESS04.06.02 Deliver presentations with supporting materials.

ESS04.07

Employ spreadsheet applications to organize and manipulate data.

ESS04.07.01 Create a spreadsheet.

ESS04.07.02 Perform calculations and analyses on data using a spreadsheet.

ESS04.08

Employ database applications to manage data.

ESS04.08.01 Manipulate data elements.

ESS04.08.02 Manage interrelated data elements.

ESS04.08.03 Analyze interrelated data elements.

ESS04.08.04 Generate reports showing interrelated data elements.

ESS04.09

Employ collaborative/groupware applications to facilitate group work.

ESS04.09.01 Facilitate group work through management of shared schedule and contact information.

ESS04.09.02 Facilitate group work through management of shared files and online information.

ESS04.09.03 Facilitate group work through instant messaging or virtual meetings.

ESS04.10

Employ computer operations applications to manage work tasks.

ESS04.10.01 Manage computer operations.

ESS04.10.02 Manage file storage.

ESS04.10.03 Compress or alter files.

ESS04.11

Use computer-based equipment (containing embedded computers or processors) to control devices.

ESS04.11.01 Operate computer driven equipment and machines.

ESS04.11.02 Use installation and operation manuals.

ESS04.11.03 Troubleshoot computer driven equipment and machines.

ESS04.11.04 Access support as needed to maintain operation of computer driven equipment and machines.

Essential Topic
ESS05

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.*

ESS05.01

Describe the nature and types of business organizations to build an understanding of the scope of organizations.

ESS05.01.01 List the types and functions of businesses.

ESS05.01.02 Describe the types and functions of businesses.



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ESS05.01.03 Explain the functions and interactions of common departments within a business.

ESS05.02 Implement quality control systems and practices to ensure quality products and services.

ESS05.02.01 Describe quality control standards and practices common to the workplace.

Essential Topic
ESS06

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.*

ESS06.01 Implement personal and jobsite safety rules and regulations to maintain safe and healthful working conditions and environments.

ESS06.01.01 Assess workplace conditions with regard to safety and health.

ESS06.01.02 Align safety issues with appropriate safety standards to ensure a safe workplace/jobsite.

ESS06.01.03 Identify safety hazards common to workplaces.

ESS06.01.04 Identify safety precautions to maintain a safe worksite.

ESS06.01.05 Select appropriate personal protective equipment as needed for a safe workplace/jobsite.

ESS06.01.06 Inspect personal protective equipment commonly used for selected career pathway.

ESS06.01.07 Use personal protective equipment according to manufacturer rules and regulations.

ESS06.01.08 Employ a safety hierarchy and communication system within the workplace/jobsite.

ESS06.01.09 Implement safety precautions to maintain a safe worksite.

ESS06.02 Complete work tasks in accordance with employee rights and responsibilities and employers obligations to maintain workplace safety and health.

ESS06.02.01 Identify rules and laws designed to promote safety and health in the workplace.

ESS06.02.02 State the rationale of rules and laws designed to promote safety and health.

ESS06.03 Employ emergency procedures as necessary to provide aid in workplace accidents.

ESS06.03.01 Use knowledge of First Aid procedures as necessary.

ESS06.03.02 Use knowledge of CPR procedures as necessary.

ESS06.03.03 Use safety equipment as necessary.

ESS06.04 Employ knowledge of response techniques to create a disaster and/or emergency response plan.

ESS06.04.01 Complete an assessment of an emergency and/or disaster situation.



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ESS06.04.02 Create an emergency and/or disaster plan.

Essential Topic
ESS07

LEADERSHIP AND TEAMWORK: *Use leadership and teamwork skills in collaborating with others to accomplish organizational goals and objectives.*

ESS07.01

Employ leadership skills to accomplish organizational goals and objectives.

- ESS07.01.01 Analyze the various roles of leaders within organizations (e.g. contribute ideas; share in building an organization; act as role models to employees by adhering to company policies, procedures, and standards; promote the organization's vision; and mentor others).
- ESS07.01.02 Exhibit traits such as empowerment, risk, communication, focusing on results, decision-making, problem solution, and investment in individuals when leading a group in solving a problem.
- ESS07.01.03 Exhibit traits such as compassion, service, listening, coaching, developing others, team development, and understanding and appreciating others when acting as a manager of others in the workplace.
- ESS07.01.04 Exhibit traits such as enthusiasm, creativity, conviction, mission, courage, concept, focus, principle-centered living, and change when interacting with others in general.
- ESS07.01.05 Consider issues related to self, team, community, diversity, environment, and global awareness when leading others.
- ESS07.01.06 Exhibit traits such as innovation, intuition, adaptation, life-long learning and coachability to develop leadership potential over time.
- ESS07.01.07 Analyze leadership in relation to trust, positive attitude, integrity, and willingness to accept key responsibilities in a work situation.
- ESS07.01.08 Describe observations of outstanding leaders using effective management styles.
- ESS07.01.09 Participate in civic and community leadership and teamwork opportunities to enhance skills.

ESS07.02

Employ organizational and staff development skills to foster positive working relationships and accomplish organizational goals.

- ESS07.02.01 Implement organizational skills when facilitating others' work efforts.
- ESS07.02.02 Explain how to manage a staff that satisfies work demands while adhering to budget constraints.
- ESS07.02.03 Describe how staff growth and development to increase productivity and employee satisfaction.
- ESS07.02.04 Organize team involvement within a group environment.
- ESS07.02.05 Work with others to develop and gain commitment to team goals.
- ESS07.02.06 Distribute responsibility and work load fairly.
- ESS07.02.07 Model leadership and teamwork qualities to aid in employee morale.
- ESS07.02.08 Identify best practices for successful team functioning.
- ESS07.02.09 Explain best practices for successful team functioning.



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ESS07.03 **Employ teamwork skills to achieve collective goals and use team members' talents effectively.**

- ESS07.03.01 Work with others to achieve objectives in a timely manner.
- ESS07.03.02 Promote the full involvement and use of team members' individual talents and skills.
- ESS07.03.03 Employ conflict-management skills to facilitate solutions.
- ESS07.03.04 Demonstrate teamwork skills through working cooperatively with co-workers, supervisory staff, and others, both in and out of the organization, to achieve particular tasks.
- ESS07.03.05 Demonstrate teamwork processes that provide team building, consensus, continuous improvement, respect for the opinions of others, cooperation, adaptability, and conflict resolution.
- ESS07.03.06 Develop plans to improve team performance.
- ESS07.03.07 Demonstrate commitment to and a positive attitude toward team goals.
- ESS07.03.08 Take responsibility for shared group and individual work tasks.
- ESS07.03.09 Assist team members in completing their work.
- ESS07.03.10 Adapt effectively to changes in projects and work activities.
- ESS07.03.11 Negotiate effectively to arrive at decisions.

ESS07.04 **Establish and maintain effective working relationships with all levels of personnel and other departments in order to accomplish objectives and tasks.**

- ESS07.04.01 Build effective working relationships using interpersonal skills.
- ESS07.04.02 Use positive interpersonal skills to work cooperatively with co-workers representing different cultures, genders and backgrounds.
- ESS07.04.03 Manage personal skills to accomplish assignments.
- ESS07.04.04 Treat people with respect.
- ESS07.04.05 Provide constructive praise and criticism.
- ESS07.04.06 Demonstrate sensitivity to and value for diversity.
- ESS07.04.07 Manage stress and control emotions.

ESS07.05 **Conduct and participate in meetings to accomplish work tasks.**

- ESS07.05.01 Develop meeting goals, objectives and agenda.
- ESS07.05.02 Assign responsibilities for preparing materials and leading discussions.
- ESS07.05.03 Prepare materials for leading discussion.
- ESS07.05.04 Assemble and distribute meeting materials.
- ESS07.05.05 Conduct meeting to achieve objectives within scheduled time.
- ESS07.05.06 Demonstrate effective communication skills in meetings.
- ESS07.05.07 Produce meeting minutes including decisions and next steps.
- ESS07.05.08 Use parliamentary procedure, as needed, to conduct meetings.

ESS07.06 **Employ mentoring skills to inspire and teach others.**

- ESS07.06.01 Use motivational techniques to enhance performance in others.
- ESS07.06.02 Provide guidance to enhance performance in others.

Essential Topic **ETHICS AND LEGAL RESPONSIBILITIES: *Know and understand the importance of professional ethics and legal responsibilities.***
ESS08



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- ESS08.01 Apply ethical reasoning to a variety of workplace situations in order to make ethical decisions.**
- ESS08.01.01 Evaluate alternative responses to workplace situations based on legal responsibilities and employer policies.
 - ESS08.01.02 Evaluate alternative responses to workplace situations based on personal or professional ethical responsibilities.
 - ESS08.01.03 Identify personal and long-term workplace consequences of unethical or illegal behaviors.
 - ESS08.01.04 Explain personal and long-term workplace consequences of unethical or illegal behaviors.
 - ESS08.01.05 Determine the most appropriate response to workplace situations based on legal and ethical considerations.
 - ESS08.01.06 Explain the most appropriate response to workplace situations based on legal and ethical considerations.
- ESS08.02 Interpret and explain written organizational policies and procedures to help employees perform their jobs according to employer rules and expectations.**
- ESS08.02.01 Locate information on organizational policies in handbooks and manuals.
 - ESS08.02.02 Discuss how specific organizational policies and procedures influence a specific work situation.

**Essential Topic
ESS09 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.***

- ESS09.01 Identify and demonstrate positive work behaviors and personal qualities needed to be employable.**
- ESS09.01.01 Demonstrate self-discipline, self-worth, positive attitude, and integrity in a work situation.
 - ESS09.01.02 Demonstrate flexibility and willingness to learn new knowledge and skills.
 - ESS09.01.03 Exhibit commitment to the organization.
 - ESS09.01.04 Identify how work varies with regard to site, from indoor confined spaces to outdoor areas, including aerial space and a variety of climatic and physical conditions.
 - ESS09.01.05 Apply communication strategies when adapting to a culturally diverse environment.
 - ESS09.01.06 Manage resources in relation to the position (i.e. budget, supplies, computer, etc).
 - ESS09.01.07 Identify positive work-qualities typically desired in each of the career cluster's pathways.
 - ESS09.01.08 Manage work roles and responsibilities to balance them with other life roles and responsibilities.



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- ESS09.02 Develop a personal career plan to meet career goals and objectives.**
- ESS09.02.01 Develop career goals and objectives as part of a plan for future career direction.
 - ESS09.02.02 Develop strategies to reach career objectives.
- ESS09.03 Demonstrate skills related to seeking and applying for employment to find and obtain a desired job.**
- ESS09.03.01 Use multiple resources to locate job opportunities.
 - ESS09.03.02 Prepare a résumé.
 - ESS09.03.03 Prepare a letter of application.
 - ESS09.03.04 Complete an employment application.
 - ESS09.03.05 Interview for employment.
 - ESS09.03.06 List the standards and qualifications that must be met in order to enter a given industry.
 - ESS09.03.07 Employ critical thinking and decision-making skills to exhibit qualifications to a potential employer.
- ESS09.04 Maintain a career portfolio to document knowledge, skills and experience in a career field.**
- ESS09.04.01 Select educational and work history highlights to include in a career portfolio.
 - ESS09.04.02 Produce a record of work experiences, licenses, certifications and products.
 - ESS09.04.03 Organize electronic or physical portfolio for use in demonstrating knowledge, skills and experiences.
- ESS09.05 Demonstrate skills in evaluating and comparing employment opportunities in order to accept employment positions that match career goals.**
- ESS09.05.01 Compare employment opportunities to individual needs and career plan objectives.
 - ESS09.05.02 Evaluate employment opportunities based upon individual needs and career plan objectives.
 - ESS09.05.03 Demonstrate appropriate methods for accepting or rejecting employment offers.
- ESS09.06 Identify and exhibit traits for retaining employment to maintain employment once secured.**
- ESS09.06.01 Model behaviors that demonstrate reliability and dependability.
 - ESS09.06.02 Maintain appropriate dress and behavior for the job to contribute to a safe and effective workplace/jobsite.
 - ESS09.06.03 Complete required employment forms and documentation such as I-9 form, work visa, W-4 and licensures to meet employment requirements.
 - ESS09.06.04 Summarize key activities necessary to retain a job in the industry.
 - ESS09.06.05 Identify positive work behaviors and personal qualities necessary to retain employment.



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ESS09.07 Identify and explore career opportunities in one or more career pathways to build an understanding of the opportunities available in the cluster.

ESS09.07.01 Locate and identify career opportunities that appeal to personal career goals.

ESS09.07.02 Match personal interest and aptitudes to selected careers.

ESS09.08 Recognize and act upon requirements for career advancement to plan for continuing education and training.

ESS09.08.01 Identify opportunities for career advancement.

ESS09.08.02 Pursue education and training opportunities to acquire skills necessary for career advancement.

ESS09.08.03 Examine the organization and structure of various segments of the industry to prepare for career advancement.

ESS09.08.04 Research local and regional labor (workforce) market and job growth information to project potential for advancement.

ESS09.08.05 Manage employment relations to make career advancements.

ESS09.09 Continue professional development to keep current on relevant trends and information within the industry.

ESS09.09.01 Use self assessment, organizational priorities, journals, Internet sites, professional associations, peers and other resources to develop goals that address training, education and self-improvement issues.

ESS09.09.02 Read trade magazines and journals, manufacturers' catalogues, industry publications and Internet sites to keep current on industry trends.

ESS09.09.03 Participate in relevant conferences, workshops, mentoring activities and in-service training to stay current with recent changes in the field.

ESS09.10 Examine licensing, certification and credentialing requirements at the national, state and local levels to maintain compliance with industry requirements.

ESS09.10.01 Examine continuing education requirements related to licensing, certification, and credentialing requirements at the local, state and national levels for chosen occupation.

ESS09.10.02 Examine the procedures and paperwork involved in maintaining and updating licensure, certification and credentials for chosen occupation.

ESS09.10.03 Align ongoing licensing, certification and credentialing requirements to career plans and goals.

ESS09.11 Examine employment opportunities in entrepreneurship to consider entrepreneurship as an option for career planning.

ESS09.11.01 Describe the opportunities for entrepreneurship in a given industry.

Essential Topic
ESS10

TECHNICAL SKILLS: *Use of technical knowledge and skills required to pursue careers in all career cluster, including knowledge of design, operation, and maintenance of technological systems critical to the career cluster.*



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ESS10.01 Employ information management techniques and strategies in the workplace to assist in decision-making.

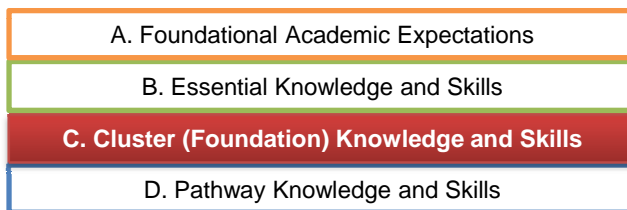
- ESS10.01.01 Use information literacy skills when accessing, evaluating and disseminating information.
- ESS10.01.02 Describe the nature and scope of information management.
- ESS10.01.03 Maintain records to facilitate ongoing business operations.

ESS10.02 Employ planning and time management skills and tools to enhance results and complete work tasks.

- ESS10.02.01 Develop goals and objectives.
- ESS10.02.02 Prioritize tasks to be completed.
- ESS10.02.03 Develop timelines using time management knowledge and skills.
- ESS10.02.04 Use project-management skills to improve workflow and minimize costs.

C. CLUSTER (FOUNDATION) KNOWLEDGE AND SKILLS

The following Cluster (Foundation) Knowledge and Skill statements 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.



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.



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- 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 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.



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- 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.



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Cluster Topic	SYSTEMS: <i>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.</i>
TRC05	
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.



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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.



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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.



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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

Sample Indicators

Demonstrate the steps involved in preventing workplace hazards.

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.

TRC06.04

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

TRC06.04.01

Sample Indicators

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

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.



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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 Execute health, safety and environmental procedures and protocols established within the TDL organization.

TRC06.08.01 Identify and utilize common sources of information to maintain knowledge of organizational safety, health and environmental management policies and procedures.

TRC06.08.02 Execute organizational environmental policies and procedures.

TRC06.08.03 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.

TRC06.08.04 Execute the procedures involved in a protocol for maintaining a safe, healthful and environmentally friendly work area.

TRC06.08.05 State common safety, health and environmental hazards to be avoided in the workplace.

TRC06.08.06 Perform regular audits and inspections to maintain compliance with safety, health and environmental regulations.

TRC06.08.07 Execute common methods and protocols for maintaining documentation on compliance with safety, health and environmental regulations.

TRC06.08.08 Assess and document health, safety and environmental problems using common forms and protocols.

TRC06.08.09 Document the steps involved in an accident/incident investigation.

TRC06.09 Evaluate current practices and develop a comprehensive plan to improve health, safety, and environmental performance.

TRC06.09.01 Identify and describe the most critical performance problems related to health, safety and the environment.

TRC06.09.02 Identify opportunities for improvement of performance related to the problems found in an assessment of health, safety and environmental issues.

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.



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- 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 Understand corporate 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.



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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.

TRC09.02.02 Match personal interests and aptitudes to careers when researching opportunities within the pathways.

Sample Indicators Identify educational and credentialing requirements for career cluster and pathways.
 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.



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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 health, 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.

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.



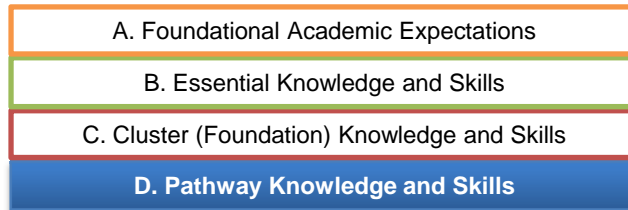
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TRC10.05 Participate in efforts to improve the utilization and performance of technological systems to provide the correct data needed to make informed decisions dealing with managing risk and compliance.

- 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.

D. PATHWAY KNOWLEDGE AND SKILLS

The following knowledge and skill statements apply to all careers in the Transportation Systems/Infrastructure Planning, Management and Regulation Pathway.



Pathway Topic TRPE01 TRANSPORTATION SYSTEMS/INFRASTRUCTURE PLANNING, MANAGEMENT AND REGULATION

TRPE01.01 Assess infrastructure conditions and develop plans to maintain and/or improve transportation infrastructure in order to enhance systems used in transporting people and products.

- TRPE01.01.01 *Sample Indicators*
 - Develop plans to maintain transportation infrastructure.
 - 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 meeting).
- TRPE01.01.02 *Sample Indicators*
 - Develop plans for new, improved or discontinued transportation infrastructure (e.g., highways, airports, train terminals, ports, intermodal facilities).
 - 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.
 - Evaluate the costs and benefits of public transportation infrastructure including environmental, economic, and social impacts.
 - Develop plans for transportation infrastructure including reports and land and infrastructure maps and drawings and related design documents.



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Present and explain plans (e.g., public meeting).

Assess, plan and manage implementation of transportation services to provide safe, reliable, high quality transportation for people and products.

TRPE01.02

TRPE01.02.01 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 meeting).

TRPE01.02.02 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 meeting).

TRPE01.02.03 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).

TRPE01.03

Assess, plan, recommend improvements and manage transportation systems to improve system utilization, flow, safety and environmental performance.

TRPE01.03.01 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).

TRPE01.03.02 Develop plans to improve safety and environmental performance of carriers and safety conditions in transportation systems.



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Sample Indicators

Analyze the safety and environmental performance of carriers and safety conditions in transportation systems.

Determine major problem areas (e.g., homeland security) hazardous materials, accident rates.

Identify and evaluate alternative solutions.

Develop plans to improve safety and environmental performance.

Present and explain plans (e.g., public meetings).