# Scope & Sequence

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| Course Name: Management of Transportation Systems **TSDS PEIMS Code:** 13040200 | **Course Credit:** 1.0**Course Requirements:** Grades 10-12.**Prerequisites:** None.**Recommended Prerequisites:** Principles of Transportation Systems. |
| **Course Description:** In Management of Transportation Systems, students will gain knowledge and skills in material handling and distribution and proper application, design and production of technology as it relates to the transportation industries. This course includes the safe operation of tractor-trailers, forklifts and related heavy equipment. This course will allow students to reinforce, apply and transfer their academic knowledge and skills to management of transportation systems and associated careers. |
| **NOTE:** This is a suggested scope and sequence for the course content. This content will work with any textbook or instructional materials. If locally adapted, make sure all TEKS are covered. |
| **Total Number of Periods** **Total Number of Minutes****Total Number of Hours** | 175 Periods7875 Minutes131.25 Hours\* | \*Schedule calculations based on 175/180 calendar days. For .5 credit courses, schedule calculations based on 88/90 calendar days. Scope and sequence allows additional time for guest speakers, student presentations, field trips, remediation, extended learning activities and other activities. |
| **Unit Number, Title, and Brief Description** | **# of Class Periods\***(assumes 45-minute periods)Total minutes per unit | **TEKS Covered****130.461. (c) Knowledge and skills** |
| **Unit 1:** **Management of Transportation Systems**Students will identify and discuss course instructor’s as well as employers’ expectations regarding work habits, policies and procedures, ethical conduct, legal responsibilities and good citizenship skills, and model these habits, skills and expectations in classroom activities. Students will apply ethical reasoning to a variety of workplace and classroom scenarios and situations and discuss how to make ethical decisions, how to complete tasks with the highest standards and the importance of maintaining safe and healthy work environments. Students will accept constructive criticism and demonstrate and model other positive work behaviors and attitudes throughout the course, including punctuality, time management, initiative and cooperation.  | 10 periods450 minutes | (1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:(A) adhere to policies and procedures;(B) demonstrate positive work behaviors and attitudes, including punctuality, time management, initiative, and cooperation;(C) accept constructive criticism;(D) apply ethical reasoning to a variety of situations in order to make ethical decisions;(E) complete tasks with the highest standards to ensure quality products and services;(F) model professional appearance, including dress, grooming, and personal protective equipment as appropriate; and(G) comply with safety rules and regulations to maintain safe and healthy working conditions and environments.(2) The student demonstrates an understanding of the transportation systems. The student is expected to:(I) identify employer's expectations, appropriate work habits, ethical conduct, legal responsibilities, and good citizenship skills. |
| **Unit 2: History and Development of Transportation** Students will explain and further develop their understanding of the history and development of the U.S. transportation systems and related industries with discussion, presentations and/or by creating timelines that identify historical milestones and events related to various transportation systems. Students will use technology to explore, discuss and describe how transportation and logistics systems are used by individuals and societies for the transportation and handling of products, materials and services. | 10 periods450 minutes | (2) The student demonstrates an understanding of the transportation systems. The student is expected to:(A) explain the history and development of the U.S. transportation systems such as railroads, highways, airports, water systems, and intermodal vans; and(B) examine logistics systems used for the transportation of products and services;(J) demonstrate computer skills related to transportation and materials handling. |
| **Unit 3: Transportation Systems: Current Risks and Issues** Students will examine and explore how current events, risks, social and economic trends and safety issues affect transportation systems and industries. Students will also examine and explore how to evaluate risk factors and social and economic trends related to risk mitigation, policy issues, security, and culture and the role of homeland security in interstate and international trade. After reading about a transportation-related current event or events, students will discuss, present and/or predict how the event(s) may affect the current and/or future role of homeland security in interstate and international trade. | 20 periods900 minutes | (2) The student demonstrates an understanding of the transportation systems. The student is expected to:(E) explain the role of homeland security in interstate and international trade;(F) evaluate risk factors and social and economic trends such as factors and trends related to risk mitigation, policy issues, security, and culture; (6) The student demonstrates an understanding of heavy equipment knowledge and skills. The student is expected to:(A) explain safety issues pertaining to heavy equipment operation;(D) discuss safe transportation of heavy equipment; and(E) discuss equipment theft prevention procedures. |
| **Unit 4: Safety and Regulations**Students will examine, identify, and discuss U.S. DOT, EPA, and OSHA regulations, procedures and requirements designed to promote safety and health in transportation environments, as well as demonstrate the proper use of personal protective equipment. Students will demonstrate cooperation and good citizenship in classroom activities and/or in small groups as they model, evaluate, present and discuss health and safety-related workplace scenarios as well as action and evacuation plans in various emergency situations. Students will demonstrate their knowledge and understanding as they identify, research and compare signs, tags, markings, placards and labels, safety standards, material designations and packaging requirements. In this safety focused unit, students will also be given multiple opportunities for “hands-on” discussions, demonstrations and analysis of fire prevention plans, resources, documentation, alarms, extinguishers, equipment and procedures.  | 20 periods900 minutes | (3) The student demonstrates an understanding of the U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration hazardous materials regulations. The student is expected to:(A) discuss U.S. Department of Transportation regulations, including procedures or policies, material designations, packaging requirements, and operational rules;(C) examine personal protective equipment;(D) compare specifications for accident prevention signs and tags, retention of U.S. Department of Transportation markings, and placards and labels for toxic and hazardous materials;(F) examine emergency action plans, employee training requirements, evacuation procedure requirements, and facility and equipment safety standards;(G) explain fire prevention resources, including portable fire extinguishers, fire management systems, employee alarm systems, and hazard communication; and(H) examine fire prevention plans and documentation. |
| **Unit 5: Hazardous Materials**Students will examine, identify and discuss U.S. DOT, EPA, and OSHA regulations concerning hazardous waste and materials, including personnel training, ventilation, and confined space hazards. Students will demonstrate the proper use of personal protective equipment in context as they model, evaluate, present and/or discuss health and safety-related hazardous material workplace scenarios as well as action and evacuation plans in various emergency situations. Students will demonstrate their knowledge and understanding as they identify, research and compare signs, tags, markings, placards and labels, handling and storage requirements and facility and equipment safety standards. In this hazardous material safety unit, students will also be given additional opportunities for “hands-on” discussions, demonstrations and analysis of fire and other emergency action plans, resources, documentation, alarms, equipment, and procedures.  | 20 periods900 minutes | (3) The student demonstrates an understanding of the U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration hazardous materials regulations. The student is expected to:(B) explain U.S. Department of Transportation, Environmental Protection Agency, and Occupational Safety and Health Administration compliance requirements concerning hazardous materials, hazardous waste operations, medical surveillance, personnel training, adequate ventilation, confined space hazards, and emergency preparedness and response;(C) examine personal protective equipment;(D) compare specifications for accident prevention signs and tags, retention of U.S. Department of Transportation markings, and placards and labels for toxic and hazardous materials;(E) research handling and storage requirements for liquid fuels, liquid petroleum gas, carbon monoxide, and toxic and hazardous substances;(F) examine emergency action plans, employee training requirements, evacuation procedure requirements, and facility and equipment safety standards;(G) explain fire prevention resources, including portable fire extinguishers, fire management systems, employee alarm systems, and hazard communication. |
| **Unit 6: Heavy Equipment**Students will be given opportunities for “hands-on” explanations, demonstrations and observation of heavy equipment. Students will explain safety issues related to heavy equipment operation and transportation and theft prevention procedures. Students will be given multiple opportunities to discuss, examine and/or explain the principles and maintenance of heavy equipment components, including cooling systems, fuel systems, lubrication systems, electrical systems, air systems, power systems, braking systems, pneumatic systems, hydraulic systems, operator ergonomics systems, tires, tracks and track frames. | 22 periods990 minutes | (6) The student demonstrates an understanding of heavy equipment knowledge and skills. The student is expected to:(A) explain safety issues pertaining to heavy equipment operation;(B) discuss principles and maintenance of heavy equipment components, including cooling systems, fuel systems, lubrication systems, electrical systems, air systems, power systems, braking systems, pneumatic systems, hydraulic systems, operator ergonomics systems, tires, tracks, and track frames;(C) observe the operation of heavy equipment such as bull dozers, crawler tractors, backhoes, excavators, track hoes, graders, scrapers, skid steer loaders, mini excavators, dump trucks, trenchers, cranes, hoists, soil compactors, land planes, landscaping equipment, and quarry equipment;(D) discuss safe transportation of heavy equipment; and(E) discuss equipment theft prevention procedures. |
| **Unit 7: Forklifts**Students will be given opportunities for “hands-on” inspections, explanations, demonstrations and observation of forklifts and their operating environments. Students will explain safety issues related to forklift operation, discuss proper start-up, shut-down and traveling procedures and perform maintenance and documentation procedures. Students will be given multiple opportunities to discuss, examine and evaluate proper lifting, carrying, load stability and stacking procedures for loading trailers, boxcars and containers. | 21 periods945 minutes | (5) The student demonstrates an understanding of forklift knowledge and skills. The student is expected to:(A) explain Occupational Safety and Health Administration forklift safety standards, including equipment operation, battery maintenance, liquid propane tank maintenance, lift truck stability, load weight limits, seat belt requirements, overhead guards, tip over prevention, and ride-out procedures;(B) perform visual inspection of forklifts and their operating environment;(C) discuss proper start-up, shut-down, and traveling procedures;(D) perform maintenance inspections and documentation procedures;(E) discuss forklift attachments; and(F) evaluate proper lifting, carrying, load stability, and stacking procedures for loading trailers, boxcars, and containers. |
| **Unit 8: Tractor-Trailers**Students will be given opportunities for “hands-on” visual inspections, demonstrations and observation of tractor-trailer operation. Students will read and interpret control systems, demonstrate operation of tractor-trailer controls and perform vehicle inspections and maintenance such as checking vehicle systems and components, diagnosing potential problems and developing reports and maintenance schedules. Students will explain safety issues related to tractor-trailer operation as they examine emergency maneuvers, procedures and accident reports, as well as identify potential driving hazards and environmental conditions. Students will be given opportunities to explain the management and adjustment of vehicle speed and space relations in a chart or drawing, classroom activity and/or small group discussion. | 22 periods990 minutes | (4) The student demonstrates an understanding of tractor-trailer knowledge and skills. The student is expected to:(A) read and interpret control systems;(B) perform vehicle inspections and maintenance such as checking vehicle systems and components, diagnosing potential problems, and developing malfunction reports and maintenance schedules and reports;(C) perform visual search and inspection of a tractor-trailer;(D) demonstrate operation of tractor-trailer controls such as shifting, backing, docking, coupling and uncoupling, and adjusting vehicle speed and conduct break-down procedures;(E) explain the management and adjustment of vehicle speed and space relations;(F) identify potential driving hazards and environmental conditions;(G) examine emergency maneuvers, procedures, and accident reports; and(H) discuss appropriate decision-making procedures for planning trips. |
| **Unit 9: Trade, Transportation, and Logistics**Students will be given multiple opportunities to define practices and terms commonly used in international sales contracts, summarize laws and regulations concerning interstate and international trade and evaluate documentation and other requirements. Students will also be given opportunities to describe transportation issues such as internal processing, storage, forecasting, cost analysis, routing issues and packaging types in a chart, graph, or drawing, classroom activity and/or small group discussion. Various examples of packing lists, materials safety data sheets, packaging labels, and other related documentation will be examined and described in classroom activities and/or small group discussions. | 20 periods900 minutes | (2) The student demonstrates an understanding of the transportation systems. The student is expected to:(C) define practices and terms commonly used in international sales contracts as published by the International Chamber of Commerce;(D) summarize laws and regulations concerning interstate and international trade;(G) evaluate documentation and other requirements for interstate and international transportation and logistics; and(H) describe transportation issues such as internal processing, product and supply storage, forecasting, scheduling, cost analysis, documentation confirmation, packing lists, materials safety data sheets, product seals, packaging types, packaging labels, and routing issues. |
| **Unit 10: Career Activities** Students will model professional appearance, including dress, grooming and personal protective equipment as appropriate as they participate in mock interviews both as applicants and as potential employers, and create and/or participate in various workplace scenarios that demonstrate appropriate and ethical decision-making, workplace conduct, and compliance with safety rules and regulations. As part of these interviews and scenarios, students will demonstrate their knowledge of laws, regulations and safety issues that apply to and affect transportation and logistics systems. | 10 periods450 minutes | (1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:(B) demonstrate positive work behaviors and attitudes, including punctuality, time management, initiative, and cooperation;(D) apply ethical reasoning to a variety of situations in order to make ethical decisions;(F) model professional appearance, including dress, grooming, and personal protective equipment as appropriate; and(G) comply with safety rules and regulations to maintain safe and healthy working conditions and environments. |