

Arkansas Department of Career Education
Model Framework

Course Title: Diesel Brakes

Secondary – Skilled and Technical Sciences	
Course Number	494650
Career Cluster	Transportation, Distribution & Logistics
CIP Number	47.0605
Grade Level	9-12
Prerequisite	
Course Type	Core
Teacher Certification	574 Diesel Mechanics
CTSO	Skills USA
Facility Requirements	
Industry Certifications	Automotive Standard of Excellence (ASE)

Course Description

Diesel Brakes is a program that prepares individuals to apply technical knowledge and skills to the specialized maintenance and repair of trucks, buses, and other commercial and industrial vehicles. This course includes instruction in **diesel** suspension and steering, brake systems, electrical and electronic systems, preventive maintenance inspections, drive trains, gasoline engine mechanics, HVAC systems, and auxiliary equipment installation and repair.

Special Notes

For every task in Brakes, the following safety task must be strictly enforced:

Comply with personal and environmental safety practices associated with clothing; eye protection; hand protection; proper lifting practices; hand tools; power equipment; proper ventilation; and the handling, storage, and disposal of fuels/chemicals/materials in accordance with federal, state, and local regulations.

The first task in Brakes is to listen to and verify the operator's concern, review past maintenance and repair documents, and determine necessary action.

Standard 1.0 Demonstrate the employability skills necessary to obtain and maintain employment in the diesel automotive industry.			
Performance Indicator 1.1 Demonstrate personal business etiquette for the automotive industry.	Recommended Application/Activity	CCSS Standards	CCTC Standards
1.1.1 Report to class/work daily on time.	•		
1.1.2 Dress appropriately and use language and manners suitable for the workplace.	•		
1.1.3 Maintain appropriate personal hygiene.	•		
1.1.4 Meet and maintain employment eligibility criteria, such as drug/alcohol-free status, clean driving record, etc.	•		
1.1.5 Demonstrate honesty, integrity and reliability.	•		
Performance Indicator 1.2 Demonstrate personal work ethic and habits.	Recommended Application/Activity	CCSS Standards	CCTC Standards
1.2.1 Interpret and comply with workplace policies and procedures.	•		
1.2.2 Contribute to the success of the team by assisting others and requesting help when needed.	•		
1.2.3 Identify and address the needs of all customers, providing helpful, courteous and knowledgeable service and advice as needed.	•		
1.2.4 Negotiate solutions to interpersonal and workplace conflicts.	•		
1.2.5 Contribute ideas and initiatives for workplace effectiveness.	•		
1.2.6 Follow directions for shop protocol taking with personal motivation to accomplish the task at hand.	•		
1.2.7 Demonstrate appropriate	• (written and verbal)		

communication effectively with customers and coworkers.			
1.2.8 Analyze and resolve problems that arise in completing assigned tasks.	•		
1.2.9 Organize and implement a productive plan of work.	•		
1.2.10 Use technical principles, problem solving and critical thinking to accomplish assigned tasks.	•		
Performance Indicator 1.3 Investigate training and entrepreneurial opportunities in the diesel industry.	Recommended Application/Activity	CCSS Standards	CCTC Standards
1.3.1 Evaluate the personal characteristics of a successful professional in the industry.	•		
1.3.2 Identify the training opportunities within the architecture and construction industry.			
1.3.3 Explore extended learning and leadership opportunities in career and technical education student organizations.	• Find and participate in the appropriate competition in Skills USA		
1.3.4 Examine work-based learning opportunities for students in the industry.			
1.3.5 Locate in-demand career opportunities within a chosen region of the state.	• Research the pay, education, and diversity of the jobs in the construction industry	SL11-12.3	AC4
1.3.6 Demonstrate the ability to apply for employment within the industry.	• Build a resume on computer and email to the instructor • Create a memo and email to the instructor	SL11-12.1 W11-12.6	AC7
Standard 2.0 Demonstrate personal and shop safety measures.			
Performance Indicator 2.1 Identify general shop safety rules and procedures.	Recommended Application/Activity	CCSS Standards	CCTC Standards
2.1.1 Locate and demonstrate knowledge of material safety data sheets (MSDS).	•		
2.1.2 Explain the purposes for marked safety areas.	•		

2.1.3 Identify the location and use of eye wash stations.	•		
2.1.4 Identify the location of the posted evacuation routes.	•		
2.1.5 Identify and wear appropriate clothing for lab/shop activities.	•		
2.1.6 Utilize proper ventilation procedures for working within the lab/shop area.	•		
2.1.7 Secure hair and jewelry for lab/shop activities.	•		
2.1.8 Comply with the required use of safety glasses, ear protection, gloves, and shoes during lab/shop activities.	•		
2.1.9 Demonstrate knowledge of the procedures for using fire extinguishers and other fire safety equipment.	•		
Performance Indicator 2.2 Utilize safe procedures for handling of tools.	Recommended Application/Activity	CCSS Standards	CCTC Standards
2.2.1 Demonstrate safe handling and use of automotive tools.	•		
2.2.2 Demonstrate proper cleaning, storage, and maintenance of tools and equipment.	•		
Performance Indicator 2.3 Demonstrate knowledge of the procedures for using safety equipment.	Recommended Application/Activity	CCSS Standards	CCTC Standards
2.3.1 Identify and use proper placement of floor jacks and jack stands.	•		
2.3.2 Identify and use proper procedures for safe lift operation.	•		
2.3.3 Demonstrate awareness of the safety aspects of supplemental restraint systems (SRS), electronic brake control systems, and hybrid vehicle high voltage circuits.	•		
2.3.4 Demonstrate awareness of the safety	• High intensity discharge (HID) lamps, ignition systems,		

aspects of high voltage circuits.	injection systems, etc.		
2.3.5 Check operation of electric/air horns and reverse warning devices	•		
2.3.6 Check condition of spare fuses, safety triangles, fire extinguisher, and all required decals.	•		
2.3.7 Inspect seat belts and sleeper restraints.	•		
2.3.8 Inspect wiper blades and arms.	•		
Standard 3.0 Demonstrate knowledge and application of vehicle maintenance and repair preparation.			
Performance Indicator 3.1 Demonstrate appropriate use of diesel brake systems service tools.	Recommended Application/Activity	CCSS Standards	CCTC Standards
3.1.1 Identify tools and their usage in braking systems applications.	•		
3.1.2 Identify standard and metric tool designation.	•		
3.1.3 Demonstrate proper use of precision measuring tools (i.e. micrometer, dial-indicator, dial-caliper).	•		
Performance Indicator 3.2 Demonstrate the ability to prepare the vehicle for service.	Recommended Application/Activity	CCSS Standards	CCTC Standards
3.2.1 Identify information needed and the service requested on a repair order.	•		
3.2.2 Demonstrate proper use of fender covers, and mats.	•		
3.2.3 Demonstrate awareness of customer expectations for vehicle repair.	• Customer concern, cause, and correction		
Performance Indicator 3.3 Demonstrate appropriate use of diesel hardware.	Recommended Application/Activity	CCSS Standards	CCTC Standards
3.3.1 Check operation of wiper and washer.	•		
3.3.2 Inspect windshield glass for cracks or	•		

discoloration; check sun visor.			
3.3.3 Check seat condition, operation, and mounting.	•		
3.3.4 Check door glass and window operation.	•		
3.3.5 Inspect steps and grab handles.	•		
3.3.6 Inspect mirrors, mountings, brackets, and glass.	•		
3.3.7 Record all observed physical damage.	•		
3.3.8 Lubricate all cab and hood grease fittings.	•		
3.3.9 Inspect and lubricate door and hood hinges, latches, strikers, lock cylinders, safety latches, linkages, and cables.	•		
3.3.10 Inspect cab mountings, hinges, latches, linkages and ride height; service as needed.	•		

Standard 4.0 Analyze, inspect, adjust and repair air brake supply and services systems.			
Performance Indicator 4.1 Demonstrate the ability to test and repair air brake supply and service systems.	Recommended Application/Activity	CCSS Standards	CCTC Standards
4.1.1 Determine poor braking problems caused by supply and service system malfunctions.	<ul style="list-style-type: none"> • Test for air leaks, premature wear, pulling, grabbing, dragging, or balance problems and determine needed action 		
4.1.2 Check air system build-up time and determine the appropriate needed action.	<ul style="list-style-type: none"> • 		
4.1.3 Drain air reservoir/tanks; check for oil, water, and foreign material; determine needed action.	<ul style="list-style-type: none"> • 		
4.1.4 Inspect air compressor drive gear, belts and coupling; adjust or replace as needed.	<ul style="list-style-type: none"> • 		
4.1.5 Inspect air compressor inlet; inspect oil supply and coolant lines, fittings, and mounting brackets; repair or replace as needed.	<ul style="list-style-type: none"> • 		
4.1.6 Inspect and test air system pressure controls: governor, unloader assembly valves, filters, lines, hoses, and fittings; adjust or replace as needed.	<ul style="list-style-type: none"> • 		
4.1.7 Inspect air system lines, hoses, fittings, and couplings; repair or replace as needed	<ul style="list-style-type: none"> • 		
4.1.8 Inspect and test air tank relief (safety) valves, one-way (single) check valves, two-way (double) check valves, manual and automatic drain valves; replace as needed.	<ul style="list-style-type: none"> • 		
4.1.9 Inspect and clean air drier systems, filters, valves, heaters, wiring, and connectors; repair or replace as needed.	<ul style="list-style-type: none"> • 		

4.1.10 Inspect and test brake application (foot/treadle) valve, fittings, and mounts; check pedal operation; replace as needed.	•		
4.1.11 Inspect and test stop light circuit switches, wiring, and connectors; repair or replace as needed.	•		
4.1.12 Inspect and test hand brake (trailer) control valve, lines, fittings, and mountings; repair or replace as needed.	•		
4.1.13 Inspect and test brake relay valves; replace as needed.	•		
4.1.14 Inspect and test quick release valves; replace as needed.	•		
4.1.15 Inspect and test tractor protection valve; replace as needed.	•		
4.1.16 Inspect and test emergency (spring) brake control/modulator valve(s); replace as needed.	•		
4.1.17 Inspect and test low pressure warning devices, wiring, and connectors; repair or replace as needed.	•		
4.1.18 Inspect and test air pressure gauges, lines, and fittings; replace as needed.	•		
Performance Indicator 4.2 Analyze the cause for poor mechanical foundation brakes and determine the needed action.	Recommended Application/Activity	CCSS Standards	CCTC Standards
4.2.1 Test the braking system for malfunctioning components.	<ul style="list-style-type: none"> • Check for brake noise, premature wear, pulling, grabbing, or dragging problems. • Check for malfunctioning components by the foundation brake, slack adjuster, and brake chamber problems. 		
4.2.2 Inspect and test service brake chambers, diaphragm, clamp, spring, pushrod, clevis, and mounting brackets; repair or replace as needed.	•		

4.2.3 Identify type, inspect and service slack adjusters; perform needed action.	•	P-1	
4.2.4 Inspect camshafts, tubes, rollers, bushings, seals, spacers, retainers, brake spiders, shields, anchor pins, and springs; replace as needed.	•		
4.2.5 Inspect, clean, and adjust air disc brake caliper assemblies; determine needed repairs.	•		
4.2.6 Inspect and measure brake shoes or pads; perform needed action.	•		
4.2.7 Inspect and measure brake drums or rotors; perform needed action.	•		
Performance Indicator 4.3 Demonstrate appropriate knowledge to inspect, test and repair parking brakes.	Recommended Application/Activity	CCSS Standards	CCTC Standards
4.3.1 Inspect, test and replace parking (spring) brake chamber diaphragm and seals.	•		
4.3.2 Inspect and test parking (spring) brake check valves, lines, hoses, and fittings; replace as needed.	•		
4.3.3 Inspect and test parking (spring) brake application and release valve; replace as needed.	•		
4.3.4 Manually release (cage) and reset (uncage) parking (spring) brakes in accordance with the manufacturer's recommendations.	•		
4.3.5 Identify and test the anti-compounding brake function.	•		
4.3.6 Dispose of removed chambers in accordance with local regulations.	•		
Standard 5.0 Analyze, inspect, adjust and repair hydraulic brakes			
Performance Indicator 5.1	Recommended Application/Activity	CCSS	CCTC

Inspect and repair the hydraulic braking system.		Standards	Standards
5.1.1 Identify poor stopping problems caused by the hydraulic system and determine the needed action.	<ul style="list-style-type: none"> • Check for premature wear, pulling, dragging, balance, or pedal feel. 		
5.1.2 Inspect and test master cylinder for internal/external leaks and damage and replace as needed.	<ul style="list-style-type: none"> • 		
5.1.3 Inspect hydraulic system brake lines, flexible hoses, and fittings for leaks and damage and replace as needed.	<ul style="list-style-type: none"> • 		
5.1.4 Inspect and test metering (hold-off), load sensing/proportioning, proportioning, and combination valves; replace as needed.	<ul style="list-style-type: none"> • 		
5.1.5 Inspect and test brake pressure differential valve and warning light circuit switch, bulbs/LEDs, wiring, and connectors; repair or replace as needed	<ul style="list-style-type: none"> • 		
5.1.6 Inspect disc brake caliper assemblies; replace as needed.	<ul style="list-style-type: none"> • 		
5.1.7 Inspect/test brake fluid; bleed and/or flush system; determine proper fluid type.	<ul style="list-style-type: none"> • 		
Performance Indicator 5.2 Inspect and repair mechanical foundation brake systems.	Recommended Application/Activity	CCSS Standards	CCTC Standards
5.2.1 Identify poor stopping problems caused by mechanical components and determine needed action.	<ul style="list-style-type: none"> • Check for brake noise, premature wear, pulling, grabbing, dragging, or pedal feel. 		
5.2.2 Inspect and measure rotors and perform needed action.	<ul style="list-style-type: none"> • 		
5.2.3 Inspect and measure disc brake pads.	<ul style="list-style-type: none"> • 		
5.2.4 Inspect mounting hardware and perform needed action.	<ul style="list-style-type: none"> • 		
5.2.5 Inspect parking brake operation and	<ul style="list-style-type: none"> • 		

the holding devices; adjust and replace as needed.			
Performance Indicator 5.3 Inspect and repair power assist units.	Recommended Application/Activity	CCSS Standards	CCTC Standards
5.3.1 Identify stopping problems caused by the brake assist (booster) system and determine needed action.	•		
5.3.2 Inspect, test, repair, or replace hydraulic brake assist (booster), hoses, and control valves.	•		
5.3.3 Determine the proper fluid type and amount.	•		
5.3.4 Check emergency (back-up, reserve) brake assist system.	•		
Standard 6.0 Inspect and diagnose air and hydraulic antilock brake systems (ABS), automatic traction control (ATC), and wheel bearings.			
Performance Indicator 6.1 Diagnose and repair air and hydraulic antilock brake systems(ABS).	Recommended Application/Activity	CCSS Standards	CCTC Standards
6.1.1 Observe antilock brake system (ABS) warning light operation (includes trailer and dash mounted trailer ABS warning light); determine needed action.	•		
6.1.2 Diagnose antilock brake system (ABS) electronic control(s) and components using self-diagnosis and/or electronic service tool(s); determine needed action.	•		
6.1.3 Identify poor stopping and wheel lock-up problems caused by failure of the antilock brake system (ABS); determine needed action.	•		
6.1.4 Test and check operation of antilock brake system (ABS) air, hydraulic,	•		

electrical, and mechanical components; perform needed action.			
6.1.5 Test antilock brake system (ABS) wheel speed sensors and circuits; adjust or replace as needed.	•		
6.1.6 Bleed the ABS hydraulic circuits.	•		
Performance Indicator 6.2 Diagnose and repair the automatic traction control (ATC) system.	Recommended Application/Activity	CCSS Standards	CCTC Standards
6.2.1 Observe automatic traction control (ATC) warning light operation and determine the needed action.	•		
6.2.2 Diagnose the automatic traction control (ATC) electronic control(s) and components using self-diagnosis and/or specified test equipment (scan tool, PC computer) and determine the needed action.	•		
6.2.3 Verify power line carrier (PLC) operations.	•		
Performance Indicator 6.3 Inspect and repair the wheel bearings.	Recommended Application/Activity	CCSS Standards	CCTC Standards
6.3.1 Inspect, clean, lubricate, adjust and/or replace wheel bearings and races/cups.	• Verify end play with dial indicator method.		
6.3.2 Inspect and replace the seals and wear rings.	•		
6.3.3 Inspect the spindle and tube.	•		
6.3.4 Inspect and replace the retaining hardware.	•		
6.3.5 Identify, inspect or replace unitized/preset hub bearing assemblies.	•		
6.2.6 Inspect tires for wear patterns, cuts. Cracks, bulging, pressure, and proper mounting.	•		

Common Core State Standards Grades 9-10
ELA Speaking and Listening Standards Grades 9-10

1. Initiate and participate effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 9–10 topics, texts, and issues, building on others’ ideas and expressing their own clearly and persuasively. **SL9-10.1**
 - a. Come to discussions prepared, having read and researched material under study; explicitly draw on that preparation by referring to evidence from texts and other research on the topic or issue to stimulate a thoughtful, well-reasoned exchange of ideas. **SL9-10.1a**
 - b. Work with peers to set rules for collegial discussions and decision-making (e.g., informal consensus, taking votes on key issues, presentation of alternate views), clear goals and deadlines, and individual roles as needed. **SL9-10.1b**
 - c. Propel conversations by posing and responding to questions that relate the current discussion to broader themes or larger ideas; actively incorporate others into the discussion; and clarify, verify, or challenge ideas and conclusions. **SL9-10.1c**
 - d. Respond thoughtfully to diverse perspectives, summarize points of agreement and disagreement, and, when warranted, qualify or justify their own views and understanding and make new connections in light of the evidence and reasoning presented. **SL9-10.1d**
2. Integrate multiple sources of information presented in diverse media or format(e.g., visually, quantitatively, orally) evaluating the credibility and accuracy of each source. **SL9-10.2**
3. Evaluate a speaker’s point of view, reasoning, and use of evidence and rhetoric, identifying any fallacious reasoning or exaggerated or distorted evidence. **SL9-10.3**
4. Present information, findings, and supporting evidence clearly, concisely, and logically such that listeners can follow the line of reasoning and the organization, development, substance, and style are appropriate to purpose, audience, and task. **SL9-10.4**
5. Make strategic use of digital media (e.g., textual, graphical, audio, visual, and interactive elements) in presentations to enhance understanding of findings, reasoning, and evidence and to add interest. **SL9-10.5**

ELA Language Grades 9-10

4. Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grades 9–10 reading and content, choosing flexibly from a range of strategies. **L9-10.4**
 - a. Use context (e.g., the overall meaning of a sentence, paragraph, or text; a word’s position or function in a sentence) as a clue to the meaning of a word or phrase. **L9-10.4a**
 - b. Identify and correctly use patterns of word changes that indicate different meanings or parts of speech (e.g., analyze, analysis, analytical; advocate, advocacy). **L9-10.4b**
 - c. Consult general and specialized reference materials (e.g., dictionaries, glossaries, thesauruses), both print and digital, to find the pronunciation of a word or determine or clarify its precise meaning, its part of speech, or its etymology. **L9-10.4c**

- d. Verify the preliminary determination of the meaning of a word or phrase (e.g., by checking the inferred meaning in context or in a dictionary). **L9-10.4d**
6. Acquire and use accurately general academic and domain-specific words and phrases, sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression. **L9-10.6**

Reading Standards for Literacy in Science and Technical Subjects Grades 9-10

1. Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions. **R9-10.1**
2. Determine the central ideas or conclusions of a text; trace the text's explanation or depiction of a complex process, phenomenon, or concept; provide an accurate summary of the text. **R9-10.2**
3. Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks, attending to special cases or exceptions defined in the text. **R9-10.3**
4. Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 9–10 texts and topics. **R9-10.4**
5. Analyze the structure of the relationships among concepts in a text, including relationships among key terms (e.g., force, friction, reaction force, energy). **R9-10.5**
6. Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, defining the question the author seeks to address. **R9-10.6**
7. Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words. **R9-10.7**
8. Assess the extent to which the reasoning and evidence in a text support the author's claim or a recommendation for solving a scientific or technical problem. **R9-10.8**
9. Compare and contrast findings presented in a text to those from other sources (including their own experiments), noting when the findings support or contradict previous explanations or accounts. **R9-10.9**
10. By the end of grade 10, read and comprehend science/technical texts in the grades 9–10 text complexity band independently and proficiently. **R9-10.10**

Writing Standards for Literacy in History/Social Studies, Science, and Technical Subjects Grades 9-10

1. Write arguments focused on discipline-specific content. **W9-10.1**
 - a. Introduce precise claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that establishes clear relationships among the claim(s), counterclaims, reasons, and evidence. **W9-10.1a**
 - b. Develop claim(s) and counterclaims fairly, supplying data and evidence for each while pointing out the strengths and limitations of both claim(s) and counterclaims in a discipline-appropriate form and in a manner that anticipates the audience's knowledge level and concerns. **W9-10.1b**
 - c. Use words, phrases, and clauses to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims. **W9-10.1c**
 - d. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing. **W9-10.1d**
 - e. Provide a concluding statement or section that follows from or supports the argument presented. **W9-10.1e**
2. Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes. **W9-10.2**
 - a. Introduce a topic and organize ideas, concepts, and information to make important connections and distinctions; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension. **W9-10.2a**
 - b. Develop the topic with well-chosen, relevant, and sufficient facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic. **W9-10.2b**
 - c. Use varied transitions and sentence structures to link the major sections of the text, create cohesion, and clarify the relationships among ideas and concepts. **W9-10.2c**
 - d. Use precise language and domain-specific vocabulary to manage the complexity of the topic and convey a style appropriate to the discipline and context as well as to the expertise of likely readers. **W9-10.2d**
 - e. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing. **W9-10.2e**
 - f. Provide a concluding statement or section that follows from and supports the information or explanation presented (e.g., articulating implications or the significance of the topic). **W9-10.2f**
3. Write precise enough descriptions of the step-by-step procedures they use in their investigations or technical work that others can replicate them and (possibly) reach the same results. **W9-10.3**
4. Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. **W9-10.4**
5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience. **W9-10.5**
6. Use technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically. **W9-10.6**

7. Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation. **W9-10.7**
8. Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation. **W9-10.8**
9. Draw evidence from informational texts to support analysis, reflection, and research. **W9-10.9**
10. Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences. **W9-10.10**

Common Career and Technical Core Standards

Transportation, Distribution, & Logistics Career Cluster Standards (TD)

1. Describe the nature and scope of the Transportation, Distribution, and Logistics Career Cluster and the role of transportation, distribution and logistics in society and the economy. **TD1**
2. Describe the application and use of new and emerging advanced techniques to provide solutions for transportation, distribution, and logistics problems. **TD2**
3. Describe key operational activities required of successful transportation, distribution, and logistics facilities. **TD3**
4. Identify governmental policies and procedures for transportation, distribution, and logistics facilities. **TD4**
5. Describe transportation, distribution, and logistics employee rights and responsibilities and employers' obligations concerning occupational safety and health. **TD5**
6. Describe career opportunities and means to achieve those opportunities in each of the Transportation, Distribution, and Logistics Career Pathways. **TD6**

Facility and Mobile Equipment Maintenance Career Pathway (TD-MTN)

1. Develop preventative maintenance plans and systems to keep facility and mobile equipment inventory in operation. **TD-MTN1**
2. Design ways to improve facility and equipment system performance. **TD-MTN2**

Common Career and Technical Core Career Ready Practices (CCTC CRP)

- | | |
|--|---|
| 1. Act as a responsible and contributing citizen and employee. CRP1 | 7. Employ valid and reliable research strategies. CRP7 |
| 2. Apply appropriate academic and technical skills. CRP2 | 8. Utilize critical thinking to make sense of problems and persevere in solving them. CRP8 |
| 3. Attend to personal health and financial well-being. CRP3 | 9. Model integrity, ethical leadership, and effective management. CRP9 |
| 4. Communicate clearly, effectively, and with reason. CRP4 | 10. Plan education and career path aligned to personal goals. CRP10 |
| 5. Consider the environmental, social and economic impacts of decisions. CRP5 | 11. Use technology to enhance productivity. CRP11 |
| 6. Demonstrate creativity and innovation. CRP6 | 12. Work productively in teams while using cultural/global competence. CRP12 |