# Scope & Sequence

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| Course Name: Automotive Basics **TSDS PEIMS Code:** 13039550 | **Course Credit:** 1.0**Course Requirements:** Recommended Grade Placement: 9 – 12. **Prerequisites:** None. |
| **Course Description:** Automotive Basics includes knowledge of the basic automotive systems and the theory and principles of the components that make up each system and how to service these systems. Automotive Basics includes applicable safety and environmental rules and regulations. In Automotive Basics, students will gain knowledge and skills in the repair, maintenance and servicing of vehicle systems. This study allows students to reinforce, apply, and transfer academic knowledge and skills to a variety of interesting and relevant activities, problems and settings. The focus of this course is to teach safety, tool identification, proper tool use and employability. |
| **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 0.5 credit courses, schedule is calculated out of 88/90 days. Scope and sequence allows additional time for guest speakers, student presentations, field trips, remediation, extended learning activities, etc. |
| **Unit Number, Title, and Brief Description** | **# of Class Periods\***(assumes 45-minute periods)Total minutes per unit | **TEKS Covered****130.447. (c) Knowledge and skills** |
| **Unit 1: Career Exploration**Students will focus on expanding their knowledge base and interest in careers and entrepreneurship opportunities in the automotive technology industry. Students will discuss and demonstrate appropriate and proper etiquette and behavior in this and in all units as they develop personal and career goals and increase their interpersonal skills. Students will explore and discuss internships and industry certification opportunities and requirements and include personally relevant information as they develop their plans for future career opportunities. | 8 periods360 minutes | (1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:(B) identify career and employment opportunities, including entrepreneurship opportunities, internships, and industry-recognized certification requirements for the field of automotive technology.(D) apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in the automotive technology industry;(E) discuss certification opportunities; and(H) develop personal goals, objectives, and strategies as part of a plan for future career and educational opportunities.(2) The student demonstrates appropriate personal and communication skills. The student is expected to:(B) demonstrate proper etiquette and behavior. |
| **Unit 2: Health and Safety**Students will discuss and identify employers’ expectations regarding safe and appropriate work habits, ethical conduct and legal responsibilities in the workplace. Students will participate as a class and/or in small groups to model, present and discuss health and safety scenarios and equipment in the workplace as well as response plans to potential emergency situations. | 15 periods675 minutes | (1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:(A) demonstrate knowledge of the technical knowledge and skills related to health and safety in the workplace such as safety glasses, other personal protective equipment (PPE), and safety data sheets (SDS);(C) demonstrate the principles of group participation, team concept, and leadership related to citizenship and career preparation;(F) discuss response plans to emergency situations; and(G) identify employers' expectations and appropriate work habits, ethical conduct, legal responsibilities, and good citizenship skills.(2) The student demonstrates appropriate personal and communication skills. The student is expected to:(D) demonstrate effective written and oral communication skills and employ effective listening skills; and(F) demonstrate effective speaking skills through prepared and extemporaneous oral presentations.(3) The student demonstrates academic skills related to the requirements of automotive technology. The student is expected to:(A) demonstrate effective oral communication skills with individuals from various cultures such as fellow students, coworkers, and customers. |
| **Unit 3: Mathematics in Automotive Technology**Students will explore, discuss, and describe major vehicle systems and basic and emerging power systems. Students will be given multiple opportunities to describe, demonstrate and apply relevant problem-solving and mathematical skills in-context as they read and interpret vehicle maintenance and service information from a variety of sources. Students will discuss and predict what other mathematical skills will be necessary for a successful career in automotive technology.  | 20 periods900 minutes | (3) The student demonstrates academic skills related to the requirements of automotive technology. The student is expected to:(A) demonstrate effective oral communication skills with individuals from various cultures such as fellow students, coworkers, and customers; and(C) demonstrate mathematical skills in performing addition, subtraction, multiplication, division, and measurements using decimals and fractions in the metric and U.S. standard systems as appropriate.(4) The student understands the technical knowledge and skills of basic automotive systems. The student is expected to:(A) describe the eight major vehicle systems;(B) locate, read, and interpret vehicle maintenance and service information; and(C) describe the basic and emerging vehicle power systems. |
| **Unit 4: Tools, Equipment, and Materials**Students will discuss the rules for proper handling and disposal of hazardous materials used in the automotive industry. Students will be given multiple opportunities for hands-on presentations, discussions and demonstrations of the proper ways to identify and safely use the tools, materials and equipment commonly used in automotive services. | 20 periods900 minutes | (5) The student knows the functions and applications of the tools, equipment, technologies, and materials used in automotive services. The student is expected to:(A) demonstrate the proper way to safely use hand and power tools and equipment commonly employed in the maintenance and repair of vehicles;(B) discuss the proper handling and disposal of environmentally hazardous materials used in servicing vehicles;(C) identify diagnostic tools and equipment; and(D) identify hand and shop tools and describe their proper usage. |
| **Unit 5: Engines, Heating, and Cooling**Students will be given multiple opportunities to demonstrate their knowledge of internal combustion engines, chassis and power train components and systems with hands-on activities, presentations, discussions and inspections in simulated or actual automotive technology work situations. Students will also identify air-conditioning, heating and accessory system components as they demonstrate their understanding of the operation of internal combustion engines. | 20 periods900 minutes | (6) The student applies technical knowledge and skills in simulated or actual work situations. The student is expected to:(B) demonstrate an understanding of the operation theory of internal combustion engines;(F) identify air-conditioning, heating, and accessory system components; and(G) inspect and identify chassis and power train components and systems. |
| **Unit 6: Brakes**Students will be given multiple opportunities to demonstrate their knowledge of brake system components, ABS and their understanding of hydraulic brakes systems with hands-on activities, presentations, discussions and inspections. Some or all of the opportunities will be given in simulated or actual automotive technology work situations. | 15 periods675 minutes | (6) The student applies technical knowledge and skills in simulated or actual work situations. The student is expected to:(C) identify brake system components, including drum, disc, power assist, and anti-lock braking system (ABS); and(D) demonstrate an understanding of basic concepts related to hydraulic brakes systems, including Pascal's Theory of Hydraulics. |
| **Unit 7: Electronics**Students will be given multiple opportunities to demonstrate their knowledge of electrical and electrical and electronic systems with hands-on activities, demonstrations, presentations, discussions and inspections. Some or all of the opportunities will be given in simulated or actual automotive technology work situations. Students will also explain and safely perform a jump start following manufacturer recommended procedures. | 20 periods900 minutes | (3) The student demonstrates academic skills related to the requirements of automotive technology. The student is expected to: (C) demonstrate mathematical skills in performing addition, subtraction, multiplication, division, and measurements using decimals and fractions in the metric and U.S. standard systems as appropriate. (6) The student applies technical knowledge and skills in simulated or actual work situations. The student is expected to:(E) demonstrate an understanding of basic concepts related to electrical and electronic systems such as Ohm's law, voltage drop, resistance, amperage, voltage, and wiring diagram symbols; and(M) explain and perform a "jump-start" of a vehicle using jumper cables and a booster battery or an auxiliary power supply according to manufacturer recommended procedures. |
| **Unit 8: Preventative Maintenance**Students will be given multiple opportunities to identify cooling and lubrication system components and steering and suspension components and to demonstrate their knowledge of preventive maintenance schedules and inspections with hands-on activities, demonstrations, presentations and discussions. Students will perform these activities as well as safety, health and environmental audits and inspections in simulated or actual automotive technology work situations. Students will also discuss mathematical skills necessary in automotive technology as they explain and interpret tire sidewall data.  | 20 periods900 minutes | (3) The student demonstrates academic skills related to the requirements of automotive technology. The student is expected to: (C) demonstrate mathematical skills in performing addition, subtraction, multiplication, division, and measurements using decimals and fractions in the metric and U.S. standard systems as appropriate. (6) The student applies technical knowledge and skills in simulated or actual work situations. The student is expected to:(H) identify cooling and lubrication system components;(I) identify steering and suspension components, including power steering;(J) identify and interpret tire sidewall data information such as Department of Transportation (DOT) production date information, tire load capacity, inflation pressures, sizing description, and speed rating;(K) compare the preventative maintenance schedules for a variety of vehicles based on their use;(L) perform a preventative maintenance inspection; and(N) perform regular audits and inspections to maintain compliance with safety, health, and environmental regulations. |
| **Unit 9: Parts and Paperwork**Students will be given multiple opportunities to learn and demonstrate the procedures for ordering and locating parts as well as documenting repair orders in simulated and/or actual automotive technology work situations. Students will also identify and apply the technical writing, preparation and mathematical skills necessary to complete paperwork associated with various customer service scenarios in automotive services. | 20 periods900 minutes | (2) The student demonstrates appropriate personal and communication skills. The student is expected to:(E) demonstrate advanced technical writing and preparation skills. (3) The student demonstrates academic skills related to the requirements of automotive technology. The student is expected to:(A) demonstrate effective oral communication skills with individuals from various cultures such as fellow students, coworkers, and customers; and (B) demonstrate effective written communication skills, including documenting on a repair order the customer concern/complaint, root cause of the failure, and corrective action to complete the repair; and(C) demonstrate mathematical skills in performing addition, subtraction, multiplication, division, and measurements using decimals and fractions in the metric and U.S. standard systems as appropriate.(6) The student applies technical knowledge and skills in simulated or actual work situations. The student is expected to:(A) demonstrate the procedures for ordering and locating parts. |
| **Unit 10: Automotive Career Activities** Students will participate in course culminating automotive career activities which include a written plan to earn industry-recognized certification, an internship and/or to begin a successful career in automotive services or related field.Students will also participate in mock interviews both as applicants and as potential employers and create and/or participate in various workplace scenarios that demonstrate appropriate workplace conduct, employer expectations and interactions with customers. As part of these interviews and scenarios, students will demonstrate appropriate personal appearance and hygiene, group participation, teamwork and effective communication skills.  | 17 periods765 minutes | (1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:(C) demonstrate the principles of group participation, team concept, and leadership related to citizenship and career preparation; and(G) identify employers' expectations and appropriate work habits, ethical conduct, legal responsibilities, and good citizenship skills.(2) The student demonstrates appropriate personal and communication skills. The student is expected to:(A) describe, demonstrate, and apply ethical and legal responsibilities for appropriate workplace conduct;(B) demonstrate proper etiquette and behavior;(C) demonstrate appropriate personal appearance and hygiene;(D) demonstrate effective written and oral communication skills and employ effective listening skills; and(F) demonstrate effective speaking skills through prepared and extemporaneous oral presentations.(3) The student demonstrates academic skills related to the requirements of automotive technology. The student is expected to:(A) demonstrate effective oral communication skills with individuals from various cultures such as fellow students, coworkers, and customers. |