



Correlation of
Modern Automotive Technology, 9e, ©2017
to the
Texas Essential Knowledge and Skills (TEKS)
Course: §130.449 Automotive Technology I: Maintenance and Light Repair
(MLC 9449)

The following chart lists the Knowledge and Skills Statements and Student Expectations for the Texas Essential Knowledge and Skills (TEKS) for Automotive Technology I: Maintenance and Light Repair. For each Student Expectation, the corresponding pages in *Modern Automotive Technology* are listed.

Student Expectations	Textbook Page(s)
(1) The student demonstrates professional standards/employability skills as required by business and industry. The student is expected to:	
(1) (A) demonstrate knowledge of the technical knowledge and skills related to health and safety in the workplace such as safety glasses and other personal protective equipment (PPE) and safety data sheets (SDS)	76–84
(1) (B) identify career and employment opportunities, including entrepreneurship opportunities, and internships and industry-recognized certification requirements for the field of automotive technology	27–38
(1) (C) demonstrate the principles of group participation, team concept, and leadership related to citizenship and career preparation	157–159, 161–162
(1) (D) apply competencies related to resources, information, interpersonal skills, problem solving, critical thinking, and systems of operation in the automotive technology industry	109–114, 158–160, 406–407, 989, 1003–1020, 1025–1026, 1752–1754
(1) (E) discuss certification opportunities	28–37
(1) (F) discuss response plans to emergency situations	75–76, 78
(1) (G) identify employers' expectations and appropriate work habits, ethical conduct, legal responsibilities, and good citizenship skills	157–160
(1) (H) develop personal goals, objectives, and strategies as part of a plan for future career and educational opportunities	32–33, 37, 157, 161–163

Student Expectations	Textbook Page(s)
(2) The student demonstrates academic skills related to the requirements of automotive technology. The student is expected to:	
(2) (A) demonstrate effective oral communication skills with individuals from various cultures such as fellow students, coworkers, and customers	160
(2) (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	114–115, 159, 965–967
(2) (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	90–104
(3) The student demonstrates technical knowledge and skills related to the manufacturer preventative maintenance schedule. The student is expected to:	
(3) (A) locate the manufacturer recommended preventative maintenance schedule	147, 149–150, 990
(3) (B) perform a preventative maintenance inspection of vehicle systems, including engine, fuel, lubrication, cooling, electrical, suspension, drive train, and air-conditioning systems	109–114, 138, 140, 144, 146–147, 150, 348–349, 552–553, 708–710, 1245–1251, 1697–1699
(3) (C) describe the function of the automotive chassis components, including braking, steering, transmission, drive train, and suspension systems	145, 1227–1447, 1491–1509, 1540, 1601
(3) (D) locate, read, and interpret service repair information such as schematics, charts, diagrams, graphs, parts catalogs, and technical bulletins	109–118
(3) (E) use published specifications to diagnose component wear and determine necessary repairs	109–112, 989–990
(3) (F) identify the appropriate oil viscosity and capacity	891, 895–896, 906
(3) (G) verify operation of the instrument panel engine warning indicators	545–547, 618–627, 1729
(3) (H) inspect engine assembly and document findings of fuel, oil, coolant, and other leaks	138–146, 150–151, 385, 706, 836–837, 988, 1057–1059, 1333
(3) (I) perform common fastener and thread repair, including removing broken bolt, restoring internal and external threads, and repairing internal threads with thread insert	119–122, 126–128
(3) (J) inspect, replace, and adjust drive belts, tensioners, and pulleys	150, 235, 237–238, 538–539, 543, 545, 878, 1185, 1188, 1450

Student Expectations	Textbook Page(s)
(3) (K) perform engine oil and filter change	140, 917
(3) (L) 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	70, 496–498
(4) The student demonstrates the functions and applications of the tools, equipment, technologies, and materials used in automotive technology. The student is expected to:	
(4) (A) demonstrate the proper use of hand and power tools and equipment commonly employed in the maintenance and repair of vehicles	41–51, 59–72
(4) (B) discuss the proper handling and disposal of environmentally hazardous materials used in servicing vehicles	84
(5) The student applies the technical knowledge and skills related to brakes in simulated or actual work situations. The student is expected to:	
(5) (A) explains Pascal's Theory of Hydraulics as it relates to the brake system	1603–1604
(5) (B) inspect brake system components, including master cylinder, brake lines, wheel cylinders, calipers, and flexible hoses and fittings, for external leaks and proper operation	150, 1602, 1609–1610, 1613, 1625, 1628–1630, 1631, 1634–1636, 1643–1646
(5) (C) inspect, measure, and refinish brake drum diameter to manufacturer specifications	1602–1603, 1643, 1645, 1652
(5) (D) remove, clean, and inspect brake shoes, springs, pins, clips, levers, adjusters/self-adjusters, other related brake hardware, and backing support plates	150, 160, 1080–1082, 1602–1619, 1628–1630, 1642–1649
(5) (E) lubricate, reassemble, and pre-adjust brake shoes and parking brake	1602–1619, 1645, 1648–1649
(5) (F) remove, inspect for damage or wear, clean, lubricate, and reassemble pads and retaining hardware, caliper assembly, and mounting components such as slides and pins for proper operation	1602–1603, 1610–1613, 1629–1630, 1634–1637, 1641–1643
(5) (G) refinish a rotor on and off a vehicle and measure final rotor thickness with manufacturer specifications	1612–1613, 1638–1642
(5) (H) retract and re-adjust caliper piston on an integral parking brake system	1602, 1619–1621, 1629, 1649

Student Expectations	Textbook Page(s)
(5) (I) check brake pedal travel with, and without, engine running to verify proper power booster operation	1602, 1607, 1626–1628
(5) (J) check brake pedal travel with, and without, engine running to verify proper power booster operation	1602, 1607, 1626–1628
(5) (K) check vacuum supply from a manifold or auxiliary pump to vacuum-type brake power booster	1607
(5) (L) describe the operation of a regenerative braking system	442, 1506, 1601
(6) The student applies the technical knowledge and skills related to electrical systems in simulated or actual work situations. The student is expected to:	
(6) (A) demonstrate knowledge of electrical/electronic series, parallel, and series-parallel circuits using principles of electricity as defined by Ohm's Law	263–264, 266, 269–270
(6) (B) demonstrate proper use of a digital multimeter (DMM) when measuring source voltage, voltage drop, current flow, resistance, and ground circuits	257–259, 267–268, 304, 350–351, 355, 359–362, 526–527, 558
(6) (C) use wiring diagrams to trace electrical/electronic circuits	311, 327, 337
(6) (D) demonstrate knowledge of the causes and effects from shorts, grounds, opens, and resistance problems in electrical/electronic circuits	265–268, 282, 349–352, 360, 473, 558, 567
(6) (E) confirm proper battery capacity for vehicle application and perform battery capacity test	491–493, 497–498
(6) (F) perform battery state-of-charge test	146, 475, 492–493
(6) (G) inspect and clean the battery, fill battery cells, and check battery cables, connectors, clamps, and hold-downs	146, 472, 474–476, 487, 489, 490–491, 499, 509, 527–528
(6) (H) perform starter current draw test	523–527
(6) (I) inspect and test fusible links, circuit breakers, fuses, and relays	281–285, 326–327, 353–354, 365, 423–424, 518–519, 647
(6) (J) perform charging system output test	553–555
(6) (K) inspect, adjust, or replace generator/alternator drive belts and check pulleys and tensioners for wear and belt alignment	543, 545, 558

Student Expectations	Textbook Page(s)
(6) (L) verify operation of instrument panel gauges and warning/indicator lights, and reset maintenance indicators	410, 425, 608, 611, 616, 618, 620–627
(6) (M) inspect interior and exterior lamps and sockets, including headlights and auxiliary light such as fog and driving lights and replace as needed	605, 608, 613–615
(6) (N) verify windshield wiper and washer operation and replace wiper blades as needed	627, 629–630
(7) The student applies the technical knowledge and skills related to heating and air conditioning (A/C) in simulated or actual work situations. The student is expected to:	
(7) (A) identify refrigerant type and the safety and environmental concerns related to handling and storage	1673–1692, 1699–1706, 1711–1714
(7) (B) inspect engine cooling and heater systems hoses	1702–1706, 1710–1711, 1714
(7) (C) inspect A/C-heater ducts, doors, hoses, cabin filters, and outlets	150–151, 1673–1692, 1681, 1702–1706, 1714, 1716
(7) (D) inspect A/C condenser for airflow restrictions	1673–1692, 1702–1706, 1710
(7) (E) identify hybrid vehicle A/C system electrical circuits and the service/safety precautions	82–83, 313, 385, 850, 852, 1673–1692
(8) The student applies the technical knowledge and skills related to manual and automatic drive train and axles in simulated or actual work situations. The student is expected to:	
(8) (A) identify the different fluid types used in both an automatic and manual transmission/transaxle	141–143, 1268, 1314–1315, 1328, 1332
(8) (B) identify the fluid types and capacity required by application using service information	1331–1332, 1328
(8) (C) check fluid level in a transmission or a transaxle equipped with a dip-stick	1327, 1331–1332
(8) (D) check fluid level in a transmission or a transaxle not equipped with a dip-stick	1328, 1332
(8) (E) check fluid condition and inspect for leaks	151, 1302–1303, 1328, 1333
(8) (F) drain and replace fluid and filter or filters in an automatic transmission/transaxle	1302–1303, 1328, 1332
(8) (G) drain and replace fluid in a manual transmission/transaxle	1268–1269, 1332–1333
(8) (H) inspect power train mounts	1050–1051, 1216, 1302–1303

Student Expectations	Textbook Page(s)
(9) The student applies the technical knowledge and skills related to engine performance in simulated or actual work situations. The student is expected to:	
(9) (A) inspect and explain the electrical/electronic components, sensors and circuits on an on board diagnostics (OBD) controlled engine	400–403, 416, 419–423, 532, 978–980, 993, 1008
(9) (B) perform engine absolute manifold pressure tests such as vacuum or boost	736–737, 765
(9) (C) verify engine operating temperature	737, 765, 837–838, 867
(9) (D) remove and replace spark plugs and inspect secondary ignition components for wear and damage	567, 569, 587–588, 591
(9) (E) describe the importance of operating all OBD II monitors for repair verification	400, 401, 747, 978–980
(9) (F) retrieve and record diagnostic trouble codes, OBD II monitor status, and freeze frame data and clear codes when applicable	400–406, 408, 410, 978–980
(9) (G) inspect, service, or replace air filters, filter housings, and intake duct work	146, 696, 715, 1691
(9) (H) replace fuel filter or filters	710
(9) (I) inspect integrity of the exhaust manifolds, exhaust pipes, mufflers, catalytic converters, resonators, tail pipes, and heat shields	799–812
(9) (J) inspect, test, and service positive crankcase ventilation (PCV) system and its components such as the filter/breather cap, valve, tubes, orifices, and hoses	926–927, 935, 968–972
(10) The student applies the technical knowledge and skills related to suspension systems and simulated or actual work situations. The student is expected to:	
(10) (A) 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	1451–1453
(10) (B) demonstrate tire tread depth measuring procedures using industry standards such as common tread depth gauges	1468–1469, 1471, 1513, 1586, 1588
(10) (C) demonstrate tire and wheel balance such as static and dynamic balance, and proper wheel weight selection	1459, 1470, 1474–1476
(10) (D) demonstrate tire and wheel measurements such as radial and lateral run-out in tire and wheel assembly	1451, 1453, 1456–1457, 1467–1471, 1474

Student Expectations	Textbook Page(s)
(10) (E) inspect steering linkage components and mounts such as inner and outer tie-rod ends, pitman arm, idler arm, inner rack and pinion ends, rack and pinion mounts, upper and lower ball joints, power steering pump, and hoses for leaks	1538, 1542, 1565–1566
(10) (F) remove, clean, inspect, and repack wheel bearings, properly install wheel seals, and adjust wheel bearing pre-load	1459, 1467–1471, 1480, 1482–1484
(10) (G) inspect shock absorbers and McPherson struts for leakage and performance using bounce and rebound tests	1493, 1496, 1500–1502, 1514, 1524–1529
(10) (H) demonstrate wheel stud replacement and installation of wheel and tire assembly with proper torqueing procedure	1473, 1458–1459
(10) (I) identify and test the Tire Pressure Monitoring Systems (TPMS), both the direct and indirect, for proper operation	148–149, 1455–1456, 1467–1471, 1479–1480
(10) (J) dismount and mount a tire on a wheel and reinstall the assembly, including torqueing the lug nuts	1458, 1468–1469, 1476, 1513
(10) (K) rotate tires according to manufacturer recommendations	1468–1469, 1472, 1513