

AUTOMOTIVE TECHNOLOGY (AUTO)

AUTO 102 Automotive Systems 3.5 Units

This course will introduce students to the automotive industry and provide a basic overview of the eight areas of certification as specified by the National Institute for Automotive Service Excellence (ASE Alliance).

The course will examine the purpose, function, and operation of the major systems common to most automobiles. In addition, students will learn methodologies for inspecting and providing basic maintenance common to most vehicles. Students will work with the tools and equipment used for inspection, maintenance, repair, and diagnostic work. (C-ID AUTO 110X)

Lecture Hours: 2 Lab Hours: 4.5 Repeatable: No Grading: L
Advisory Level: Read: 3 Write: 3 Math: 3
Transfer Status: CSU Degree Applicable: AA/AS
CSU GE: None IGETC: None District GE: None

AUTO 103 Light Line Technician 2 Units

This course will prepare students for entry level employment in the automotive field as a first-level maintenance technician. The course will also introduce students to the Express Service training that the American Honda Program provides. Each student is assigned various vehicles and performs routine maintenance, inspection, and basic performance testing tasks that are commonly performed at automobile dealerships. In addition to gaining hands-on experience, successful students will build teamwork and cooperative skills, improve their time management practices, and develop sound workmanship values.

Lecture Hours: 1 Lab Hours: 3 Repeatable: No Grading: L
Prerequisite: AUTO 102 with C or better or equivalent
Advisory Level: Read: 3 Write: 3 Math: 3
Transfer Status: None Degree Applicable: AS
CSU GE: None IGETC: None District GE: None

AUTO 105 Suspension, Steering, and Alignment 3 Units

This course will cover, in both theory and practice, the proper diagnosis and repair of automobile steering and suspension systems. Students will learn to use computerized four wheel alignment equipment to diagnose and adjust vehicle alignment angles. Focus will be on adherence to proper service manual procedures, and a sequential process of vehicle repair. (C-ID AUTO 140X)

Lecture Hours: 2.5 Lab Hours: 1.5 Repeatable: No Grading: L
Prerequisite: AUTO 102 with C or better
Advisory Level: Read: 3 Write: 3 Math: 3
Transfer Status: None Degree Applicable: AS
CSU GE: None IGETC: None District GE: None

AUTO 106 Automotive Brake Systems 2 Units

This course is a study of mechanical and hydraulic brake components and systems. Emphasis will be on system operation, adjustment, testing, replacement, and repair procedures. Drum, disc, power assist, and ABS brake systems will also be studied.

Lecture Hours: 1 Lab Hours: 3 Repeatable: No Grading: L
Prerequisite: AUTO 102 with C or better
Recommended: AUTO 172
Advisory Level: Read: 3 Write: 3 Math: 3
Transfer Status: None Degree Applicable: AS
CSU GE: None IGETC: None District GE: None
Credit by Exam: Yes

AUTO 117 Automotive Principles 1.5 Units

This is an introductory course for prospective automotive majors. Students will become familiar with automobile ownership, consumer maintenance, terminology, tools, procedures, and a basic overview of the major vehicle systems.

Lecture Hours: 1 Lab Hours: 1.5 Repeatable: No Grading: L
Advisory Level: Read: 3 Write: 3 Math: 3
Transfer Status: None Degree Applicable: AS
CSU GE: None IGETC: None District GE: None

AUTO 118 Fuel Systems/Emission Controls 2.5 Units

This course covers automotive fuel systems, including: tanks, pumps, lines, filters, idle and vacuum control devices, electronic fuel injection, and emission control devices. Emphasis will be placed on combustion chemistry and emission testing procedures, and the diagnosis and repair of fuel and emission control system components. Students will diagnose and repair hard start, no-start, poor performance, and emission failures on a range of vehicles using the latest test equipment and methods. This course provides significant preparation and experience for those pursuing licensing as CA emission technicians.

Lecture Hours: 1.5 Lab Hours: 3 Repeatable: No Grading: L
Prerequisite: AUTO 102 and AUTO 119 both with C or better
Advisory Level: Read: 2 Write: 2 Math: 2
Transfer Status: None Degree Applicable: AS
CSU GE: None IGETC: None District GE: None
Credit by Exam: Yes

AUTO 119 Introduction to Engine Performance 2.5 Units

This course is part of the Automotive Basic Skills track emphasizing engine systems relevant to performance and driveability. Classroom theory, engine analyzers and test equipment will be utilized to diagnose modern automobile engine systems. Engine diagnostic strategies will be performed in the lab as they would be in the workplace. In addition to gaining hands-on experience, successful students will build teamwork and cooperative skills, improve their time management practices, and develop sound workmanship values.

Lecture Hours: 2 Lab Hours: 2 Repeatable: No Grading: L
Prerequisite: AUTO 102 with C or better or equivalent
Advisory Level: Read: 3 Write: 3 Math: 3
Transfer Status: None Degree Applicable: AS
CSU GE: None IGETC: None District GE: None

AUTO 120 Automatic Transmission Systems 2.5 Units

This course will prepare students to diagnose and repair front and rear wheel drive automatic transmission systems. Topics include: stall and pressure testing, torque converters, planetary, CVT, and helical gear systems, overhaul practices, valve body repair, and on-car service techniques in both theory and practical application. Computerized powertrain diagnosis and repair will also be explored. Additional electronic transmission diagnosis and repair techniques are studied in AUTO 174, Body Chassis Electronics. Both courses are recommended preparation for the ASE Automatic Transmission Exam.

Lecture Hours: 1.5 Lab Hours: 3 Repeatable: No Grading: L
 Prerequisite: AUTO 102 with C or better
 Recommended: AUTO 103 and AUTO 172
 Advisory Level: Read: 3 Write: 3 Math: 3
 Transfer Status: None Degree Applicable: AS
 CSU GE: None IGETC: None District GE: None

AUTO 121 Manual Transmission and Drivetrain Systems 2 Units

This course will prepare students to diagnose and repair front and rear wheel drive manual transmission systems, clutches, drive lines, differentials, and CV axles. Planetary, helical, hypoid, bevel, and straight cut gear systems will be studied including ratio calculation and torque multiplication. Overhaul practices, including teardown, measurement, inspection, repair, and reassembly will be covered. Four wheel drive systems such as automatic locking hubs, transfer cases, and electronic drivetrain systems are also studied to prepare students for the ASE Manual Transmission Exam.

Lecture Hours: 1 Lab Hours: 3 Repeatable: No Grading: L
 Prerequisite: AUTO 102 with C or better
 Recommended: AUTO 103 and AUTO 172
 Advisory Level: Read: 3 Write: 3 Math: 3
 Transfer Status: None Degree Applicable: AS
 CSU GE: None IGETC: None District GE: None

AUTO 122 Advanced Electrical Systems 3 Units

This is an advanced automotive electrical course stressing diagram-based diagnostic methods. Students will design and build functioning circuits and systems, as well as compute and measure all aspects of performance. Students will learn to diagnose and repair a wide variety of circuit, system, and component faults in general electrical, starting, charging, lighting, instrumentation, accessory, climate control, audio, navigation, and SRS systems. Analytical skills and use of specialized test equipment will be stressed to provide students with excellent and highly marketable diagnostic abilities.

Lecture Hours: 2 Lab Hours: 4 Repeatable: No Grading: L
 Prerequisite: AUTO 170 with C or better
 Advisory Level: Read: 3 Write: 3 Math: 3
 Transfer Status: None Degree Applicable: AS
 CSU GE: None IGETC: None District GE: None

AUTO 125 Automotive Electronics 2 Units

This course explores the application of electronic components and systems within a modern vehicle. Students will learn basic semiconductor theory, and operation and testing of a wide variety of input and output devices. Multiplex (vehicle intranet) systems, serial communications, and diagnostic practices will also be covered.

Lecture Hours: 1.5 Lab Hours: 1.5 Repeatable: No Grading: L
 Prerequisite: AUTO 170 with C or better
 Recommended: AUTO 118, AUTO 122 and AUTO 127
 Advisory Level: Read: 3 Write: 3 Math: 3
 Transfer Status: None Degree Applicable: AS
 CSU GE: None IGETC: None District GE: None

AUTO 127 Ignition Systems 2 Units

This course covers the theory, diagnosis and repair of modern automotive ignition systems. Topics include ignition system function, combustion requirements, primary system triggering, switching components and operation, secondary ignition components, ignition timing devices, electronic spark timing function and strategy, Waste Spark, and Coil-on-Plug systems. Course also includes testing methods, fault isolation techniques and Oscilloscope testing, waveform interpretation, as well as maintenance and driveability fault corrections.

Lecture Hours: 1 Lab Hours: 3 Repeatable: No Grading: L
 Prerequisite: AUTO 102 with C or better
 Recommended: AUTO 170
 Advisory Level: Read: 3 Write: 3 Math: 3
 Transfer Status: None Degree Applicable: AS
 CSU GE: None IGETC: None District GE: None

AUTO 132A Honda Individualized Skills Training (IST) Session A 1.5 Units

This course allows automotive students to complete Honda Individualized-Skills-Training. This course includes "hands-on" skill modules covering General and Express-Service. Students will also practice Honda Express-Service choreography.

Lecture Hours: 1 Lab Hours: 1.5 Repeatable: No Grading: L
 Prerequisite: AUTO 102 with C or better; Students must interview with the Automotive Faculty Honda Coordinator and been given a Honda/Acura Dealer Personnel Tracking System (DPTS) ID
 Recommended: AUTO 103, AUTO 119, AUTO 170
 Advisory Level: Read: 3 Write: 3 Math: 3
 Transfer Status: None Degree Applicable: AS
 CSU GE: None IGETC: None District GE: None

AUTO 132B Honda Individualized Skills Training (IST) Session B 1.5 Units

This course introduces the student to Honda manufacture training curriculum. Student's progress in this and other courses leads to Honda manufacturer certification. This course includes "hands-on" skill modules covering Express-Service and fuel-system skill modules.

Lecture Hours: 1 Lab Hours: 1.5 Repeatable: No Grading: L
 Prerequisite: AUTO 102 with C or better and students must interview with the Automotive Faculty Honda Coordinator and been previously given a Honda/Acura Dealer Personnel Tracking System (DPTS) ID
 Recommended: AUTO 103, AUTO 119, AUTO 170, AUTO 171
 Advisory Level: Read: 3 Write: 3 Math: 3
 Transfer Status: None Degree Applicable: AS
 CSU GE: None IGETC: None District GE: None

AUTO 132C Honda Individualized Skills Training (IST) Session C 1.5 Units

This course introduces the student to Honda manufacture training curriculum. Student's progress in this and other courses leads to Honda manufacturer certification. Topics of focus are Express Lube Choreography, air conditioning, and steering and suspension.

Lecture Hours: 1 Lab Hours: 1.5 Repeatable: No Grading: L
 Prerequisite: AUTO 102 with C or better; Students must have a Honda/Acura Dealer Personnel Tracking System (DPTS) ID
 Recommended: AUTO 103, AUTO 119, AUTO 170 and AUTO 171
 Advisory Level: Read: 3 Write: 3 Math: 3
 Transfer Status: None Degree Applicable: AS
 CSU GE: None IGETC: None District GE: None

AUTO 135 Air Conditioning Systems 2 Units

This course will prepare students to diagnose and repair modern heating ventilation and air conditioning systems. Topics studied include systems inspection, diagnosis, and repair, leak testing, performance testing, mode control, refrigerant identification, recovery, flushing, evacuation, recharging, and safe handling procedures. Students will also learn to diagnose component malfunctions and using various refrigerant types. AUTO 135 and 174 prepare students for the ASE Air Conditioning exam.

Lecture Hours: 1.5 Lab Hours: 1.5 Repeatable: No Grading: L
 Prerequisite: AUTO 102 with C or better
 Recommended: AUTO 103
 Advisory Level: Read: 3 Write: 3 Math: 3
 Transfer Status: None Degree Applicable: AS
 CSU GE: None IGETC: None District GE: None

AUTO 138 Occupational Work Experience 1-8 Units

Occupational Work Experience is designed for students who work or volunteer in a field related to their career major. Students are required to provide evidence that they are enrolled in an automotive technology course(s). Students can earn one unit of credit for each 60 hours of unpaid volunteer time or 75 hours of paid work during the semester. Students can repeat Occupational Work Experience, combined with General Work Experience, or alone, up to a maximum of 16 units. Internship/job placement is not guaranteed.

Lecture Hours: None Lab Hours: 2.07 Repeatable: Yes Grading: O
 Corequisite: Be employed or a volunteer at an approved automotive work-site for the minimum number of hours per unit as stipulated for paid and unpaid status.
 Advisory Level: Read: 3 Write: 3 Math: 3
 Transfer Status: CSU Degree Applicable: AA/AS
 CSU GE: None IGETC: None District GE: None

AUTO 170 Electrical Systems 3 Units

This course introduces students and entry level automotive technicians to the automotive electrical system. The course covers DC electrical theory, magnetism, Ohm's law, series and parallel circuits, passive components, and system dynamics. Students learn to calculate and measure voltage, resistance and current in theoretical and live circuits, build and test working models of typical automotive electrical systems using table top components and industry specific simulators, and practice diagnosis and repair procedures on a variety of vehicles. Students will also develop an understanding of modern electrical test equipment, such as DMMs, GDMs, and DSO's, and industry standard troubleshooting and repair procedures. This course will prepare students for the ASE A6, Automotive Electrical Systems, certification examination.

Lecture Hours: 2 Lab Hours: 3 Repeatable: No Grading: L
 Prerequisite: AUTO 102 with C or better
 Advisory Level: Read: 3 Write: 3 Math: 3
 Transfer Status: None Degree Applicable: AS
 CSU GE: None IGETC: None District GE: None

AUTO 171 Engine Systems 2.5 Units

This is an intermediate level course that covers engine theory and repair procedures found in the latest ASE Alliance (formerly NATEF) engine repair task list. The students will disassemble, measure, and reassemble an engine(s) according to manufacturer-specific service instructions. Engine support systems for cooling and lubrication are discussed as well as valve train technology. This course prepares students to take the ASE "Engine Repair, A1" test.

Lecture Hours: 1.5 Lab Hours: 3 Repeatable: No Grading: L
 Prerequisite: AUTO 102 with C or better
 Advisory Level: Read: 3 Write: 3 Math: 3
 Transfer Status: None Degree Applicable: AS
 CSU GE: None IGETC: None District GE: None
 Credit by Exam: Yes

AUTO 172 Chassis and Drivetrain Systems 2.5 Units

This intermediate level course will introduce students to the service and repair procedures of drive-train systems, brakes, clutches, steering, suspension, alignment, and related measurement practices. This course is designed to prepare students for the chassis drive-train track and stresses inspection and routine maintenance services of under-car systems such as CV axles, brake friction components, universal joints, clutch systems, and transmissions. Satisfactory completion of this course is required for all Automotive degree options.

Lecture Hours: 2 Lab Hours: 2 Repeatable: No Grading: L

Prerequisite: AUTO 102 with C or better

Advisory Level: Read: 3 Write: 3 Math: 3

Transfer Status: None Degree Applicable: AS

CSU GE: None IGETC: None District GE: None

AUTO 173 Automotive Service Operations 2 Units

This course will provide overview information about careers in Automotive Technology. Preparation for "on the job" experience will include presentations and discussions about professionalism, work ethics, diplomacy, consumerism, safety, hazardous wastes, tools and equipment, as well as employee, employer, and customer relations.

Lecture Hours: 1.5 Lab Hours: 1.5 Repeatable: No Grading: L

Advisory Level: Read: 3 Write: 3 Math: 3

Transfer Status: None Degree Applicable: AS

CSU GE: None IGETC: None District GE: None

Credit by Exam: Yes

AUTO 174 Body & Chassis Electronics 2 Units

This course provides students with the marketable skills needed for the diagnosis and repair of modern electronic body-chassis control systems. It is designed to complement Chassis/Drivetrain classes by studying ABS, electronically controlled steering, suspension, AC, and transmission systems. Students will be using state-of-the-art equipment such as: lab scopes, ETMs, scanners, DVOMs, and other related resources. Students will apply knowledge of Ohm's Law, digital logic, parasitic load testing, short/open location, communication protocols, and other technical resources.

Lecture Hours: 1 Lab Hours: 3 Repeatable: No Grading: L

Prerequisite: AUTO 102 and AUTO 170 both with C or better

Corequisite: AUTO 102 and AUTO 170; Recommended: AUTO 105, AUTO 106 and AUTO 172

Advisory Level: Read: 3 Write: 3 Math: 3

Transfer Status: None Degree Applicable: AS

CSU GE: None IGETC: None District GE: None

AUTO 181A Introduction to Alternative Fuel and Hybrid/Electric Vehicles 2 Units

This course will examine a variety of alternative fuels and propulsion systems used in modern automotive vehicles. The advantages and limitations of alternative fuels used in internal combustion engines (ICE) will be discussed. The topics on alternative propulsion systems will include the basic theory of operation, construction, and safety. The unique dangers surrounding alternative fuel and propulsion vehicles will be explored and how to minimize the risks. This course will also cover what is needed to operate safely and effectively around these vehicles.

Lecture Hours: 1.5 Lab Hours: 1.5 Repeatable: No Grading: L

Prerequisite: AUTO 102 with C or better or equivalent industry experience

Advisory Level: Read: 3 Write: 3 Math: 3

Transfer Status: None Degree Applicable: AS

CSU GE: None IGETC: None District GE: None

AUTO 181B Hybrid Electric Vehicle Maintenance and Repair 3 Units

This is an advanced course that provides an in-depth study of the technology, maintenance, and repair of hybrid, plug-in, and all electric light duty passenger vehicles. Basic diagnostic, repair, and maintenance procedures of the unique systems associated with hybrid and electric vehicles will be discussed and practiced. Special tools and diagnostic equipment will be used during the laboratory exercises.

Lecture Hours: 1.5 Lab Hours: 4.5 Repeatable: No Grading: L

Prerequisite: AUTO 102, AUTO 170 and AUTO 181A, all with C or better

Advisory Level: Read: 3 Write: 3 Math: 3

Transfer Status: None Degree Applicable: AS

CSU GE: None IGETC: None District GE: None

AUTO 182A Tesla Service Technician Training (Session A) 3 Units

This course is part of a series of four courses that will provide the technical skills necessary to gain successful employment with TESLA Motors as a service technician. The focus of this course is to provide an overview of Tesla History, Safety, Product, Specialized Tools, High Voltage System, and Service Operations. This course is suitable for students who have completed a two-year automotive technology program or have experience as a vehicle service technician. A formal application and interview process are required for acceptance into this course.

Lecture Hours: 1.5 Lab Hours: 4.5 Repeatable: No Grading: L

Recommended: Acceptance to this course requires the submission of an application and faculty interview to determine if the applicant has the required level of skill and understanding of electrical concepts, mechanical and electrical diagnostics, the function and operating principles of common systems used in hybrid, electrical, and conventional vehicles. The common systems are brakes, air conditioning, steering, suspension, high voltage electrical circuits. Completion of AUTO 181B, AUTO 170, AUTO 105, AUTO 135, AUTO 106 with a C or better or equivalent work experience

Advisory Level: Read: 3 Write: 3 Math: 3

Transfer Status: None Degree Applicable: AS

CSU GE: None IGETC: None District GE: None

AUTO 182B Tesla Service Technician Training (Session B) 4 Units

This course is part of a series of four courses that will provide the technical skills necessary to gain successful employment with TESLA Motors as a service technician. The focus of this course is to provide technical service training on Electrical Fundamentals, Thermal System and HVAC, and Chassis Systems. This course is suitable for students who have completed a two-year automotive technology program or have experience as a vehicle service technician. A formal application and interview process are required for acceptance into this course.

Lecture Hours: 2.5 Lab Hours: 4.5 Repeatable: No Grading: L
 Recommended: Acceptance to this course requires the submission of an application and faculty interview to determine if the applicant has the required level of skill and understanding of electrical concepts, mechanical and electrical diagnostics, the function and operating principles of common systems used in hybrid, electrical, and conventional vehicles. The common systems are brakes, air conditioning, steering, suspension, high voltage electrical circuits. Completion of AUTO 181B, AUTO 170, AUTO 105, AUTO 135, AUTO 106 with a C or better or equivalent work experience
 Advisory Level: Read: 4 Write: 4 Math: 4
 Transfer Status: None Degree Applicable: AS
 CSU GE: None IGETC: None District GE: None

AUTO 182C Tesla Service Technician Training (Session C) 4 Units

This course is part of a series of four courses that will provide the technical skills necessary to gain successful employment with TESLA Motors as a service technician. The focus of this course is to provide technical service training on Advanced Electrical, HV System, and Penthouse. This course is suitable for students who have completed a two-year automotive technology program or have experience as a vehicle service technician. This course is a required course for TESLA Motors Service Technician. A formal application and interview process are required for acceptance into this course.

Lecture Hours: 2.5 Lab Hours: 4.5 Repeatable: No Grading: L
 Recommended: Acceptance to this course requires the submission of an application and faculty interview to determine if the applicant has the required level of skill and understanding of electrical concepts, mechanical and electrical diagnostics, the function and operating principles of common systems used in hybrid, electrical, and conventional vehicles. The common systems are brakes, air conditioning, steering, suspension, high voltage electrical circuits. Completion of AUTO 181B, AUTO 170, AUTO 105, AUTO 135, AUTO 106 with a C or better or equivalent work experience
 Advisory Level: Read: 4 Write: 4 Math: 4
 Transfer Status: None Degree Applicable: AS
 CSU GE: None IGETC: None District GE: None

AUTO 182D Tesla Service Technician Training (Session D) 4 Units

This course is part of a series of four courses that will provide the technical skills necessary to gain successful employment with TESLA Motors as a service technician. The focus of this course is to provide technical service training on Driver Assist, Panoramic Roof, and Infotainment Systems. This course is suitable for students who have completed a two-year automotive technology program or have experience as a vehicle service technician. This course is a required course for TESLA Motors Service Technician. A formal application and interview process are required for acceptance into this course.

Lecture Hours: 2.5 Lab Hours: 4.5 Repeatable: No Grading: L
 Recommended: Acceptance to this course requires the submission of an application and faculty interview to determine if the applicant has the required level of skill and understanding of electrical concepts, mechanical and electrical diagnostics, the function and operating principles of common systems used in hybrid, electrical, and conventional vehicles. The common systems are brakes, air conditioning, steering, suspension, high voltage electrical circuits. Completion of AUTO 181B, AUTO 170, AUTO 105, AUTO 135, AUTO 106 with a C or better or equivalent work experience
 Advisory Level: Read: 4 Write: 4 Math: 4
 Transfer Status: None Degree Applicable: AS
 CSU GE: None IGETC: None District GE: None

AUTO 204 Driver Assist Technology 1.5 Units

This course addresses the technology of driver-assist systems used in modern vehicles to help a vehicle driver avoid collisions and assist in driving maneuvers with limited visibility and reaction time. The student will be presented with various technologies and the skills needed to calibrate these systems if they are replaced due to component failure or following collision repairs.

Lecture Hours: 1 Lab Hours: 1.5 Repeatable: No Grading: L
 Prerequisite: AUTO 102 with C or better or applicable industry experience
 Advisory Level: Read: 3 Write: 3 Math: 3
 Transfer Status: None Degree Applicable: AS
 CSU GE: None IGETC: None District GE: None
 Credit by Exam: Yes