

AUTOMOTIVE TECHNOLOGY

DIVISION: Business and Applied Technology

The Automotive Technology Program is committed to producing entry-level automotive technicians. Paired with general education units you can graduate with an Associate in Science Degree in All Automotive Systems.

The All Automotive Systems Certificate of Achievement is the broadest of our certificates, offering a strong foundation in the major concepts and skills of automotive technology. Upon successful completion of the curriculum you receive one year of industry credit towards your ASE credential. The program has NATEF Student Certification Exams that are part of the curricula, which helps with the mastery of the National ASE test. With a strong Automotive Advisory Board & ASCCA (Automotive Service Council of CA) membership we offer an excellent opportunity for career placement.

Our program and instructors meet strict industry standards and are NATEF/ASE certified in MAST (Master Automotive Service Technician) & MLR (Maintenance & Light Repair – Summer 2016).

- Automotive Technology – All Automotive Systems – Associate in Science Degree, Certificate of Achievement (<https://curriculum.pasadena.edu/academic-programs/automotive-technology/automotive-technology-all-automotive-systems-as-cert-achievement/>)
- Automotive Technology – Automotive Electrical Systems Technician – Certificate of Achievement (<https://curriculum.pasadena.edu/academic-programs/automotive-technology/automotive-technology-automotive-electrical-systems-technician-cert-achievement/>)
- Automotive Technology – Engine Performance Technician – Associate in Science Degree, Certificate of Achievement (<https://curriculum.pasadena.edu/academic-programs/automotive-technology/automotive-technology-engine-performance-technician-ase-cert-achievement/>)
- Automotive Technology – Heating & Air Conditioning Technician – Occupational Skills Certificate (<https://curriculum.pasadena.edu/academic-programs/automotive-technology/automotive-technology-heating-air-conditioning-technician-occupational-skills-cert/>)
- Automotive Technology – Powertrain Technician – Associate in Science Degree, Certificate of Achievement (<https://curriculum.pasadena.edu/academic-programs/automotive-technology/automotive-technology-powertrain-technician-as-cert-achievement/>)
- Automotive Technology – Undercar Technician – Associate in Science Degree, Certificate of Achievement (<https://curriculum.pasadena.edu/academic-programs/automotive-technology/automotive-technology-undercar-technician-as-cert-achievement/>)
- Automotive Technology – Underhood Technician – Certificate of Achievement (<https://curriculum.pasadena.edu/academic-programs/automotive-technology/automotive-technology-underhood-technician-cert-achievement/>)

Courses

AUTO 100 BASIC AUTOMOTIVE FUNDAMENTALS

2 unit

Vocabulary and theory of the internal combustion engine. Covers major vehicle operating systems including ignition, fuel, transmission, driveline, chassis, suspension, brakes, heating, and air conditioning. Recommended for Automotive Program students that have no experience and/or did not attend a High School automotive program. This is the only Automotive Technology course that has no DMV or uniform requirement. No credit if taken after AUTO 032. Total of 36 hours lecture.

Grade Mode: *Audit, Letter Grade, Pass/No-Pass*

AUTO 101C AUTOMOTIVE SERVICE CONSULTANT

3 unit

Prerequisite(s): *ENGL 001A and AUTO 100*

Enrollment Limitation: *Must possess a valid driver's license*

DMV print out showing valid driver's license is required. Must be able to stand for long periods of time. Typing skills necessary. Organization and function of an automotive service consultant. Development of effective Walk-around inspection skills. Use BAR and California standards to create a legal service repair order. This course prepares students for the ASE C1 certification exam. Valid drivers license required. Total of 54 hours of lecture and 9 hours of laboratory.

Grade Mode: *Audit, Letter Grade*

AUTO 140A VEHICLE MAINTENANCE

4 unit

Intended for the incumbent worker, re-entry personnel, and/or persons seeking a career change into the automotive service industry. Foundation course in the Maintenance and Light Repair (MLR) Program. Focus on developing workplace skills (detailed multi-point inspection and fluid maintenance) on select vehicle subsystems. Appropriate lab activities are included. Total of 54 hours lecture and 54 hours laboratory.

Grade Mode: *Audit, Letter Grade*

AUTO 141 ENGINE MECHANICAL MAINTENANCE AND LIGHT REPAIR

2 unit

Prerequisite(s): *AUTO 140A or one year industry experience*

Intended for the incumbent worker, re-entry personnel, and/or persons seeking a career change into the automotive service industry. Part of the Maintenance and Light Repair (MLR) program. Essential engine theory, inspection, diagnosis, service and repair. Engine inspection and measurements with an emphasis on in-vehicle repairs. Total of 27 hours lecture and 27 hours laboratory.

Grade Mode: *Audit, Letter Grade*

AUTO 144 AUTOMOTIVE CHASSIS MAINTENANCE AND LIGHT REPAIR

4 unit

Prerequisite(s): *AUTO 140A*

Intended for the incumbent worker, re-entry personnel, and/or persons seeking a career change into the automotive service industry. Part of the Maintenance and Light Repair (MLR) program. Essential chassis system theory, inspection, diagnosis, service and repair of the following undercar systems: steering, suspension, alignment, wheels and tires. Total of 54 hours lecture and 54 hours laboratory.

Grade Mode: *Audit, Letter Grade*

AUTO 145 AUTOMOTIVE BRAKES MAINTENANCE AND LIGHT REPAIR
3 unit**Prerequisite(s):** AUTO 140A

Intended for the incumbent worker, re-entry person or person seeking a career change into the automotive service industry. Part of the Maintenance and Light Repair (MLR) curriculum. Focus on developing workplace skills allowing a student to competently perform detailed brake inspections and repairs on disc, drum and parking brake systems. Appropriate lab activities are included. Total of 36 hours lecture and 54 hours laboratory.

Grade Mode: Audit, Letter Grade**AUTO 146 AUTOMOTIVE ELECTRICAL SYSTEMS MAINTENANCE AND LIGHT REPAIR****4 unit****Prerequisite(s):** AUTO 140A

Intended for the incumbent worker, re-entry personnel, and/or persons seeking a career change into the automotive service industry. Part of the Maintenance and Light Repair (MLR) program. Essential electrical and electronic systems theory, including inspection, diagnosis, service and repair of specific electrical systems (battery, starting systems, charging systems, lighting systems, gauges, instrument-panel warning lights and power accessories). Total of 54 hours lecture and 54 hours laboratory.

Grade Mode: Audit, Letter Grade**AUTO 147 AUTOMOTIVE HEATING, VENTILATION AND AIR CONDITIONING MAINTENANCE AND LIGHT REPAIR****2 unit****Prerequisite(s):** AUTO 140A

Intended for the incumbent worker, re-entry personnel, and/or persons seeking a career change into the automotive service industry. Part of the Maintenance and Light Repair (MLR) program. Essential heating, ventilation, and air conditioning (HVAC) system theory, inspection, maintenance and light repair. Total of 18 hours lecture and 54 hours laboratory.

Grade Mode: Audit, Letter Grade**AUTO 148 ENGINE PERFORMANCE MAINTENANCE AND LIGHT REPAIR**
4 unit**Prerequisite(s):** AUTO 140A

Intended for the incumbent worker, re-entry person or person seeking a career change into the automotive service industry. Part of the Maintenance and Light Repair (MLR) curriculum. Essential engine management system theory, along with inspection, diagnosis, service and repair of the following systems: Ignition, air and fuel delivery, electronic engine controls, and auxiliary emission controls. Total of 54 hours of lecture and 54 hours laboratory.

Grade Mode: Audit, Letter Grade**AUTO 170 WORK EXPERIENCE INTERNSHIP**
4 unit**Enrollment Limitation:** 40 or more units in AUTO courses; DMV license in good standing (no points)

Supervised unpaid work experience in an established professional Dealership or Independent repair facility. Designed for students accomplishing the All Automotive Systems Certificate to assist in employment transition. Analysis of professional and technical style and performance outcomes. Occupational Work Experience Education: This work experience course of supervised employment is designed to assist students to acquire career awareness, work habits, attitudes and skills related to the student's college major. Credit may be accrued at the rate of 1 to 8 units per semester for a total of 16 units. Additionally, students must work 60 non-paid hours per unit earned. Total of 240 hours field practice.

Grade Mode: Audit, Letter Grade, Pass/No-Pass**AUTO 200 AUTOMOTIVE FUNDAMENTALS FOR TECHNICIANS**
4 unit**Recommended Preparation:** AUTO 100 or AUTO 032 if no previous experience with vehicles**Enrollment Limitation:** Valid DMV license (print out)

Introductory course intended for automotive majors and individuals with some automotive knowledge or experience. Automobiles will be covered from the service technician's view covering all roles and responsibilities as recommended by BAR, NATEF, and all Federal and State agencies. Theories and fundamentals of the automobile's major operating systems including: internal combustion engine, ignition, fuel, driveline, chassis, suspension, brakes, heating, and air conditioning. Lab activities in automotive inspection and maintenance service are included. Total of 54 hours of lecture and 54 hours of laboratory.

Grade Mode: Audit, Letter Grade**AUTO 201 ENGINE OPERATION & TESTING**
6 unit**Prerequisite(s):** AUTO 200**Enrollment Limitation:** Able to manipulate up to 50 lbs in a safe manner; Work at an average 4 foot working height

Technical course with hands-on experience related to automotive engine theory of operation and methods of testing. Extensive practice in using pinpoint testing to diagnose failures. Practice in disassembly measurement and reassembly of various four cycle engines. Use of precision measurement tools and assessing engine failure conditions. No credit if taken after AUTO 220. Total of 54 hours lecture and 162 hours laboratory.

Grade Mode: Audit, Letter Grade

AUTO 202 AUTOMATIC TRANSMISSION AND TRANSAXLES**5 unit***C-ID: AUTO 120X***Prerequisite(s):** *AUTO 200 and AUTO 206A; OR AUTO 032 and AUTO 050; OR AUTO 200 and AUTO 050***Enrollment Limitation:** *DMV print out showing valid driver's license is required; Must be able to stand for long periods of time and work on overhead automotive lifts at a height of 5 ft or more while standing; Must lift and manipulate 80 lbs or more in a safe manner*

Theory of operation and service of hydraulic and electronic controlled automatic transmissions/transaxles available in automobiles and light trucks. Laboratory procedures include disassembly, inspection, reassembly of a common hydraulic controlled automatic transmission. Safe and correct use of special service and diagnostic tools is emphasized. This course prepares student for A2 ASE Professional Exam. No credit if taken after AUTO 223. Total of 54 hours lecture and 108 hours laboratory.

Grade Mode: *Audit, Letter Grade***AUTO 203 MANUAL TRANSMISSION, TRANSAXLE, AND DRIVETRAIN****5 unit***C-ID: AUTO 130X***Prerequisite(s):** *AUTO 200***Enrollment Limitation:** *Must possess a valid driver's license; DMV print out showing valid drivers license is required; Able to work in a standing position for long periods and manipulate 80 lbs or more in a safe manner*

Theory of operation and diagnosis of manual transmissions, transaxles, clutches, differentials, driveshafts, constant velocity joints, and drive axles. Laboratory procedures include removal, disassembly, inspection, rebuilding, installation, and adjustment of manual transmissions and related assemblies. ASE A3 examination preparation. No credit if taken after AUTO 222. Total of 54 hours lecture and 108 hours laboratory.

Grade Mode: *Audit, Letter Grade***AUTO 204 AUTOMOTIVE SUSPENSION & STEERING****6 unit***C-ID: AUTO 140X***Prerequisite(s):** *Enrollment in or completion of AUTO 205***Enrollment Limitation:** *Must possess a valid driver's license; DMV print out showing valid driver's license is required; Must be able to stand for long periods of time and work on cutting equipment at a height of 3 ft or more while standing; Must lift and manipulate 50 lbs or more in a safe manner*

Theory of operation, diagnosis, service and repair of suspension and steering systems. Wheel alignment on Hunter and John Beam Equipment, tire service and repair, tire diagnosis including wheel balancing. This course pertains to the Snap-On Industrial Certification in Wheel Service which includes alignment. NATEF Tasks are the basis of all lab work and ASE Student Certification Exam is required in course. No credit if taken after AUTO 225. Total of 63 hours lecture and 135 hours laboratory.

Grade Mode: *Audit, Letter Grade***AUTO 205 AUTOMOTIVE BRAKE SYSTEMS****4 unit***C-ID: AUTO 150X***Prerequisite(s):** *AUTO 200 and AUTO 206A***Enrollment Limitation:** *Must possess a valid driver's license; DMV print out showing valid driver's license is required; Must be able to stand for long periods of time and work on cutting equipment at a height of 3 ft or more while standing; Must lift and manipulate 50 lbs or more in a safe manner*

Theory of operation, diagnosis, and repair of ABS systems using ABS scanners. Emphasis is placed on complete brake services including related machine operations. Prepares students for the ASE A5 exam, ASE Student Certification testing is completed in this class. No credit if taken after AUTO 224. Total of 36 hours lecture and 108 hours laboratory.

Grade Mode: *Audit, Letter Grade***AUTO 206A BASIC AUTOMOTIVE ELECTRICAL SYSTEMS****4 unit****Enrollment Limitation:** *Valid DMV license (printout) required and uniform*

Fundamentals of electrical theory and how it is applied in modern vehicles. Understanding of basic automotive electrical systems: circuits and lights, electronic devices, starting motors, charging systems, batteries and indicating devices. Building of automotive circuits, testing and repair of DC automotive circuits. Introduction to reading schematics, and troubleshooting. First level course in the preparation for the Automotive Service Excellence (ASE) A6 certification program. No credit if taken after AUTO 050. Total of 54 hours lecture and 54 hours laboratory.

Grade Mode: *Audit, Letter Grade***AUTO 206B AUTOMOTIVE ELECTRICAL SYSTEMS****4 unit****Prerequisite(s):** *AUTO 200 and AUTO 206A*

Theory, operation, and maintenance of microprocessor-based automotive control systems. Electronic fuel injection ignition, body computer modules and on-board diagnostic systems are covered. Use of digital scan tools, oscilloscopes and trouble-shooting procedures are practiced. This course prepares the student for the ASE A6 Electrical test. No credit if taken after AUTO 151. Total of 54 hours lecture and 54 hours laboratory.

Grade Mode: *Audit, Letter Grade***AUTO 207 AUTOMOTIVE HEATING & AIR CONDITIONING****3 unit***C-ID: AUTO 170***Prerequisite(s):** *AUTO 200 and AUTO 206A; or AUTO 032 and AUTO 050; or AUTO 200 and AUTO 050***Enrollment Limitation:** *Proof of valid DMV license required if working on vehicles in the Auto Facility*

Air conditioning theory, methods of testing, diagnosing and servicing automotive air conditioners. Introduction to new technologies, safe handling, reclaiming and recycling of refrigerants. Students will have the opportunity to take the United States Clean Air Act MACS Section 609 Refrigerant Recycling and Recovery Certification Program to obtain a refrigerant handlers' license. This course prepares students for the Automotive Service Excellence (ASE) A7 Professional Exam. No credit if taken after AUTO 215. Total of 36 hours lecture and 54 hours laboratory.

Grade Mode: *Audit, Letter Grade*

AUTO 208 ENGINE PERFORMANCE

6 unit

Prerequisite(s): *AUTO 201 and AUTO 206B*

Enrollment Limitation: *Must possess a valid driver's license; DMV print out showing valid driver's license is required; Must be able to stand for long periods of time*

Theory and operation of electronic engine controls and includes: electronic fuel injection, electronic ignitions, onboard diagnostics and current emission systems. Laboratory practice includes proper set up and use of digital storage oscilloscopes, scan tools, engine analyzer, four and five-gas emission analyzers, and dynamometer. This course prepares the students for the Automotive Service Excellence (ASE) A8 Professional Exam. No credit if taken after AUTO 226 and 227 or 208A and 208B. Total of 72 hours lecture and 108 hours laboratory.

Grade Mode: *Audit, Letter Grade*

AUTO 228A ALTERNATIVE FUEL VEHICLES

1.5 unit

Introductory class to the vocabulary and nomenclature associated with alternate fuel vehicles. History, design, and operation of alternate fuel vehicles will be covered. Dangers of working on high voltage systems and the proper use of industry standard safety practices will be taught. Proper use and testing of personal protective equipment. Total of 18 hours lecture and 27 hours laboratory.

Grade Mode: *Audit, Letter Grade*

AUTO 228B ALTERNATIVE FUELS TECHNOLOGY

4 unit

Prerequisite(s): *AUTO 208 and 228A Examination of alternate fuels technology for hybrid and electric vehicles*

Theory of operation of high voltage systems, batteries, internal combustion engine, powertrain, and supporting systems. Testing of hybrid and electric vehicle systems utilizing industry standard diagnostic tools. Safety when working with high voltage assemblies, along with proper set-up and operation of diagnostic tools is emphasized. No credit if taken after AUTO 228. Total of 54 hours lecture and 54 hours laboratory. Formerly AUTO 228.

Grade Mode: *Audit, Letter Grade*