

AUTOMOTIVE TECHNOLOGY

The Automotive Technology Department offers courses designed to provide the skills and knowledge required for immediate employment as well as for students with a personal interest in automotive technology. The course of study in automotive technology may lead to an Associate of Science Degree or a vocational certificate.

Contact Information

Division: Applied Technology, Transportation, and Culinary Arts (T - 108)

Division Phone Number: (909) 384-4451

Faculty Chair: Kenny Melancon (bmelancon@sbccd.edu), A.S.

- Automatic and Manual Transmission Associate of Science Degree (<http://catalog.valleycollege.edu/degree-certificate-program-index/automotive-technology/automatic-manual-transmission-as-degree/>)
- Automotive Technician Associate of Science Degree (<http://catalog.valleycollege.edu/degree-certificate-program-index/automotive-technology/automotive-technician-as-degree/>)
- Engine Performance Associate of Science Degree (<http://catalog.valleycollege.edu/degree-certificate-program-index/automotive-technology/engine-performance-as-degree/>)
- Wheel Alignment and Brakes Associate of Science Degree (<http://catalog.valleycollege.edu/degree-certificate-program-index/automotive-technology/wheel-alignment-brakes-as-degree/>)
- Automatic and Manual Transmission Certificate of Achievement (<http://catalog.valleycollege.edu/degree-certificate-program-index/automotive-technology/automatic-manual-transmission-certificate-achievement/>)
- Automotive Technician Certificate of Achievement (<http://catalog.valleycollege.edu/degree-certificate-program-index/automotive-technology/automotive-technician-certificate-achievement/>)
- Engine Performance Certificate of Achievement (<http://catalog.valleycollege.edu/degree-certificate-program-index/automotive-technology/engine-performance-certificate-achievement/>)
- Preventative Maintenance Technician Certificate of Achievement (<http://catalog.valleycollege.edu/degree-certificate-program-index/automotive-technology/preventative-maintenance-technician-certificate-achievement/>)
- Wheel Alignment and Brakes Certificate of Achievement (<http://catalog.valleycollege.edu/degree-certificate-program-index/automotive-technology/wheel-alignment-brakes-certificate-achievement/>)

AUTO 010 4 Units

Introduction to Hybrid and Electric Vehicle Technology

Lecture: 54 contact hours

Lab: 54 contact hours

This course explores the use of hybrid and electric battery power for vehicle transportation. Topics will include safety when using high voltage, maintenance, drivability, inverter, AC/DC power transfer and battery technology, physics of battery storage and hybrid generation systems. Electric vehicle applications and their integrated systems from many manufacturers will be discussed.

Associate Degree Applicable

AUTO 020 6 Units

Non-Structural Body Repair

Lecture: 90 contact hours

Lab: 54 contact hours

This course covers theory and practical experience in automotive collision damage repair and shop safety with a focus on automotive construction, regulations, oxyacetylene and Metal Inert Gas (MIG) welding, surface preparation, basic spray painting, and detailing. This course may be used in preparation for the Automotive Service Excellence (ASE) National Test B-3.

Associate Degree Applicable

AUTO 022 6 Units

Non-Structural Collision Repair

Lecture: 90 contact hours

Lab: 54 contact hours

This course covers theory and practical experience in automotive collision damage repair and shop safety with a focus on laws and regulations, refinishing techniques, Metal Inert Gas (MIG) welding and steering, suspension and vehicle alignment, and Hybrid and electric vehicle safety procedures. This course may be used in preparation for the Automotive Service Excellence (ASE) National B3 Test.

Associate Degree Applicable

AUTO 024 6 Units

Structural Analysis and Damage Repair

Lecture: 90 contact hours

Lab: 54 contact hours

Advisory: AUTOST 010 and AUTO 022

This course covers theory and practical experience in auto collision repair and shop safety, with a focus on Metal Inert Gas (MIG) welding, panel replacement, theory and practical experience in minor uni-body frame measuring and repair, basic hybrid body repair, and hybrid and electric vehicle safety procedures. This course may be used in preparation for the Automotive Service Excellence (ASE) National B4 Test.

Associate Degree Applicable

AUTO 026 6 Units

Auto Collision Refinishing

Lecture: 90 contact hours

Lab: 54 contact hours

Advisory: AUTOST 010 and AUTO 022

This course covers theory and practical experience in automotive collision repair and refinishing, shop safety practices, personal safety, and health protection as outlined by Environmental Protection Agency (EPA) and South Coast Air Quality Management District (SCAQMD). Topics include Sheet Molded Compound (SMC) panel replacement; heat reshaping plastic parts; electrical and electronic systems; single-, two-, and three-stage refinishing systems; spot repairing/blending; polishing; detailing; estimating; and custom painting. This course may be used in preparation for the Automotive Service Excellence (ASE) National Test B2.

Associate Degree Applicable

AUTO 030 5 Units**Mechanical Technology for the Collision Specialist****Lecture:** 72 contact hours**Lab:** 54 contact hours

This course is an intense overview of the mechanical aspects of a vehicle as it pertains to Collision industry. Subjects covered are A/C, Electrical, SRS (Safety Restraint Systems), front end geometry and hybrid and electrical vehicle safety.

Associate Degree Applicable**AUTO 050 4 Units****Automotive Brakes****Lecture:** 54 contact hours**Lab:** 54 contact hours

This course is based on National Automotive Technicians Education Foundation (NATEF) standards and is designed for students and current technicians to gain knowledge and skills in automotive brake (standard and antilock) systems. Topics include, but are not limited to, disc, drum, hydraulics, power boosters, and traction control with emphasis on diagnosing, troubleshooting, repairing, replacing, and adjusting. This course may be used in preparation for the Automotive Service Excellence (ASE) National Test A-5.

Associate Degree Applicable**AUTO 051 4 Units****Advanced Automotive Brakes****Lecture:** 54 contact hours**Lab:** 54 contact hours**Prerequisite:** AUTO 050

This course is based on National Automotive Technicians Education Foundation (NATEF) standards and is designed for students and current technicians to gain advanced knowledge and skills in the theory and practical work in the repair of automotive brake systems. Topics include safety, machinery, procedures for troubleshooting and reconditioning brake systems, advanced study of disc, drum, hydraulics, and power boosters systems with emphasis on antilock brakes, traction control, and machining.

Associate Degree Applicable**AUTO 052 4 Units****Automotive Suspension and Steering****Lecture:** 54 contact hours**Lab:** 54 contact hours

This course is based on National Automotive Technicians Education Foundation (NATEF) standards and is designed for students and current technicians to gain knowledge and skills in automotive chassis and suspension systems. Topics include, but are not limited to, suspension types, basic geometry, alignment angles, and two- and four-wheel alignment using both computerized and mechanical methods. Emphasis is on diagnosing, troubleshooting, repairing, replacing, and adjusting. This course may be used in preparation for the Automotive Service Excellence (ASE) National Test A-4.

Associate Degree Applicable**AUTO 053 4 Units****Advanced Automotive Suspension and Steering****Lecture:** 54 contact hours**Lab:** 54 contact hours**Prerequisite:** AUTO 052

This course is designed for students and current technicians to gain advanced knowledge and skills in automotive chassis and suspension systems. Topics include, but are not limited to, suspension design, advanced geometry, alignment angles, and four-wheel alignment using computerized methods. Emphasis is on diagnosing, troubleshooting, repairing, replacing, and adjusting.

Associate Degree Applicable**AUTO 056 4 Units****Automotive Heating and Air Conditioning****Lecture:** 54 contact hours**Lab:** 54 contact hours

This course is an in-depth study of the design and operation of contemporary, domestic and import vehicle air conditioning/heating systems. Air conditioning and heating related parts will be disassembled, inspected and a determination made of the serviceability of existing parts. Emphasis is placed on problem diagnosis of and repair procedures for these systems. This course also offers an introduction to Automatic A/C and Comfort Control Systems, and recovery and recycling of refrigerants.

Associate Degree Applicable**AUTO 064 4 Units****Auto/Truck Electrical Systems****Lecture:** 54 contact hours**Lab:** 54 contact hours

This course covers basic electrical theory, use of meters, test equipment, wiring diagrams, diagnosis and repair/replacement of major electrical components of automobiles and trucks. Emphasis is placed on diagnosis of starting systems, charging systems, and electrical circuits such as lights and batteries.

Associate Degree Applicable**AUTO 065 5 Units****Electrical Systems Diagnosis and Repair****Lecture:** 72 contact hours**Lab:** 54 contact hours

This course provides students with the knowledge necessary to diagnose and repair automotive electrical malfunctions. Topics include lighting systems, electrical instruments and accessories, electrical door components, air bags, wiring diagrams, and alarm systems. Emphasis is placed on problem diagnosis of and repair procedures for these systems.

Associate Degree Applicable**AUTO 066 4 Units****ASE Alternative A-6, A-8, L-1 Prep Or Certificate****Lecture:** 54 contact hours**Lab:** 54 contact hours

Automotive Service Excellence (ASE) alternative course is designed for students wishing to meet the Bureau of Automotive Repair (BAR) requirements to become a Smog Technician in lieu of ASE certificates or as a preparation for ASE testing. Subject areas include reviewing of A-6 Electrical and Electronics, A-8 Engine Performance, and L-1 Advanced Engine Performance. Students wishing alternative certificate will be asked to pay for testing services for each test; State certificate expires at the end of five years.

Associate Degree Applicable

AUTO 067 4 Units**Engine and Emission Control Fundamentals****Lecture:** 54 contact hours**Lab:** 54 contact hours

This course provides students with the information and skills necessary to complete a smog inspection and perform repairs in the basic and advanced inspection areas according to the Bureau of Automotive Repair (BAR) guidelines. The course includes engine and emission controls (Level 1), smog check (Level 2) training in inspection procedures, and Hybrid and electric vehicle safety procedures. Upon satisfactory completion of the course, students receive a state certificate for both Level 1 and Level 2.

Associate Degree Applicable**AUTO 068 5 Units****Engine Performance - Ignition Systems****Lecture:** 72 contact hours**Lab:** 54 contact hours

This course provides an in-depth study of the design and operation of domestic and import ignition systems. Major areas of study include point type, electronic, and computer control ignition systems. Emphasis is placed on the correct diagnosis of and repair procedures for these systems. The use of current diagnostic test equipment used in today's industry and strategies necessary to determine needed repairs are covered.

Associate Degree Applicable**AUTO 069 5 Units****Engine Performance - Fuel and Exhaust Systems****Lecture:** 72 contact hours**Lab:** 54 contact hours

This course is an in-depth study of the design and operation of fuel management systems including domestic and import feedback carburetor, fuel injection and computer control fuel management systems. This course covers the diagnosis and repair/replacement of major components: all sensors, injectors, fuel pumps, and interpretation of computer related malfunctions. The use of current diagnostic test equipment used in today's industry and strategies necessary to determine needed repairs are covered.

Associate Degree Applicable**AUTO 075 4 Units****Automatic Transmissions Rear Wheel Drive****Lecture:** 54 contact hours**Lab:** 54 contact hours

This course covers theory and practical work on rear wheel drive automatic transmissions in automobile and light truck applications. The course offers training to prepare for the Automotive Service Excellence (ASE) A2 certification test.

Associate Degree Applicable**AUTO 076 4 Units****Automatic Transaxles Front Wheel Drive****Lecture:** 54 contact hours**Lab:** 54 contact hours

This course covers theory and practical work on front wheel drive automatic transaxles in automobile applications. The course offers training to prepare for the Automotive Service Excellence (ASE) A2 certification test.

Associate Degree Applicable**AUTO 077 4 Units****Manual Transmissions and Transaxles****Lecture:** 54 contact hours**Lab:** 54 contact hours

This course covers theory and practical work on front wheel drive manual transaxles and rear wheel drive manual transmissions in automobile and light truck applications including transfer cases, axle assemblies, and clutches.

Associate Degree Applicable**AUTO 084 4 Units****General Automotive Technology****Lecture:** 54 contact hours**Lab:** 54 contact hours

This course covers general theory, principles, and service procedures relating to an introduction to automotive systems and maintenance with emphasis on component identification, basic functions, minor maintenance, and service.

Associate Degree Applicable**AUTO 090 6 Units****Engine Repair****Lecture:** 54 contact hours**Lab:** 162 contact hours

This course covers theory and practical work in the repair and rebuilding of automotive engines, removal, disassembly, inspection, reconditioning and reassembling of engines, rebuilding of components using automotive machine shop equipment and failure analysis of components. This course may be used in preparation for the Automotive Service Excellence (ASE) National Test A-1.

Associate Degree Applicable**AUTO 098 1-4 Units****Automotive Technology Work Experience Experience****WRKEX:** 300 contact hours

Supervised training, in the form of on the job employment that will enhance the student's knowledge in the selected field of study. The student's major and job must match. For paid work, 75 hours = 1 unit; for volunteer work, 60 hours = 1 unit. Students may earn a total of 16 units toward graduation in Work Experience 098 courses. See department for specific guidelines.

Associate Degree Applicable**AUTO 620 Noncredit****Non-Structural Body Repair****Lecture:** 90 contact hours**Lab:** 54 contact hours

This noncredit course covers theory and practical experience in automotive collision damage repair and shop safety with a focus on automotive construction, regulations, oxyacetylene and Metal Inert Gas (MIG) welding, surface preparation, basic spray painting, and detailing. This course may be used in preparation for the Automotive Service Excellence (ASE) National Test B-3.