Definition

Automotive Technology is designed to provide the future and working technician with a strong foundation in automotive repair, including knowledge of and skills in the most up-to-date and advanced technology. The goal of the Automotive Technology program is to provide pre-employment instruction in the manipulative skills, technical knowledge, and related trade information which will prepare the student for employment in the automotive industry. Class offerings allow students with any experience level the opportunity to prepare for entry into the current automotive job market. Improvement and upgrading of technicians is another goal of the program.

Staff

Please dial (661) 722-6300, then the 4 digit extension.

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Dr. Maria Clinton, Dean	x.6327
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Program Description

The Automotive Technology program is in a constant state of development and expansion into new technology. The two-year program is offered in four major sections: engine, electrical, fuel, and chassis. Normally the two-year vocational program may be taken during both day and evenings. Classes vary from entry level to advanced training in specialized topics.

Students must receive a minimum grade of "C" or better in all required core courses and the specific courses listed as program electives in order to qualify for the degree or certificate.

Distinctive Features

Students have direct access to specialized and up-to-date automotive repair equipment. They are able to run equipment and perform automotive repairs in the automotive shop. The program features both lecture and "hands-on" instruction, covers both domestic and imported vehicles, and emphasizes the latest in high-technology.

Career Options

Two-year application:
Entry-level training for automotive service outlets such as new car dealerships, independent garages, mass merchandisers, local, state and federal motor pools.

Advanced specialization and upgrading:
California clean air car course, ASE A-6, A-8, and L-1 California equivalence courses, fuel injection, computer controls, automatic transmissions, air conditioning, and air conditioning certification.

Program Learning Outcomes

Engine and Drive Trains

1. Rebuild and assemble an automotive engine to factory specifications.
2. Troubleshoot, repair and align suspension and steering systems to factory specifications.
3. Perform manual transmission overhaul and repair to factory specifications.
4. Perform automatic transmission overhaul and repair to factory specifications.
5. Diagnose and overhaul brake systems to factory specifications.

Driveability, Emissions, and Electrical

1. Perform basic automotive electrical and electronic system repairs to factory standards.
2. Troubleshoot and repair fuel and carburator systems to factory standards.
3. Troubleshoot and repair fuel injection systems to factory standards.
4. Perform a "Smog Check" in accordance with California Bureau of Automotive Repair (BAR) Standards.

Certificate Programs

Engine and Drive Trains

Required Courses (26 units):	**units**
AUTO 211, Automotive Engine Operation and Repair ***or*** AUTO 111 ***and*** 112, Automotive Engine Rebuilding**	6-10
AUTO 125, Automotive Chassis ***or*** AUTO 126, Automotive Brakes ***and*** AUTO 240, Automotive Suspension, Steering and Alignment ***and*** AUTO 230, Manual Transmissions, Transaxles and Driveline**	10-13
AUTO 220, Automatic Transmissions and Transaxles	4
Program Electives	3-8
	Total 26

Program Electives:	**units**
AUTO 113, Automotive Engine Rebuilding (Advanced)	4
AUTO 151, Automotive Chassis and Body Electrical Systems	4
AUTO 231, Automatic Transmissions (General Motors)	2
AUTO 232, Automatic Transmissions (Ford and Chrysler)	2
WELD 101, Welding Fundamentals	2

Driveability, Emissions, and Electrical

Required Courses (26 units):	**units**
AUTO 260, Automotive Electrical Systems ***or*** AUTO 151, Automotive Chassis and Body Electrical Systems ***and*** AUTO 152, Automotive Ignition Systems ***and*** AUTO 153, Automotive Starting and Charging Systems**	5-10
AUTO 175, Automotive Fuel, Emission Systems, and Calif. Clean Air Car Course ***or*** AUTO 276, Calif. Clean Air Car Course ***and*** AUTO 176, Automotive Carburetor Fuel Systems ***and*** AUTO 177, Elect. Fuel Injection**	10-14
Program Electives	2-8
	Total 26

Program Electives:	**units**
AUTO 277, Elect. Engine Controls–General Motors Systems	4
AUTO 278, Elect. Engine Controls–Ford/Chrysler Systems	4
WELD 101, Welding Fundamentals	2

***These courses are intended for night students.*

For a recommended plan of study for the certificates, please refer to the Associate Degree plan minus the general education requirements.

Antelope Valley College is not an Automotive Service Excellence General Auto Mechanic certification testing site. The following courses are suggested for students who are preparing to take the ***Automotive Service Excellence General Auto Mechanic Certification (ASE) test**:

AUTO 125, Automotive Chassis	10
AUTO 150, Auto. Electrical Systems	10
AUTO 152, Auto. Ignition Systems	2
AUTO 175, Auto. Fuel, Emission Systems, and Calif. Clean Air Car Course	10
AUTO 211, Automotive Engine Operation and Repair	6
AUTO 230, Manual Transmissions and Transaxles	4
AUTO 231, Automatic Transmissions (General Motors)	2
AUTO 232, Automatic Transmissions (Ford and Chrysler)	2

***** Two years experience as a mechanic are required for the ASE certificate. A two-year full-time college program will suffice for one year of experience.

Associate Degree

The requirements for an associate degree in Automotive Technology may be satisfied by completing 26 units of required courses in any of the certificate programs, 21 units of general education requirements, and sufficient elective credits to total 60 units. (See Graduation/Associate Degree Requirements.)

Students who complete the associate degree will enhance their knowledge and skills needed to compete for employment in the automotive field. They will be better prepared and qualified for a full time position as an automotive technician as they gain valuable experience in the various disciplines. The associate degree will further enhance their opportunity for promotion into supervisory and management positions. The associate degree will help the student excel in the automotive field by broadening their thinking and communication skills needed along with their mechanical skills.

Engine and Drive Trains

Except in cases of a prerequisite requirement, it is not required to take courses in exactly this sequence; they are recommended in this order to facilitate success.

Recommended Plan of Study

First Semester	**units**
AUTO 211, Automotive Engine Operation and Repair ***or*** AUTO 111 ***and*** 112, Automotive Engine Rebuilding**	6-10
GE requirement Area A	3
GE requirement Area D1	3
Total	**14-16**
Second Semester	
AUTO 125, Automotive Chassis ***or*** AUTO 126, Automotive Brakes ***and*** AUTO 127, Automotive Suspension, Steering and Alignment ***and*** AUTO 230,Manual Transmissions, transaxles, and Drivelines**	8-10
GE requirement Area B	3
GE requirement Area D2	3
Total	**14-16**
Third Semester	
AUTO 220, Automatic Transmissions and Transaxles	5
GE requirement Area E	3
GE requirement Area F	3
Program Electives	2-6
Elective	3
Total	**16-20**
Fourth Semester	
GE requirement Area C	3
Electives	6-14
Total	**9-17**
Degree Total	**60**

Please refer to the Program Electives listed under the certificate program.

Semester class order completion time may vary for night students.

Driveability, Emissions, and Electrical

Except in cases of a prerequisite requirement, it is not required to take courses in exactly this sequence; they are recommended in this order to facilitate success.

Recommended Plan of Study

First Semester	**units**
AUTO 260, Automotive Electrical Systems ***or*** AUTO 151, Automotive Chassis and Body Electrical Systems ***and*** AUTO 152, Automotive Ignition Systems ***and*** AUTO 153, Automotive Starting and Charging Systems**	5-8
GE requirement Area A	3
GE requirement Area D1	3
Total	**11-14**
Second Semester	**units**
AUTO 175, Automotive Fuel, Emission Systems, and Calif. Clean Air Car Course ***or*** AUTO 276, Calif. Clean Air Car Course ***and*** AUTO 176, Automotive Carburetor Fuel Systems ***and*** AUTO 177, Elect. Fuel Injection**	10-14
GE requirement Area D2	3
Total	**13-17**
Third Semester	
GE requirement Area E	3
GE requirement Area F	3
Program Electives	4-6
Electives	6
Total	**16-18**
Fourth Semester	
GE requirement Area B	3
GE requirement Area C	3
Electives	5-9
Total	**11-15**
Degree Total	**60**

Please refer to the electives listed under the certificate program.

Semester class order completion time may vary for night students.

Transfer
Not a transfer major.

Prerequisite Completion
All prerequisite courses must be completed with a satisfactory grade in order to enroll in the next course. According to Title 5, Section 55200(d), a satisfactory grade is a grade of "A," "B," "C" or "P". Classes in which the Pass/No Pass option is available are indicated with an asterisk **(*)** before the course title. See "Pass/No Pass Option" in the catalog for full explanation.

Automotive Technology Courses

AUTO 100 *INTRODUCTION TO AUTOMOTIVE TECHNOLOGY
4 units
6 hours weekly [3 lecture, 3 lab]
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, ASE, Federal, and State agencies. Subjects covered will be theories of operation of major automotive systems, maintenance services, and safety. (AVC)

AUTO 101 *BASIC AUTOMOTIVE PRACTICUM
1 unit
3 lab hours weekly
Advisory: *Completion of or concurrent enrollment in AUTO 100*
A basic "hands-on" course in automotive preventive maintenance and minor repair. Students must furnish own work clothes and safety glasses. (AVC)

AUTO 102 *BASIC AUTOMOTIVE PRACTICUM
1 unit
3 lab hours weekly
Advisory: *Completion of AUTO 100*
Prerequisite: *Completion of AUTO 101.*
A course in automotive preventative servicing, and simple repairs. Students repeat some of the same operations as required in AUTO 101, this time with greater proficiency; as well as tackle additional repairs and service. Consult with the instructor for individual instruction on more complex jobs. (AVC)

AUTO 111 *AUTOMOTIVE ENGINE REBUILDING (LOWER END)
4 units
8 hours weekly [2 lecture; 6 lab]
Advisory: *Completion of AUTO 100*
A course in the fundamentals of automotive engine repair and rebuilding includes laboratory experience in modern techniques of engine diagnosis, overhaul, maintenance and rebuilding. This class is the first in the sequence and deals primarily with the engine lower end/ short block and lubrication system. (AVC)

AUTO 112 *AUTOMOTIVE ENGINE REBUILDING (UPPER END)
4 units
8 hours weekly [2 lecture; 6 lab]
Advisory: *Completion of AUTO 100*
A course in the fundamentals of automotive engine repair and rebuilding primarily with cylinder head, cooling system, valve train, and related parts. Included is laboratory experience in modern techniques of engine diagnosis, overhaul, maintenance, and rebuilding. (AVC)

AUTO 113 *AUTOMOTIVE ENGINE REBUILDING (ADVANCED)
4 units
8 hours weekly [2 lecture; 6 lab]
Prerequisite: *Completion of AUTO 110, or completion of both AUTO 111 and AUTO 112.*
A course in the repair and rebuilding of automotive engines. The student will already have completed AUTO 110 or completed both AUTO 111 and 112. The student will complete projects at his/her own rate. (AVC)

AUTO 125 *AUTOMOTIVE CHASSIS
10 units
20 hours weekly [5 lecture, 15 lab]
Advisory: *Completion of AUTO 100*
A course designed to help prepare students for a career in the automotive industry. Topics covered include fundamentals, maintenance, service, and repair of automotive braking systems, steering systems, suspension systems, wheel alignment, and manual power trains. Students who successfully complete the course are prepared for entry level job positions in the area of steering and suspension. Required course for Automotive Engine and Drive Train Certificate. (AVC)

AUTO 151 *AUTOMOTIVE CHASSIS AND BODY ELECTRICAL SYSTEMS
4 units
8 hours weekly [2 lecture, 6 lab]
Advisory: *Completion of AUTO 100*
A course in automotive electrical systems. Includes laboratory experiences in accessory circuitry, dash instruments, lighting, safety, and related control circuits. Emphasis is placed on the correct use of the ohmmeter, voltmeter, ammeter, digital storage oscilloscope, test light, jumperwire, wiring diagrams, and modern techniques of electrical diagnosis. (AVC)

AUTO 152 *AUTOMOTIVE IGNITION SYSTEMS
2 units
4 hours weekly [1 lecture, 3 lab]
Advisory: *Completion of AUTO 100, AUTO 101 and AUTO 151*
A course in automotive electrical tune-up, includes fundamentals of electricity, electronics, service, repair and adjustment of components dealing with various automotive starting and ignition systems. (AVC)

AUTO 153 *AUTOMOTIVE STARTING AND CHARGING SYSTEMS

2 units
4 hours weekly [1 lecture, 3 lab]
Advisory: *Completion of AUTO 100, AUTO 101 and AUTO 151*
This course is to familiarize the student with the principles of automotive starting and charging systems on an advanced level. Operation of the different electrical components, diagnosis and service are stressed. (AVC)

AUTO 160 *AUTOMOTIVE ELECTRICAL FUNDAMENTALS

4 units
6 hours weekly [3 lecture, 3 lab]
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. This course will help prepare students for certification tests in electrical system repair. (AVC)

AUTO 175 *AUTOMOTIVE FUEL, EMISSIONS SYSTEMS, AND CALIFORNIA CLEAN AIR CAR COURSE

10 units
20 hours weekly [5 lecture, 15 lab]
Advisory: *Completion of AUTO 100, AUTO 101 and AUTO 150*
A course developed to prepare the automotive technician to diagnose and repair carburetor and electronic fuel injection, electronic engine control systems, emission systems, and pass the California Bureau of Automotive Repair Smog Check Mechanic Qualified Unlimited examination. (AVC)

AUTO 176 *AUTOMOTIVE CARBURETOR FUEL SYSTEMS

2 units
64 lecture hours total
Advisory: *Completion of AUTO 100*
A course in automotive carburetor fuel systems. Includes fundamentals in fuel delivery, internal and external carburetor adjustments on computer and non-computer controlled carburetors. (AVC)

AUTO 177 *ELECTRONIC FUEL INJECTION

4 units
4 hours total
Advisory: *Completion of AUTO 100 and AUTO 151*
A course in understanding, diagnosis, and testing electronic fuel injection systems. This course will cover systems used on Chrysler, Ford, GM, and selected imports. (AVC)

AUTO 198H ADVANCED EMISSIONS DIAGNOSTICS TRAINING SEMINAR (BAR "20" HOUR UPDATE)

1.5 units
1.5 hours weekly
Designed to update currently licensed Smog Check technicians, and is a prerequisite to renewing a Smog Check technician license. Covers current automotive diagnostic procedures and Bureau of Automotive Repair (BAR) procedures that affect the inspection, diagnosis, and repair of vehicles subject to the Smog Check Inspection and Maintenance program. NOTE: No grade will be given for this class; student will receive "pass" or "no pass" only. (AVC) **(R unlimited*)**
* Course repeatability allowed for mandated training as stated in Title 5, Sections 55763(c) and 58161(c).

AUTO 199 *OCCUPATIONAL WORK EXPERIENCE

1–8 units
hours vary
Prerequisite: *To participate in work experience, students must have a job or internship which is either paid or voluntary and have the approval of the supervisor and instructor supervising work experience in the specific subject area. PRIOR TO ENROLLING, students must attend a scheduled orientation or meet individually with the supervising instructor for an individual orientation.*
Occupational Work Experience Education is supervised employment designed to provide students a realistic learning experience through work. The ultimate goal is to teach students those skills and attitudes that will equip them to function and adapt as an employee in a variety of situations and jobs. Occupational Work Experience Education is supervised employment extending classroom-based occupational learning at an on-the-job learning station related to the student's educational major or occupational goal. Credit may be accrued at the rate of one to eight units per semester. For the satisfactory completion of all types of Cooperative Work Experience Education (WE 197 and WE 199), students may earn up to a total of sixteen semester credit hours. (AVC) **(R3)**

AUTO 211 *AUTOMOTIVE ENGINE OPERATION AND REPAIR

(formally AUTO 110)
6 units
10 hours weekly [4 lecture, 6 lab]
Prerequisite: *Completion of AUTO 100.*
Technical course with hands-on experience related to automotive engine theory of operation and methods of testing. Practice in disassembly, measurement, and reassembly of various four-cycle engines. Use of precision measurement tools and assessing engine failure conditions. This course will help prepare students for certification tests in engine repair. (AVC)

AUTO 220 *AUTOMATIC TRANSMISSIONS AND TRANSAXLES

(formally AUTO 130)
5 units
9 hours weekly [3 lecture, 6 lab]
Prerequisite: *Completion of AUTO 100.*
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 will help prepare students for certification tests in automatic transmission repair. (AVC)

AUTO 230 *MANUAL TRANSMISSIONS, TRANSAXLES AND DRIVELINES

(formally AUTO 128)
4 units
6 hours weekly [3 lecture, 3 lab]
Prerequisite: *Completion of AUTO 100*
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. This course will help prepare students for certification tests in manual transmission repair. (AVC)

AUTO 231 *AUTOMATIC TRANSMISSIONS (GENERAL MOTORS)

2 units
72 lecture hours total
Advisory: *Completion of AUTO 100*
A course intended to prepare students for an entry level position in automatic transmission diagnosis and repair. Course will cover fundamentals, maintenance, service, and repair of late model General Motors transmissions and transaxles. Required course for automotive certificate in automotive engines and drive trains. (AVC)

AUTO 232 *AUTOMATIC TRANSMISSIONS (FORD AND CHRYSLER)

2 units
72 hours total
Advisory: *Completion of AUTO 100*
A c ourse intended to prepare students for an entry level position in automatic transmission diagnosis and repair. Course will cover fundamentals, maintenance, service, and repair of late model Ford and Chrysler transmissions and transaxles. Required course for automotive certificate in automotive engines and drive trains. (AVC)

AUTO 240 *AUTOMOTIVE SUSPENSION AND STEERING

(formally AUTO 127)
6 units
10 hours weekly [4 lecture, 6 lab]
Prerequisite: *Completion of AUTO 100*
Theory of operation, diagnosis, service, and repair of suspension and steering systems. Laboratory procedures will include wheel alignment, tire service and repair, tire diagnosis including wheel balancing. This course will help prepare students for certification tests in steering and suspension repair. (AVC)

AUTO 250 *AUTOMOTIVE BRAKE SYSTEMS

*(*formally *AUTO 126)*
5 units
9 hours weekly [3 lecture, 6 lab]
Prerequisite: *Completion of AUTO 100.*
This course will cover braking systems fundamentals, theory of operation, and diagnosis procedures. Laboratory procedures will include maintenance, service, use of scan tools, and repair of automotive braking systems, both conventional and anti-lock brakes. This course will help prepare students for certification tests in brake system repair. (AVC)

AUTO 260 *AUTOMOTIVE ELECTRICAL SYSTEMS

(formally AUTO 150)
5 units
9 hours weekly [3 lecture, 6 lab]
Prerequisite: *Completion of AUTO 160.*
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 will help prepare students for certification tests in electrical system repair. (AVC)

AUTO 270 *AUTOMATIC HEATING AND AIR CONDITIONING

4 units
6 hours weekly [3 lecture, 3 lab]
Prerequisite: *Completion of AUTO 100 and AUTO 160.*
Air conditioning theory, methods of testing, diagnosing and servicing automotive air conditioning systems. Introduction to new technologies, safe handling, reclaiming and recycling of refrigerants. Students will have the opportunity to take the Environmental Protection Agency (EPA) section 609 of the Clean Air Act MACS-Refrigerant, Recycling, and Recovery Certification Program to obtain a refrigerant handlers' license. This course will help prepare students for certification tests in heating and air conditioning system repair. (AVC)

AUTO 276 *ENGINE PERFORMANCE EMISSIONS

8 units
8 hours weekly
Advisory: *Completion of AUTO 150, AUTO 176 and AUTO 177.*
Designed to prepare students and technicians wishing to become state of California licensed smog inspection technicians. Covers both the basic and advanced California Clean Air Car Courses. Both courses are needed to partially satisfy the education prerequisite required to become a licensed "Advanced Emission Specialist". Students wishing to take the exam must have one year of experience or education in the automotive engine performance area prior to taking the exam. Other interested parties are allowed to take the course, but will not be certified as eligible to take the state licensing examination given by the Bureau of Automotive Repair (BAR). (AVC)

AUTO 277 *ELECTRONIC ENGINE CONTROLS–GENERAL MOTORS SYSTEMS

4 units
4 hours weekly
A course designed for students preparing for a career in the automotive profession. Course will cover General Motors microprocessor controlled ignition and fuel systems. Subjects covered include microprocessor operation, sensors, actuators, and closed loop operation. Special emphasis will be placed on diagnosis and testing of electronic components. Students who successfully complete course are prepared for entry level job position in the area of engine performance. **BEFORE ENROLLING,** it is advised that students should have a background in engine performance and electrical systems. (AVC)

AUTO 278 *ELECTRONIC ENGINE CONTROLS–FORD/CHRYSLER SYSTEMS

4 units
4 hours weekly
A course designed for students preparing for a career in the automotive profession. Course will cover Ford and Chrysler microprocessor controlled ignition and fuel systems. Subjects covered include microprocessor operation, sensors, actuators, and closed loop operation. Special emphasis will be placed on diagnosis and testing of electronic components. Students who successfully complete course are prepared for entry level job position in the area of engine performance. **BEFORE ENROLLING,** it is advised that students should have a background in engine performance and electrical systems. (AVC)

AUTO 280 *AUTOMOTIVE ENGINE PERFORMANCE

5 units
9 hours total [3 lecture, 6 lab]
Prerequisite: *Completion of AUTO 110 and AUTO 160.*
Theory and operation of electronic engine controls including: electronic fuel injection, electronic ignition, onboard diagnostics, and current emission systems. Laboratory practice includes proper set up and use of digital storage oscilloscopes, scan tools, and various engine performance testing procedures. This course will help prepare students for certification tests in engine performance repair. (AVC)