# AUTOMOTIVE TECHNOLOGY

It is the mission of the Automotive Department of Victor Valley Community College to provide quality automotive instruction to a diverse community of students; the array of courses offered shall serve the educational needs of the beginning student as well as the employed professional. Through industry input the department shall strive to create and maintain the most up to date curriculum based on current industry trends. The department will acquire and maintain the appropriate equipment that will augment the current course curriculum.

Each year the Bureau of Labor Statistics lists the need for Automotive Technicians as one of the nation's highest. This shortage of well-trained technicians has been created by the technological advances caused by the addition of the computerized engine controls and the need to control automotive pollution.

VVC's automotive program is designed to give the student a thorough and complete knowledge of the basics of the modern automobile. The program is capable of training the student to entry-level performance on the latest industry approved equipment.

## Career Opportunities

Federally recognized ASE certification in eight (8) categories, Parts Salesperson, Repair Shop Owner or Operator State Certified Pollution Control Technician , Tune-up Technician

## Faculty

Bennett, Harry Lee

Coultas, Steven

Shaner, Keith

## Programs of Study

- Automotive Alternative Propulsion Certificate of Achievement (https://catalog.vvc.edu/degrees-certificates/automotive-technology/automotive-alternative-propulsion-ca/)
- Automotive Brake and Suspension Specialist Technician Certificate of Achievement (https://catalog.vvc.edu/degrees-certificates/automotive-technology/automotive-brake-suspension-specialist-technician-ca/)
- Automotive Dealership Technician Certificate of Achievement (https://catalog.vvc.edu/degrees-certificates/automotive-technology/automotive-dealership-technician-ca/)
- Automotive Detailer and Porter Certificate of Achievement (https://catalog.vvc.edu/degrees-certificates/automotive-technology/automotive-detailer-porter-ca/)
- Automotive Electrical Specialist Certificate of Achievement (https://catalog.vvc.edu/degrees-certificates/automotive-technology/automotive-electrical-specialist-technician-ca/)
- Automotive Emission Testing Specialist Certificate of Achievement (https://catalog.vvc.edu/degrees-certificates/automotive-technology/automotive-emission-testing-specialist-ca/)
- Automotive Engine Performance Specialist Certificate of Achievement (https://catalog.vvc.edu/degrees-certificates/automotive-technology/automotive-engine-performance-specialist-ca/)
- Automotive Engine Specialist Certificate of Achievement (https://catalog.vvc.edu/degrees-certificates/automotive-technology/automotive-engine-specialist-ca/)
- Automotive Heating and Air Conditioning Specialist Certificate of Achievement (https://catalog.vvc.edu/degrees-certificates/automotive-technology/automotive-heating-air-conditioning-specialist-ca/)
- Automotive Service Advisor and Manager Certificate of Achievement (https://catalog.vvc.edu/degrees-certificates/automotive-technology/automotive-service-advisor-manager-ca/)
- Automotive Service Management, AS (https://catalog.vvc.edu/degrees-certificates/automotive-technology/automotive-service-management-as/)
- Automotive Technology, AS (https://catalog.vvc.edu/degrees-certificates/automotive-technology/automotive-technology-as/)
- Automotive Transmission Specialist Technician Certificate of Achievement (https://catalog.vvc.edu/degrees-certificates/automotive-technology/automotive-transmission-specialist-technician-ca/)
- Introduction to Automotive Drivability Theory Certificate of Achievement (https://catalog.vvc.edu/degrees-certificates/automotive-technology/introduction-automotive-drivability-theory-ca/)
- Light Duty Diesel Technician Certificate of Achievement (https://catalog.vvc.edu/degrees-certificates/automotive-technology/light-duty-diesel-technician-ca/)

## Program Learning Outcomes

Program Learning Outcomes (PLOs) are statements of the kind of learning a program hopes a student will achieve. The PLOs describe the knowledge, skills, problem-solving, communication and values that apply to all certificates and/or degrees within that program.

Upon completion of this program, students should be able to:

a. Perform automotive repairs to a professional level that ensures compliance with industry standards for vehicle safety and function while maintaining a workplace that meets local, state and federal safety and environmental regulations and complies with state regulatory agency standards for professionalism and ethics.
b. Recognize the procedures to perform automotive repairs while minimizing impact on the environment.
c. Determine necessary procedures to bring the ignition, fuel, and computer system into industry compliance for dependable vehicle operation.

## Automotive Technology Courses

**AUTO 025 Introduction to the Dealership½technician Program (0.0 Units)**
This course will enhance the experience of an automotive student who is selected to participate in the Dealership Technician Program. This course will expose the student to the wide range of support programs at VVC, San Bernardino County, and the state to help the student succeed.
Lecture Hours: 18.0
Transfer: Not transferable

**AUTO 050.1 Life Skills Relating to Vehicle½ownership & Operation (0.0 Units)**
This course uses a common sense approach to operating and maintaining a vehicle for the average motorist. Topics include safety, purchasing, insuring, maintenance, road side emergencies, picking the right repair shop, noises, and day to day responsibilities.
Lecture Hours: 54.0
Transfer: Not transferable

**AUTO 050.2 How to Research and Purchase a Car (0.0 Units)**
This course explores how to choose and determine the vehicle that fits your needs Topics covered will include negotiation, finance, warranty, and true cost of owning a vehicle.
Lecture Hours: 36.0
Transfer: Not transferable

**AUTO 050.3 How to Keep Your Car Smog Inspection½ready (0.0 Units)**
This course covers how to maintain your vehicle so when your biannual smog inspection comes due you will know how to proceed. Topics covered will include general maintenance, what a smog inspection measures, inspection failures, and consumer help.
Lecture Hours: 36.0
Transfer: Not transferable

**AUTO 050.4 Auto 911 (0.0 Units)**
This course targets the new driver giving them the skills to safely operate their vehicle. The course will cover purchasing, minor maintenance, tire condition, day to day driving responsibilities, minor road side repairs, traffic accident responsibilities.
Lecture Hours: 54.0
Transfer: Not transferable

**AUTO 050.5 Auto 911 Lab½Ownership & Operation (0.0 Units)**
This lab course targets the student who has an interest in performing minor repair and maintenance on their vehicle. They will practice the skills in a shop/lab setting after they take and pass the required shop safety component.
Lab Hours: 54.0
Transfer: Not transferable

**AUTO 050.6 Automotive Lab½Ownership & Operation (0.0 Units)**
This lab course targets the student who has an interest in performing minor repair and maintenance on their vehicle. They will practice the skills in a shop/lab setting after they take and pass the required shop safety component.
Lab Hours: 108.0
Transfer: Not transferable

**AUTO 050.7 Electical Volt Drops Explained (0.0 Units)**
This course covers electrical voltage drops in theory and practical applications. Topics covered will include voltage drops performed hypothetically on wiring diagrams and simulated circuit voltage drops.
Lecture Hours: 36.0
Transfer: Not transferable

**AUTO 50 Introduction to Automotive Technology (4.0 Units)**
This course provides the student with a basic knowledge of automotive systems and components. Information covered will serve as a foundation and prerequisite for advanced automotive classes. Topics covered will include safety, tool and shop equipment uses, industry practices, technician certification, theory and design of the major automotive systems.
Lecture Hours: 54.0; Lab Hours: 54.0
Transfer: Not transferable

**AUTO 50.3 Survival Guide for the Motorist (3.0 Units)**
Thiscourseusesacommonsenseapproachtooperat ingandmaintaininga vehicle for the average motorist. Topics include safety, purcasing, insuring, maintenance, road side emergencies, picking the right repair shop, noises, and day to day responsibilities.
Lecture Hours: 54.0
Transfer: Not transferable

**AUTO 51A Engine Repair (4.0 Units)**
In this course, the student will gain knowledge necessary to effectively evaluate an automotive internal combustion engine by learning the various processes of diagnostic procedures. During the course, the student will also be able to demonstrate their understanding of both the lubrication and cooling systems that are incorporated in the engine components.
Prerequisite(s): AUTO 50, Minimum grade C
Lecture Hours: 54.0; Lab Hours: 54.0
Transfer: Not transferable

**AUTO 51B Advanced Engine Diagnosis and Repair (4.0 Units)**
This course covers the development of engine maintenance and repair skills without removing the engine from the vehicle. The student will also learn to identify faulty parts and the procedure for removing and replacing parts of the engine, cooling and lubrication systems while the engine is still inside of the automobile.
Prerequisite(s): Take AUTO-50, Minimum grade C
Lecture Hours: 54.0; Lab Hours: 54.0
Transfer: Not transferable

**AUTO 51C Advanced Engine Diagnosis And½replacement (4.0 Units)**
This course will cover the evaluation of internal engine failures where the student will be required to demonstrate an understanding of proper removal and replacement of the automotive engine by following manufacturing guidelines.
Prerequisite(s): AUTO 50 and AUTO 51B, Minimum grade of C
Lecture Hours: 54.0; Lab Hours: 54.0
Transfer: Not transferable

**AUTO 55.0 Manual Transmission and Differential½overhaul (4.0 Units)**
This course covers diagnosis and repair of the components of standard transmission systems and differential systems, gears, synchronizers, bearings, clutches, and electronic controls. Standard transmissions and related parts will be disassembled, inspected and determination made of the serviceability of existing parts. The need for replacement parts will be established as the components are disassembled, inspected and reassembled.
Prerequisite(s): AUTO 50, Minimum grade C
Lecture Hours: 54.0; Lab Hours: 54.0
Transfer: Not transferable

**AUTO 56.0 Automatic Transmission and Overhaul (4.0 Units)**
This course covers diagnosis and repair of the components of automatic transmission systems: clutches, bands, servo valve bodies, hydraulic pumps, cases, governors, torque converters, and electronic controls. Automatic transmissions and related parts will be disassembled, inspected and determination made of the serviceability of existing parts. The need for replacement parts will be established as the components are disassembled, inspected and reassembled.
Prerequisite(s): AUTO 50, Minimum grade C
Lecture Hours: 54.0; Lab Hours: 54.0
Transfer: Not transferable

**AUTO 56A Transmission Computer Systems (4.0 Units)**
This course covers techniques used by the automotive industry to diagnose and repair transmission computer systems. Instruction will cover the diagnosis and repair of runability problems relating to electronic malfunctions of the computer controlled transmission.
Prerequisite(s): AUTO 50, Minimum grade C
Lecture Hours: 54.0; Lab Hours: 27.0
Transfer: Not transferable

**AUTO 57.1 Automotive Brakes, Theory and Function (4.0 Units)**
Theory and Function. This course covers safety practices, theory, applications, braking systems, and antilock brakes.
Prerequisite(s): AUTO 50, Minimum grade C
Lecture Hours: 54.0; Lab Hours: 54.0
Transfer: Not transferable

**AUTO 58 Automotive Lubrication Technician (2.0 Units)**
This course covers techniques used by the automotive industry to perform routine preventative maintenance. Instruction will cover changing automotive fluids, lubrication, safety inspections, installing filters and ignition components.
Prerequisite(s): AUTO 50, Minimum grade C
Lecture Hours: 27.0; Lab Hours: 27.0
Transfer: Not transferable

**AUTO 59.0 Automotive Tire Technician (2.0 Units)**
This course covers techniques used by the automotive industry to perform duties of a tire technician. Instruction will cover brake and suspension inspections, mounting, balancing, and repairing tires.
Prerequisite(s): AUTO 50, Minimum grade C
Lecture Hours: 27.0; Lab Hours: 27.0
Transfer: Not transferable

**AUTO 060.1 Automotive Suspension, Steering And½alignment (0.0 Units)**
This course covers the components and principles of operation of steering and suspension systems used on automobiles and light trucks along with the diagnosis, repair and alignment procedures used for those vehicles.
Lecture Hours: 36.0
Transfer: Not transferable

**AUTO 060.5 Advanced Alignment and Adas (advanced½driver Assistance Systems) (0.0 Units)**
Advanced Alignment and ADAS (Advanced Driver Assistance Systems) This class will cover operation, calibration, diagnosis and repair of driver assistance systems including: 1. Perimeter camera systems 2. Parking warning and assist systems 3. Lane departure warning and lane centering systems 4. Blind spot monitoring 5. Adaptive Cruise control 6. Accident avoidance and pedestrian crash avoidance mitigation.
Lecture Hours: 54.0; Lab Hours: 54.0
Transfer: Not transferable

**AUTO 60 Automotive Suspension and Alignment (4.0 Units)**
This course covers diagnosis and repair of the components of the automotive suspension system. All related parts of the suspension and steering are inspected and determination of serviceability is made. Alignment of the front and rear of the vehicles will be covered, both manual and computer alignment.
Prerequisite(s): AUTO 50, Minimum grade C
Lecture Hours: 54.0; Lab Hours: 54.0
Transfer: Not transferable

**AUTO 60.1 Automotive Suspension, Steering And½alignment (4.0 Units)**
This course covers the components and principles of operation systems used on automobiles and light trucks along with the diagnosis, repair and alignment procedures used for those vehicles.
Prerequisite(s): AUTO 50, Minimum grade C
Lecture Hours: 54.0; Lab Hours: 54.0
Transfer: Not transferable

**AUTO 60.2 Advanced Alignment (4.0 Units)**
This course covers the advanced diagnosis, adjustments and alignment of automotive steering systems using both analog and digital alignment equipment.
Prerequisite(s): AUTO 60.1, Minimum grade C
Lecture Hours: 54.0; Lab Hours: 54.0
Transfer: Not transferable

**AUTO 60.5 Advanced Alignment and ADAS½(advanced Driver Assistance Systems) (4.0 Units)**
Advanced Alignment and ADAS (Advanced Driver Assistance Systems) This class will cover operation, calibration, diagnosis and repair of driver assistance systems including: 1. Perimeter camera systems 2. Parking warning and assist systems 3. Lane departure warning and lane centering systems 4. Blind spot monitoring 5. Adaptive Cruise control 6. Accident avoidance and pedestrian crash avoidance mitigation.
Prerequisite(s): (AUTO 60.1 and AUTO 60, Minimum grade C) and (AUTO-60.1, Minimum grade C)
Recommended Preparation: AUTO 79.1, AUTO 80.1 or AUTO 82.0
Lecture Hours: 54.0; Lab Hours: 54.0
Transfer: Not transferable

**AUTO 61.0 Automotive Brakes (4.0 Units)**
Thiscoursecoversdiagnosisandrepairofthecom ponentsofautomotivebrake systems: basic hydraulics, drum brakes, disc brackes, turning drum and rotors and related parts will be disassembled inspected and determination made of the serviceability of existing parts. The need for replacement parts will be established as the components are disassembled inspeted and reassembled.
Prerequisite(s): AUTO 50, Minimum grade C
Lecture Hours: 54.0; Lab Hours: 54.0
Transfer: Not transferable

**AUTO 62 Automotive Detailing (4.0 Units)**
This course provides students with the knowledge and skills necessary to correctly perform an automotive detail. Topics covered will include exterior paint polishing and treatment, interior and upholstery cleaning techniques, proper chemical and equipment usage, and dealership porter responsibilities.
Prerequisite(s): AUTO 50, Minimum grade C
Lecture Hours: 54.0; Lab Hours: 54.0
Transfer: Not transferable

**AUTO 77 Automotive Service Writing and Shop½management (3.0 Units)**
This course prepares students to manage an automotive repair shop. Topics covered include work order preparation, parts and labor estimating, parts ordering, office and shop organization, writing a legal work order, sales skills, and customer relations.
Lecture Hours: 54.0; Lecture Hours: 48.0
Transfer: Not transferable

**AUTO 77.1 Automotive Leadership and Team Building (3.0 Units)**
This course provides the student with the knowledge necessary to successfully build a functional automotive team and be an effective automotive team leader. Topics covered will include automotive industry team development, recruitment and retention of team members. The course will also cover automotive industry motivation and compensation and the creation and maintenance of employee policies and procedures handbooks.
Lecture Hours: 54.0; Lecture Hours: 48.0
Transfer: Not transferable

**AUTO 77.2 Automotive Safety Training for Managers (3.0 Units)**
This course provides the student with the knowledge necessary to initiate and maintain an effective automotive safety training program in an automotive repair facility. Topics covered will include employee Right to Know laws and training requirements, safety audits and facility assessment, hazardous communications guidelines, personal protective equipment, and material handling and storage.
Lecture Hours: 54.0; Lecture Hours: 48.0
Transfer: Not transferable

**AUTO 77.3 Automotive Workplace Professionalism (2.0 Units)**
This course presents information for working professionals in the automotive industry. Topics covered will include etiquette, dress, ethics, diversity, accountability, organization, communication and conflict resolution as they apply to the automotive industry.
Lecture Hours: 36.0
Transfer: Not transferable

**AUTO 77L Automotive Service Writing and½Shop Manager Laboratory (2.0 Units)**
This course prepares students to effectively write automotive service orders and manage an automotive repair shop. Topics include labor guide look up and labor calculation, work order preparation, parts and labor estimating, parts ordering, office and shop organization, writing a legal work order, sales skills, and customer relations.
Lab Hours: 108.0
Transfer: Not transferable

**AUTO 79.1 Basic Automotive Engine Performane And½emission Controls (4.0 Units)**
This course provides theory and hands-on experience in the fundamentals of automotive engine management including: basic fuel injection, ignition systems and emission systems. The focus is then placed on foundational engine management components and systems including: fuel injection, electronic ignition and emission control systems with an emphasis on servicing, troubleshooting, diagnosis and repair of common engine management malfunctions.
Prerequisite(s): AUTO 50, Minimum grade C
Lecture Hours: 54.0; Lab Hours: 54.0
Transfer: Not transferable

**AUTO 79.2 Advanced Automotive Engine Performance½emission Controls (4.0 Units)**
This course provides theory and hands-on experience in the fundamentals of automotive engine management including: basic fuel injection, ignition systems and emission systems. The focus is then placed on foundational engine management components and systems including: fuel injection, electronic ignition and emission control systems with an emphasis on servicing, troubleshooting, diagnosis and repair of common engine management malfunctions.
Prerequisite(s): AUTO 79.1, Minimum grade C
Lecture Hours: 54.0; Lab Hours: 54.0
Transfer: Not transferable

**AUTO 79.3 Advanced Automotive Engine Performance½diagnostics (4.0 Units)**
This course provides advanced-level theory and hands-on lab experience in the area of Diagnostics related to Automotive engine management systems including: fuel injection, ignition systems and emission systems. This class will also focus on electronic components, their functions and application to Automotive engine control systems. Projects will include the construction of electrical circuits for the application understanding solid-state device functions and applications. Additionally, this course will have preparatory instruction for the technician-level ASE L-1 (Advanced Engine Performance) Trade examination. The focus is placed on advanced engine management components and emission systems including: Fuel Delivery, Fuel Injection, Direct Injection, Variable Valve Timing, Variable Valve Lift, and Variable Displacement engine systems, Electronic Ignition, Emission Control Systems, computer networks and Bus systems with an emphasis on the interaction of these systems on late-model vehicles. Advanced-level troubleshooting techniques including the use of Diagnostic Scanners to interface with vehicle onboard computer systems for data analysis, electronics and their function, and Lab Scopes for the testing of computer controlled electrical circuits are large components in the lab portion of this class.
Prerequisite(s): AUTO 79.2, Minimum grade C
Lecture Hours: 54.0; Lab Hours: 54.0
Transfer: Not transferable

**AUTO 80.1 Automotive Electrical & Electronics I (4.0 Units)**
This course covers the theory of electricity, use of meters and text equipment, use of wiring diagrams, diagnosis and repair or replacement of major electrical components of automotive and light trucks. Major areas of study include batteries, starting, charging and ignition systems as well as electrical accessories. This course will assist the student in preparing for the ASE A6 exam.
Prerequisite(s): AUTO 50, Minimum grade C
Lecture Hours: 54.0; Lab Hours: 54.0
Transfer: Not transferable

**AUTO 80.2 Automotive Electrical & Electronics II (4.0 Units)**
This course covers electricity and electronics, use of electrical test equipment, wiring diagrams, diagnosis and repair/replacement/diagnosis of major electrical components of automobiles.
Prerequisite(s): AUTO 80.1, Minimum grade C
Lecture Hours: 54.0; Lab Hours: 54.0
Transfer: Not transferable

**AUTO 80.6 Introduction to Automotive Electricity (4.0 Units)**
This course covers electrical theory, basic electricity, electrical safety procedures, electrical diagnostic equipment, and industry approved procedures to diagnose and repair electrical malfunctions in the automobile.
Prerequisite(s): AUTO 50, Minimum grade C
Lecture Hours: 72.0
Transfer: Not transferable

**AUTO 82.0 Automotive Electrical Repair (4.0 Units)**
This course provides the student with the knowledge necessary to diagnose and repair automotive malfunctions including lighting systems, electrical instruments and accessories, electrical door components, air bags, and alarm systems. Information covered will include electrical fundamentals, test equipment, electrical circuits, electrical malfunctions, wiring diagrams, and electrical diagnosis.
Prerequisite(s): AUTO 50, Minimum grade C
Lecture Hours: 54.0; Lab Hours: 54.0
Transfer: Not transferable

**AUTO 085.5 Engine and Emission Control Training (0.0 Units)**
The Engine and Emission Control Training is intended to provide students with fundamental knowledge of engine and emission control theory, design and operation. This course satisfies the BAR (Bureau of Automotive Repair) requirements for Level One Training.
Lecture Hours: 54.0; Lab Hours: 54.0
Transfer: Not transferable

**AUTO 085.6 Emission Control Training Level 2 (0.0 Units)**
Emission Control Training is intended to provide students with knowledge of emission control theory, design and operation. This course satisfies the BAR (Bureau of Automotive Repair) requirements for Level Two Training.
Lecture Hours: 54.0; Lab Hours: 54.0
Transfer: Not transferable

**AUTO 085.8 Smog Technician Update (0.0 Units)**
BAR (Bureau of Automotive Repair) Smog Repair Technician 12 Hour Update
Lecture Hours: 9.0; Lab Hours: 4.5
Transfer: Not transferable

**AUTO 085D BAR Specified Diagnostic and Repair½training (0.0 Units)**
This course covers information required by the Bureau of Automotive Repair pertaining to diagnosis and repair of emission systems. Topics covered are: safety, electrical, emissions, and diagnostic strategies.
Lecture Hours: 54.0; Lab Hours: 54.0
Transfer: Not transferable

**AUTO 85.1 Introduction to Engine Performance½theory (4.0 Units)**
This course covers engine performance theory and techniques used by the automotive industry to diagnose and repair driveability malfunctions.
Lecture Hours: 72.0; Lecture Hours: 4.5
Transfer: Not transferable

**AUTO 85.2 Common Sense Approach to Computer½diagnosis (4.0 Units)**
This course covers the operational theory of automotive computers and a common sense approach for diagnosis and repair. Topics will include how to analyze data stream and how the data affects computer operation.
Lecture Hours: 72.0
Transfer: Not transferable

**AUTO 85.3 Ignition and Fuel System Theory½diagnosis (4.0 Units)**
This course will introduce the student to the ignition and fuel systems theory and cover common malfunctions on the modern automobile.
Lecture Hours: 72.0
Transfer: Not transferable

**AUTO 85.5 Engine and Emission Control Training (4.0 Units)**
The Engine and Emission Control Training is intended to provide students with fundamental knowledge of engine and emission control theory, design and operation. This course satisfies the BAR (BureauofAutomotiveRepair) requirements for Level One Training.
Lecture Hours: 54.0; Lab Hours: 54.0
Transfer: Not transferable

**AUTO 85.6 Emission Control Training (4.0 Units)**
Emission Control Training is intended to provide students with knowledge of emission control theory, design and operation. This course satisfies the BAR (Bureau of Automotive Repair) requirements for Level Two Training.
Lecture Hours: 54.0; Lab Hours: 54.0
Transfer: Not transferable

**AUTO 85D BAR Specified Diagnostic and Repair½training (4.0 Units)**
This course covers information required by the Bureau of Automotive Repair pertaining to diagnosis and repair of emission systems. Topics covered are: safety, electrical, emissions, and diagnostic strategies.
Lecture Hours: 54.0; Lab Hours: 54.0
Transfer: Not transferable

**AUTO 89.3 Introduction to Hybrid, Electric Vehicle½and Alternative Propulsion Vehicle½technology (4.0 Units)**
This course explores the use of Hybrid, Electric power and alternative fuels for the vehicle transportation. Physics of battery storage, Hybrid generation systems, Electric vehicle applications and tier integrated systems from many manufacturers will be discussed. This course is suitable for students entering into and automotive alternative fuels or power generation and energy technology field. This course is a required course for the Alternative Vehicle Propulsion Certificate/Degree.
Prerequisite(s): AUTO 50, Minimum grade C
Lecture Hours: 54.0; Lab Hours: 54.0
Transfer: Not transferable

**AUTO 89.4 Hybrid Vehicle Propulsion (4.0 Units)**
This Advanced-level Hybrid vehicle systems class will place an emphasis on theory, operation, maintenance, diagnosis and repair of Hybrid vehicle systems.Topics will include: safety when using high voltage, Hybrid vehicle drive systems, Battery technology, Hybrid generation systems, energy management systems, Hybrid vehicle peripheral systems. Hybrid vehicle maintenance, service, diagnostic and repair procedures will also be covered.
Prerequisite(s): AUTO 89.3, Minimum grade C
Recommended Preparation: AUTO 80.1, AUTO 82.0
Lecture Hours: 54.0; Lab Hours: 54.0
Transfer: Not transferable

**AUTO 89.5 Electric Vehicle and Alternative½propulsion (4.0 Units)**
This is an intermediate level course on alternative fuel systems used to power Modern vehicles. Emphasis will be placed on the theory, operation, maitenance, diagnosis, and repair of EV (Electronic Vehicles) and HEV (hydrogen electric vehicles). The course will also cover the basics of install action, diagnostic procedures, laptop computers, and computer monitoring od Compressed Natrual gas (CNG), and Liquid Natruatl Gas (LNG) Hydrogen, LPG, and Bio Fuels. Studemts will develop skills that interface with modern technology computer based automotive electronic and network controls. SAE and CAN network control systems. This courses is designed for intermediate level technicians working the the field of stationary power engines, transportation and clean energy fuels seeking to improve skills related to the diagnosis and repair of EV, HEV, and gaseous frueled vehicles.
Prerequisite(s): AUTO 89.3, Minimum grade C
Recommended Preparation: AUTO 80.1, AUTO 80.2, or AUTO 82.0
Lecture Hours: 54.0; Lab Hours: 54.0
Transfer: Not transferable

**AUTO 89.6 Advanced Hybrid, Electric Vehicle, And½alternative Propulsion Technology (4.0 Units)**
This course explores advanced level theory, operation, diagnosis and repair of Hybrid and EV propulsion systems focusing on on-board diagnostics and HV battery diagnosis and repair in the modern automobile. This course is suitable for experienced students and technicians who intend to perform diagnosis and repair of high voltage battery and EV Battery, management systems, electric propulsion systems,and on-board computer systems.
Prerequisite(s): AUTO 89.3, AUTO 89.4, and AUTO 89.5, Minimum Grade C
Lecture Hours: 54.0; Lab Hours: 54.0
Transfer: Not transferable

**AUTO 090 Intorduction to Automotive Fabrication½ownership & Operation (0.0 Units)**
This course will provide the student with the knowledge and fundamentals of basic metal fabrication in the automotive industry. Areas of instruction includes safety, understanding measurement reading and calculations, and the proper use and application of fabrication equipment.
Lecture Hours: 54.0; Lab Hours: 54.0
Transfer: Not transferable

**AUTO 090.A Automotive Exhaust System And½fabrication (0.0 Units)**
This course is designed to provide the training needed to safely diagnose repair or legally modify the automotive exhaust system. This course and the emission courses are needed to help the student with the X1 ASE Certificate.
Prerequisite(s): AUTO 50
Lecture Hours: 54.0; Lab Hours: 54.0
Transfer: Not transferable

**AUTO 090.B Introduction to Automotive Sheet Metal½fabrication (0.0 Units)**
This course is designed to provide the student with the basic knowledge and understanding of sheet metal fabrication as it applies to the automotive and automotive accessory industry.
Lecture Hours: 36.0; Lab Hours: 108.0
Transfer: Not transferable

**AUTO 090.C Introduction to Automotive Tube½fabrication (0.0 Units)**
This course is designed to provide the student with basic knowledge and understanding of tube fabrication as it applies to the Automobile Industry.
Prerequisite(s): AUTO 50
Lecture Hours: 36.0; Lab Hours: 108.0
Transfer: Not transferable

**AUTO 90 Introduction to Automotive Fabrication (4.0 Units)**
This course will provide the student with the knowledge and fundamentals of basic metal fabrication in the automotive industry. Areas of inspection includes safety, understanding measurement reading and calculations, and the proper use and application of fabrication equipment.
Prerequisite(s): AUTO 50, Minimum grade C
Lecture Hours: 54.0; Lab Hours: 54.0
Transfer: Not transferable

**AUTO 90.A Automotive Exhaust System And½fabrication (4.0 Units)**
This course is designed to provide the training needed to safely diagnose repair or legally modify the automotive exhaust system. This course and the emission courses are needed to help the student with the X1 ASE Certificate.
Prerequisite(s): AUTO 50, Minimum grade C
Lecture Hours: 54.0; Lab Hours: 54.0
Transfer: Not transferable

**AUTO 90.B Introduction to Automotive Sheet Metal½fabrication (4.0 Units)**
This course is designed to provide the student with the basic knowledge and understanding of sheet metal fabrication as it applies to the automotive and automotive accessory industry.
Prerequisite(s): AUTO 50, Minimum grade C
Lecture Hours: 36.0; Lab Hours: 108.0
Transfer: Not transferable

**AUTO 90.C Introduction to Automotive Tube½fabrication (4.0 Units)**
This course is designed to provide the student with basic knowledge and understanding of tube fabrication as it applies to the Automobile Industry
Prerequisite(s): AUTO 50 and WELD 58A, Minimum grade C
Lecture Hours: 36.0; Lab Hours: 108.0
Transfer: Not transferable

**AUTO 97 Automotive Air Conditioning and Heating Systems (4.0 Units)**
This course covers diagnosis and repair of the components of the automotive air-conditioning and heating systems: evaporators, compressors, control valves, condensers, blowers, heater cores, lines and hoses, mechanical and electronic temperature controls. Air-conditioning and heating related parts will be disassembled, inspected and determination made of serviceability of existing parts. The need for replacement parts will be established as the components are reassembled. Recovery and charging of different systems will be covered from both R-12 and R134A systems.
Prerequisite(s): AUTO 50, Minimum grade C
Lecture Hours: 54.0; Lab Hours: 54.0
Transfer: Not transferable

**AUTO 97.0 Automotive Air Conditioning and Heating½systems (4.0 Units)**
This course covers diagnosis and repair of the components of the automotive air conditioning and heating systems; evaporators, compressors, control valves, condensers, blowers, heater cores, lines and hoses. Mechanical and electronic temperature controls. Air conditioning and heating related parts will be dissembled, inspected and determination made of serviceability of existing parts. The need for replacement parts will be established as the components are reassembled. Recovery and charging of different systems will be covered from both R-12 and R134A systems.
Prerequisite(s): AUTO 50, Minimum grade C
Lecture Hours: 54.0; Lab Hours: 54.0
Transfer: Not transferable

**AUTO 99.1 Light Duty Diesel Systems 1 (4.0 Units)**
This course covers the theory, design, diagnosis and repair of the light duty diesel power plant systems. Topics covered will include the fuel and emission systems.
Prerequisite(s): AUTO 50, Minimum grade C
Lecture Hours: 54.0; Lab Hours: 54.0
Transfer: Not transferable

**AUTO 99.2 Light Duty Diesel Systems 2 (4.0 Units)**
This course covers the theory, design, diagnosis and repair of the light duty diesel power plant systems. Topics covered will include charging and starting systems, engine electronics, service and maintenance.
Prerequisite(s): AUTO 50, Minimum grade C
Lecture Hours: 54.0; Lab Hours: 54.0
Transfer: Not transferable

**AUTO 99.3 Light Duty Diesel Systems 3 (4.0 Units)**
This course covers the theory, design, diagnosis and repair of the light duty diesel power plant systems. Topics covered will include intake and exhaust systems, cooling and lubrication circuits and forced air induction.
Prerequisite(s): AUTO 50, Minimum grade C
Lecture Hours: 54.0; Lab Hours: 54.0
Transfer: Not transferable

**AUTO 99.4 Light Duty Diesel Systems 4 (4.0 Units)**
This course covers the theory, design, diagnosis and repair of the light duty diesel power plant systems. Topics covered will include cylinder block assemblies and cooling and lubrication circuits.
Prerequisite(s): AUTO 50, Minimum grade C
Lecture Hours: 54.0; Lab Hours: 54.0
Transfer: Not transferable