

AUTOMOTIVE CAREER EDUCATION

The Automotive Technology program at Ventura College is a Master Certified Automotive Service Excellence Education Foundation (ASEEF) program. The program primarily offers courses aligned with industry skills designed to prepare students with the skills needed for employment in the aftermarket, dealership, and smog industries. In addition to offering a comprehensive general automotive program, there are specialized programs: the Toyota T-TEN (Toyota's Technical Training and Education Network) program.

The program offers courses that range from the basic to advanced levels, cover all automotive content areas as required by the ASE Education Foundation, and are designed to simulate real world faults that emphasize the hands-on skills required to inspect, service, diagnose, and repair current model year vehicles.

Toyota's T-TEN program is a partnership that includes Toyota Motor Sales USA Inc., community colleges, vocational schools, and Toyota and Lexus dealerships nationwide. Together, students receive state-of-the-art automotive training in both classroom and dealership settings. As a T-TEN student, you will learn and earn in a supportive environment while receiving instruction from factory-trained instructors and guidance from dealership mentors. Advanced certifications are earned by T-TEN graduates for completing Toyota-designed courses and for passing Automotive Service Excellence Education Foundation (ASEEF) certification tests.

Credit Courses

ACE V11 Automotive Vehicle Maintenance 3 Units

In-Class Hours: 35 lecture, 70 laboratory

This course is a prerequisite for all automotive coursework and prepares students for an entry level position as a maintenance technician. The course covers automotive industry structure, successful career building techniques, employee and employer responsibilities, shop safety procedures, tools and equipment, vehicle inspections, and basic maintenance, service, and repair procedures. Partial preparation for ASE (Automotive Service Excellence) G1 (Maintenance Technician Certification) is provided. The course also determines which automotive work experience path is best suited for each student and identifies the most appropriately matched program cohort.

Grade Modes: Letter Graded

Field Trips: Will be required

Degree Applicability: Applies to Associate Degree

AA/AS GE: None

Transfer Credit: None

ACE V12 Automotive Electrical Systems I 4 Units

In-Class Hours: 35 lecture, 105 laboratory

Prerequisites: ACE V11 or concurrent enrollment

This course provides technical preparation in the skills required to service, inspect, and repair base automotive electrical systems.

Grade Modes: Letter Graded

Field Trips: May be required

Degree Applicability: Applies to Associate Degree

AA/AS GE: None

Transfer Credit: None

ACE V13 Automotive Engine Repair 4 Units

In-Class Hours: 35 lecture, 105 laboratory

Prerequisites: ACE V11 or concurrent enrollment

This course provides technical preparation in the skills required to diagnose, adjust, maintain, and repair automotive engines.

Grade Modes: Letter Graded

Field Trips: May be required

Degree Applicability: Applies to Associate Degree

AA/AS GE: None

Transfer Credit: None

ACE V21 Automotive Brake Systems 4 Units

In-Class Hours: 35 lecture, 105 laboratory

Prerequisites: ACE V11 or concurrent enrollment

This course provides technical preparation in the skills required to inspect, service, and repair automotive brake systems.

Grade Modes: Letter Graded

Degree Applicability: Applies to Associate Degree

AA/AS GE: None

Transfer Credit: None

ACE V22 Automotive Steering and Suspension Systems 4 Units

In-Class Hours: 35 lecture, 105 laboratory

Prerequisites: ACE V11 or concurrent enrollment

This course provides technical preparation in the skills required to inspect, service, and repair automotive steering and suspension systems.

Grade Modes: Letter Graded

Degree Applicability: Applies to Associate Degree

AA/AS GE: None

Transfer Credit: None

ACE V23 Automotive Electrical Systems II 4 Units

In-Class Hours: 35 lecture, 105 laboratory

Prerequisites: ACE V12

This course provides technical preparation in the skills required to diagnose automotive electronic systems.

Grade Modes: Letter Graded

Field Trips: Will be required

Degree Applicability: Applies to Associate Degree

AA/AS GE: None

Transfer Credit: None

ACE V31 Automotive Heating and Air Conditioning 4 Units

In-Class Hours: 35 lecture, 105 laboratory

Prerequisites: ACE V12

This course provides technical training and skills preparation required to service, diagnose, and repair automotive heating, ventilation, and air conditioning systems.

Grade Modes: Letter Graded

Field Trips: May be required

Degree Applicability: Applies to Associate Degree

AA/AS GE: None

Transfer Credit: None

ACE V32 Automotive Engine Management 4 Units

In-Class Hours: 35 lecture, 105 laboratory

Prerequisites: ACE V12, ACE V13

This course provides technical preparation in the skills required to diagnose base engine control management systems.

Grade Modes: Letter Graded

Field Trips: May be required

Degree Applicability: Applies to Associate Degree

AA/AS GE: None

Transfer Credit: None

ACE V33 Automotive Manual Transmissions and Transaxles 4 Units*In-Class Hours:* 35 lecture, 105 laboratory*Prerequisites:* ACE V11, ACE V12

This course provides technical knowledge and skills preparation for the theory, service, diagnosis, and repair of front-wheel drive/rear-wheel drive manual transmissions/transaxles and driveline systems.

Grade Modes: Letter Graded**Field Trips:** May be required**Degree Applicability:** Applies to Associate Degree**AA/AS GE:** None**Transfer Credit:** None**ACE V41 Automotive Automatic Transmissions and Transaxles 4 Units***In-Class Hours:* 35 lecture, 105 laboratory*Prerequisites:* ACE V12

This course provides technical preparation in the skills required to inspect, service, and repair automatic transmissions and transaxles.

Grade Modes: Letter Graded**Degree Applicability:** Applies to Associate Degree**AA/AS GE:** None**Transfer Credit:** None**ACE V42 Automotive Engine Driveability 4 Units***In-Class Hours:* 35 lecture, 105 laboratory*Prerequisites:* ACE V32

This course focuses on the diagnosis of engine management systems with an emphasis on OBD II, misfire, fuel trims, emission systems, and interrelated systems.

Grade Modes: Letter Graded**Degree Applicability:** Applies to Associate Degree**AA/AS GE:** None**Transfer Credit:** None**ACE V43 Automotive Hybrid Systems Repair and Diagnosis 3 Units***In-Class Hours:* 35 lecture, 70 laboratory*Prerequisites:* ACE V31 and ACE V32

This course takes an in-depth look at the operation, diagnosis, and service of hybrid (HEV), plug-in hybrid (PHEV), and electric vehicles (EV). Topics include safety and personal protective equipment (PPE); low voltage systems; high voltage systems; high voltage batteries; inverter/converters; transaxles; electric motors; Atkinson Cycle internal combustion engines (ICE); heating, ventilation, and air-conditioning (HVAC) systems; braking/regenerative braking; and steering systems. The course includes preparation for the ASE L3 Light duty hybrid/electric vehicles exam.

Grade Modes: Letter Graded**Field Trips:** May be required**Degree Applicability:** Not applicable for degree credit**AA/AS GE:** None**Transfer Credit:** None**ACE V50 Automotive Technology Technical Review 3 Units***In-Class Hours:* 52.5 lecture*Advisories/Rec Prep:* Prior completion of an Automotive Service

Excellence (ASE) Education Foundation Master accredited program at another recognized college or educational institution, or completion of an ASE Maintenance and Light Repair program with possession of ASE A6 certification; Prior completion of an Automotive Technology program or at least 2 years of full-time work experience as an Automotive Service Technician with possession of at least ASE A6 Electrical certification, or 5 years of full-time work experienced in the automotive industry in a related technical or professional position with industry recognized credentials
Enrollment Limitations: Department Chair approval.

This course is designed to provide a technical review of current automotive technology as aligned with the Automotive Service Excellence (ASE) industry standards for the purpose of demonstrating prerequisite knowledge prior to beginning automotive upper division coursework. Students will review the areas of; Engine Repair, Automatic Transmissions and Drivelines, Manual transmissions and Drivelines, Steering and Suspensions Systems, Brake Systems, Electrical and Electronic Systems, Heating, Ventilation, and Air Conditioning Systems, and Engine Performance Systems to demonstrate preparedness to pass ASE A1-A8 exams with the purpose of validating prerequisite content knowledge.

Grade Modes: Pass/No Pass Grading**Repeatable for Credit:** Unlimited.**Degree Applicability:** Applies to Associate Degree**AA/AS GE:** None**Transfer Credit:** None**ACE V70 Smog Inspection Procedures 3.5 Units***In-Class Hours:* 35 lecture, 87.5 laboratory*Advisories/Rec Prep:* 1-year of related automotive experience or formal automotive training

This course provides students with the basic knowledge and skills to perform California Smog Inspections. The course provides Smog Inspector Level 1 and Level 2, update, and citation training and meets standards set forth by the California Bureau of Automotive Repair (BAR).

Grade Modes: Letter Graded**Degree Applicability:** Not applicable for degree credit**AA/AS GE:** None**Transfer Credit:** None

ACE V96 Work Experience Education in Automotive 1-14 Units

Formerly: AUTO V96

In-Class Hours: 54-756 paid cooperative

Advisories/Rec Prep: Completion of or concurrent enrollment in one course in the discipline; Students should contact the instructor and review the requirements for units of credit

Enrollment Limitations: Department Chair approval. Approval of faculty/department chair in discipline before student enrollment. .

Work Experience Education provides supervised employment extending classroom occupational learning at an on-the-job learning station relating to the students' educational or occupational goals. Each unit of credit requires 54 hours of employment during the semester. Work Experience Education is available to all students. #Students are accepted as a result of consultation with a designated faculty member in the discipline.

Catalog Notes: Students may enroll in up to 14 units of work experience education per semester or term; There is no limit to the number of terms for which a student may enroll in work experience education.

Grade Modes: Pass/No Pass Grading

Repeatable for Credit: Course may be repeated up to a maximum of 14 units of credit.

Field Trips: May be required

Degree Applicability: Applies to Associate Degree

AA/AS GE: None

Transfer Credit: CSU

UC Credit Limitations: None

ACE V310 Electrified Vehicle Safety 4 Units

In-Class Hours: 70.0 lecture

Prerequisites: ACE V12 or equivalent

Enrollment Limitations: Admitted to the program.

This upper-division course provides a comprehensive understanding of automotive electrified vehicle (EV) safety, and the overall safety impact to the automotive industry. Students will explore safety measures when dealing with both high voltage alternating current and high voltage direct current. Students will also explore safety requirements in the development of shop space, vehicle power down procedures, removal, installation, and disposal of high voltage batteries and components. They will also delve into the safety related systems that make electrified vehicles safe for the consumer and first responders. In addition, preparation for the ASE L3 Light-Duty hybrid/electric vehicles exam is included.

Grade Modes: Letter Graded

Field Trips: May be required

Degree Applicability: Applies to Associate Degree

AA/AS GE: None

Transfer Credit: CSU

UC Credit Limitations: None

ACE V311 Electrified Vehicle Classification and System Design 5 Units

In-Class Hours: 87.5 lecture

Prerequisites: ACE V12 or equivalent

Enrollment Limitations: Admitted to the program.

This upper-division course provides a comprehensive understanding of automotive electrified vehicle classifications, and the underlying system designs. Students will explore various types of electrified vehicles, including hybrid electric vehicles (HEVs), plug-in hybrid electric vehicles (PHEVs), battery electric vehicles (BEVs), fuel cell electric vehicles (FCEVs), and commercial electric (CEV) vehicles. They will also delve into the intricate systems that make these vehicles work efficiently and sustainably. In addition, preparation for the ASE L3 Light-Duty hybrid/electric vehicles exam is included.

Grade Modes: Letter Graded

Field Trips: May be required

Degree Applicability: Applies to Associate Degree

AA/AS GE: None

Transfer Credit: CSU

UC Credit Limitations: None

ACE V320 Electrified Vehicle Supporting Systems 5 Units

In-Class Hours: 87.5 lecture

Prerequisites: ACE V310 and ACE V311

Enrollment Limitations: Admitted to the program.

This upper-division course provides a comprehensive understanding of automotive electrified vehicle (EV) supporting systems. Students will explore the designs and operation of supporting systems unique to electrified vehicles such as, regenerative braking, solar charging, battery cooling, inverter/converter cooling, and cabin air conditioning control. Students will also explore the different types of power generation used in hybrid electric vehicles including, gas, diesel, natural gas, propane and hydrogen fuel cell. In addition, preparation for the ASE L3 Light-Duty hybrid/electric vehicles exam is included.

Grade Modes: Letter Graded

Field Trips: May be required

Degree Applicability: Applies to Associate Degree

AA/AS GE: None

Transfer Credit: CSU

UC Credit Limitations: None

ACE V321 Electrified Vehicle Diagnostic Processes and Equipment 5 Units

In-Class Hours: 87.5 lecture

Prerequisites: ACE V310 and ACE V311

Enrollment Limitations: Admitted to the program.

This upper-division course equips students with the knowledge required to diagnose and troubleshoot electrified vehicles effectively. The curriculum covers diagnostic processes and the theory of operation of essential diagnostic equipment. Students will gain experience with tools such as Oscilloscopes, Scan tools, Remote Diagnostics, Guided Diagnostics, and specialized meters for advanced electrified vehicle diagnostics. In addition, preparation for the ASE L3 Light-Duty hybrid/electric vehicles exam is included.

Grade Modes: Letter Graded

Field Trips: May be required

Degree Applicability: Applies to Associate Degree

AA/AS GE: None

Transfer Credit: CSU

UC Credit Limitations: None

ACE V322 Methods of Research (Capstone 1) 2 Units*In-Class Hours:* 35 lecture*Prerequisites:* ACE V310 and ACE V311*Enrollment Limitations:* Admitted to the program.

In this upper-division course students will learn scientific methods of research principles and create a preliminary research proposal to prepare students for completing their capstone project. Students will explore advanced topics, emerging technologies, and key challenges in the field of electrified vehicles. Through individual or group research projects, students will develop a deep understanding of the current state of electrified vehicle technology and contribute to the advancement of knowledge in this rapidly evolving area. Students will receive project approval and begin developing their approved research project.

Grade Modes: Letter Graded**Field Trips:** May be required**Degree Applicability:** Applies to Associate Degree**AA/AS GE:** None**Transfer Credit:** CSU**UC Credit Limitations:** None**ACE V430 Advanced Driver Assistance Systems 5 Units***In-Class Hours:* 87.5 lecture*Prerequisites:* ACE V321 and ACE V322*Advisories/Rec Prep:* Enrollment in this course requires admission into a Community College baccalaureate degree program*Enrollment Limitations:* Admitted to the program.

This upper-division course provides a comprehensive understanding of automotive advanced driver assistance systems. Students will explore the design and application of systems such as, object detection, blind spot monitoring, active cruise control, lane keep assist, and autonomous vehicle (AV) operation. Students will also explore the detail of camera based, radar based, and ultrasonic based guidance systems used in current vehicle designs. Students will also delve into the infrastructure and ethical related problems that are being created with the development of autonomous vehicles. In addition, preparation for the ASE L4 Advanced Driver Assistance System Specialist exam is included.

Grade Modes: Letter Graded**Field Trips:** May be required**Degree Applicability:** Applies to Associate Degree**AA/AS GE:** None**Transfer Credit:** CSU**UC Credit Limitations:** None**ACE V431 Advanced Convenience and Comfort Systems 5 Units***In-Class Hours:* 87.5 lecture*Prerequisites:* ACE V321 and ACE V322*Enrollment Limitations:* Admitted to the program.

This upper-division course covers advanced transportation convenience and comfort systems with an emphasis on automotive electrified support systems as new technology emerges and additional systems continue to make their way into the transportation industry. Students will research and study current and emerging convenience and comfort systems technology including heating and cooling based comfort systems, infotainment systems, supporting audio and visual systems, telematics-based systems, pre-collision and accident mitigation supporting systems, and driver and passenger comfort systems. This course provides partial preparation for the ASE L3 Light-Duty hybrid/electric and L4 Automated Driver Assist Systems (ADAS).

Grade Modes: Letter Graded**Field Trips:** May be required**Degree Applicability:** Applies to Associate Degree**AA/AS GE:** None**Transfer Credit:** CSU**UC Credit Limitations:** None**ACE V440 Transportation Standards, Laws, and Regulations 5 Units***In-Class Hours:* 87.5 lecture*Prerequisites:* ACE V430 and ACE V431*Enrollment Limitations:* Admitted to the program.

This upper-division course provides an in-depth overview of historical and current transportation standards, regulations and laws with an emphasis on the emerging standards and regulations for electrified vehicles. Students will learn about the process of certifying a vehicle for sale in North America and the standards organizations and regulating parties involved. Current standards and regulations proposals for emerging technologies in the transportation industry and an analysis of related considerations such as infrastructure, communications, pedestrian safety, driver safety, environmental concerns, and traffic ordinances will be provided. Students will research, analyze, and identify the regulatory factors to be considered for new and emerging technologies based on the current standards, regulations, and laws for that technology.

Grade Modes: Letter Graded**Field Trips:** May be required**Degree Applicability:** Applies to Associate Degree**AA/AS GE:** None**Transfer Credit:** CSU**UC Credit Limitations:** None**ACE V441 Research Project (Capstone 2) 3 Units***In-Class Hours:* 52.5 lecture*Prerequisites:* ACE V431*Enrollment Limitations:* Admitted to the program.

This upper-division course provides students the opportunity to conduct in-depth research on various aspects of automotive electrified vehicles. Students will develop and complete their approved capstone research project and submit for peer and instructor review.

Grade Modes: Letter Graded**Field Trips:** May be required**Degree Applicability:** Applies to Associate Degree**AA/AS GE:** None**Transfer Credit:** CSU**UC Credit Limitations:** None

Noncredit Courses

ACE N171 Smog Inspection Procedures I (Noncredit) 0 Units

Advisories/Rec Prep: One-year of related automotive experience or formal automotive training

This non-credit course provides the basic knowledge and skills to service, adjust, and repair engine performance and emissions systems as related to the Smog Check Inspection Program. The course meets the California Bureau of Automotive Repair Smog Check Inspector Level 1 certification requirements. This is a noncredit course, non-degree applicable.

Grade Modes: Pass/No Pass Grading

Repeatable for Credit: Unlimited.

Field Trips: May be required

Degree Applicability: Noncredit course; not applicable for degree credit

AA/AS GE: None

Transfer Credit: None

ACE N172 Smog Inspection Procedures II (Noncredit) 0 Units

Advisories/Rec Prep: ACE N171

This non-credit course provides students with the procedural skills, knowledge, and abilities to perform Smog Check Inspections. The course meets the California Bureau of Automotive Repair Smog Check Inspector Level 2 certification requirements.

Grade Modes: Pass/No Pass Grading, Non-Graded

Repeatable for Credit: Unlimited.

Field Trips: May be required

Degree Applicability: Noncredit course; not applicable for degree credit

AA/AS GE: None

Transfer Credit: None

ACE N173 Smog Procedures Update (Noncredit) 0 Units

Advisories/Rec Prep: Possession of a California Smog Inspect and Repair license, or equivalent experience as an automotive service and repair technician

This course provides students with current and emerging emissions control and smog inspection technology updates. On-Board Diagnostics II, emissions systems, and diagnostic test equipment are emphasized. This is a noncredit course, not degree applicable.

Grade Modes: Pass/No Pass Grading

Repeatable for Credit: Unlimited.

Field Trips: May be required

Degree Applicability: Noncredit course; not applicable for degree credit

AA/AS GE: None

Transfer Credit: None

- Automotive Performance Technician, Certificate of Achievement (<https://catalog.vcccd.edu/ventura/programs-courses/automotive-career-education/automotive-performance-technician-coa/>)
- Automotive Repair Technician, Certificate of Achievement (<https://catalog.vcccd.edu/ventura/programs-courses/automotive-career-education/automotive-repair-technician-coa/>)
- Automotive Service Technician, Certificate of Achievement (<https://catalog.vcccd.edu/ventura/programs-courses/automotive-career-education/automotive-service-technician-coa/>)

- Automotive Career Education, Bachelor in Science (<https://catalog.vcccd.edu/ventura/programs-courses/automotive-career-education/automotive-career-education-bs/>)
- Automotive Career Education, Associate in Science (<https://catalog.vcccd.edu/ventura/programs-courses/automotive-career-education/automotive-career-education-as/>)
- Automotive Career Education Expert Technician, Certificate of Achievement (<https://catalog.vcccd.edu/ventura/programs-courses/automotive-career-education/automotive-career-education-expert-technician-coa/>)
- Automotive Career Education, Certificate of Achievement (<https://catalog.vcccd.edu/ventura/programs-courses/automotive-career-education/automotive-career-education-coa/>)
- Automotive Maintenance Technician, Certificate of Achievement (<https://catalog.vcccd.edu/ventura/programs-courses/automotive-career-education/automotive-maintenance-technician-coa/>)