AUTOMOTIVE TECHNOLOGY

The Automotive Technology program at Oxnard College is designed to prepare students as entry-level technicians for the automotive field. The program also provides improvement training for working automotive technicians dealing with rapidly changing technologies and updated certification exams. Students can complete an Associate of Science Degree or any of the eight Certificates of Achievement offered. Courses include a full range of curriculum for this career: fundamentals and foundations of automotive, automotive electrical, engine performance, brake systems, steering and suspension, heating and air conditioning systems, transmissions, automotive business management, alternative fuel systems, and hybrid and electric vehicle technology.

In addition, students can enter a pathway to becoming a State of California, Bureau of Automotive Repair licensed vehicle Emissions Inspector. The courses are designed to give a student knowledge and hands-on training needed to achieve ASE (Automotive Service Excellence) certification. All courses are taught by ASE certified instructors and the program is certified by NATEF (National Automotive Technicians Educational Foundation).

AT R088 California Bureau of Automotive Repair Smog License Update Class 1 Unit
In-Class Hours: 13.25 lecture, 13.25 laboratory
Advisories/Rec Prep: This course is for persons holding a current State of California Smog Inspection Repair License and candidates for the Smog Inspection License, to prepare or to meet minimum 16 hour training requirements by the State of California Bureau of Auto Repair license department
Enrollment Limitations: Interview.
This short course will cover selected areas of automotive technology. This course will meet the smog license update training requirements of the State of California, Bureau of Automotive Repair.
Catalog Notes: This class is repeatable if legally mandated.
Grade Modes: Letter Graded, Student Option- Letter/Credit, Pass/No Pass Grading
Repeatable for Credit: Unlimited.
Field Trips: May be required
Degree Applicability: Applies to Associate Degree
AA/AS GE: None
Transfer Credit: None

AT R100 Introduction to Hybrid and Electric Vehicle Technology 3 Units
In-Class Hours: 43.75 lecture, 26.25 laboratory
Prerequisites: AT R110 and AT R115
C-ID: ALTF 100 X
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, DC/DC power transfer, and battery technology. Physics of battery storage, hybrid generation systems, Electric vehicle applications and their integrated systems from many manufacturers will be discussed. Hybrid and high voltage service and maintenance procedures. This course will assist the student in passing the L-3 ASE exam.
Grade Modes: Letter Graded, Credit by exam, license etc.
Field Trips: May be required
Degree Applicability: Applies to Associate Degree
AA/AS GE: None
Transfer Credit: CSU
UC Credit Limitations: None
CSU GE-Breadth: None
IGETC: None

AT R102 Introduction to Alternative Fuel Systems 3 Units
In-Class Hours: 43.75 lecture, 26.25 laboratory
Prerequisites: AT R100
This course covers the theory of operation, installation, testing, trouble-shooting, and repair of vehicles powered by gaseous fuels with a focus on Compressed Natural Gas (CNG) as well as an introduction to Liquefied Natural Gas (LNG). Both dedicated and after-market systems will be covered. Gasoline and diesel powered vehicles are discussed with an emphasis on computer-controlled fuel injection. Components are thoroughly examined in this course to include everything from storage up to the injector(s). Successful completion of this course will prepare students for the CNG Inspector's Certification.
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
CSU GE-Breadth: None
IGETC: None

AT R103 Light Duty Electric Vehicles 3 Units
In-Class Hours: 43.75 lecture, 26.25 laboratory
Prerequisites: AT R100
This course focuses on light-duty passenger electric vehicles (EVs). It provides a practical introduction to advanced EV designs and propulsion systems. The course includes: EV design and construction; the testing, assembly, operation, and maintenance of EVs; the influence of aerodynamic design; advanced technology batteries, super-capacitors, intelligent charging systems; hydrogen fuel cell technology, and alternative EV drive systems. Successful completion of this course will prepare students for the ASE L3 (Light Duty Hybrid/EV Vehicle Specialist Certification).
Grade Modes: Letter Graded, Credit by exam, license etc.
Field Trips: May be required
Degree Applicability: Applies to Associate Degree
AA/AS GE: None
Transfer Credit: CSU
UC Credit Limitations: None
CSU GE-Breadth: None
IGETC: None

AT R104 Light Duty Hybrid Vehicles 3 Units
In-Class Hours: 43.75 lecture, 26.25 laboratory
Prerequisites: AT R100
This course focuses light-duty passenger hybrid electric vehicles (HEVs). It provides a practical introduction to advanced HEV design and propulsion systems. The course includes: HEV design and construction; the testing, assembly, operation, and maintenance of HEVs; the influence of aerodynamic design; advanced technology batteries, super-capacitors, intelligent charging systems; hydrogen fuel cell technology, and alternative EV drive systems. Successful completion of this course will prepare students for the ASE L3 Light Duty Hybrid/EV Vehicle Specialist Certification.
Grade Modes: Letter Graded, Credit by exam, license etc.
Field Trips: May be required
Degree Applicability: Applies to Associate Degree
AA/AS GE: None
Transfer Credit: CSU
UC Credit Limitations: None
CSU GE-Breadth: None
IGETC: None

AT R110 Introduction to Automotive Technology 6 Units
Formerly: AT R010; AT R011
In-Class Hours: 87.5 lecture, 52.5 laboratory
C-ID: AUTO 110 X
This course is a comprehensive overview of the automobile, basic operation principles and repair procedures. Systems included are ignition, charging, cranking, cooling, fuel, lubrication, brakes, engine operation and front suspension. Students will obtain skills related to, information acquisition and retrieval; writing repair orders and related documents; hardware identification, use and repair; gasket, seal and sealants use; bearing identification & repair; fluid services; wheel & tire service. Outside online safety certifications will be included in the course.
Grade Modes: Letter Graded, Credit by exam, license etc.
Field Trips: May be required
Degree Applicability: Applies to Associate Degree
AA/AS GE: None
Transfer Credit: CSU
UC Credit Limitations: None
CSU GE-Breadth: None
IGETC: None

AT R113 Automotive Engine Performance 6 Units
Formerly: AT R013L; AT R013; AT R033
In-Class Hours: 87.5 lecture, 52.5 laboratory
Advisories/Rec Prep: AT R110
This course provides state-of-the-art training in automobile emission control systems, fuel injection systems, ignition systems, and engine computer controlled operating systems. This course fulfills career training as required by the National Automotive Technicians Education Foundation and California State Smog Inspectors License. The goal of this course is to prepare students for Industry accepted ASE (Automotive Service Excellence) certification. This course will provide students with entry-level automotive technician skills necessary for immediate employment.
Grade Modes: Letter Graded, Credit by exam, license etc.
Field Trips: May be required
Degree Applicability: Applies to Associate Degree
AA/AS GE: None
Transfer Credit: CSU
UC Credit Limitations: None
CSU GE-Breadth: None
IGETC: None

AT R114 Advanced Engine Performance 6 Units
Formerly: AT R014; AT R014L
In-Class Hours: 87.5 lecture, 52.5 laboratory
Prerequisites: AT R113
This advanced course provides technical preparation in the skills required to diagnose engine control management systems of modern vehicles. The L-1 certification by ASE requires the most current knowledge and preparation in the series of tests offered by ASE for automobiles. Students will use manufacturer approved scan tools, lab scopes, digital volt meters and other state-of-the-art test equipment. Systems covered will include the engine management computer control, and other computer control systems (such as the anti-lock brake and supplemental restraint computer systems) and how they interact. Preparation for the ASE L-1 certification in advanced engine performance will be included.
Grade Modes: Letter Graded, Credit by exam, license etc.
Field Trips: May be required
Degree Applicability: Applies to Associate Degree
AA/AS GE: None
Transfer Credit: CSU
UC Credit Limitations: None
CSU GE-Breadth: None
IGETC: None

AT R115 Automotive Electrical Systems 6 Units
Formerly: AT R015; AT R015L
In-Class Hours: 87.5 lecture, 52.5 laboratory
Advisories/Rec Prep: AT R110
This course introduces students to automotive electrical system theory and application. Discussion and training include charging and starting, ignition, accessories, and electronics. This course will cover reading wiring diagrams and diagnostics of electrical problems. Labs will provide skills necessary to recognize electrical problems in computer controls and all systems using electricity on vehicles. This course provides vocational preparation and skills required in diagnosis, adjustment, repair and maintenance of the electrical systems of modern automotive vehicles. The course includes practice of electrical service equipment and procedures for the overhaul of electrical components and circuitry in automobiles. Preparation for the Industry ASE A-6 Certificate is included.
Grade Modes: Letter Graded, Credit by exam, license etc.
Field Trips: May be required
Degree Applicability: Applies to Associate Degree
AA/AS GE: None
Transfer Credit: CSU
UC Credit Limitations: None
CSU GE-Breadth: None
IGETC: None

AT R116 Advanced Automotive Electrical and Electronics 3 Units
Formerly: AT R016
In-Class Hours: 52.5 lecture
Prerequisites: AT R115
Advisories/Rec Prep: AT R110
This course is designed for advanced students or technicians in the auto service industry. This course covers various types of electronic systems, ignition systems, computer management, and fuel injection control systems. Students will learn advanced computer diagnostics including proper software updating and repairs to interactive infotainment systems.
Grade Modes: Letter Graded, Credit by exam, license etc.
Field Trips: May be required
Degree Applicability: Applies to Associate Degree
AA/AS GE: None
Transfer Credit: CSU
UC Credit Limitations: None
CSU GE-Breadth: None
IGETC: None

AT R120 Automotive Transmission and Drive Line 6 Units
Formerly: AT R030; AT R030L
In-Class Hours: 87.5 lecture, 52.5 laboratory
Advisories/Rec Prep: AT R110
C-ID: AUTO 120 X
This course provides technical preparation in the basic skills required to diagnose, adjust, repair, and overhaul the automotive transmission and drive line. All phases of transmission diagnosis and repair work will be covered. Quality inspection and reassembly procedures will be stressed. Preparation for the ASE certification 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
CSU GE-Breadth: None
IGETC: None

AT R121 ASE Technician Certification 3 Units
Formerly: AT R020
In-Class Hours: 52.5 lecture
Advisories/Rec Prep: Employment in the automotive industry or an automotive major
This course is offered to assist employed mechanics and automotive technology students in preparing for the ASE (Automotive Service Excellence) certification examinations. This course will cover nine specific test areas: engine repair, electrical/electronic systems, heating and air conditioning, brakes, suspension and steering, automatic transmission/transaxle, manual drive train and axles, engine performance, and advanced engine performance specialist.
Grade Modes: Letter Graded, Credit by exam, license etc.
Field Trips: May be required
Degree Applicability: Applies to Associate Degree
AA/AS GE: None
Transfer Credit: CSU
UC Credit Limitations: None
CSU GE-Breadth: None
IGETC: None

AT R126 Automotive Engine Repair 6 Units
Formerly: AT R026; AT R026L
In-Class Hours: 87.5 lecture, 52.5 laboratory
Advisories/Rec Prep: AT R110
This course provides technical preparation in the basic skills required to diagnose, adjust, repair, and overhaul the automotive internal combustion engine. All phases of machine work will be covered. Quality inspection and reassembly procedures will be stressed. Preparation for the ASE certification is included.
Grade Modes: Letter Graded, Credit by exam, license etc.
Field Trips: May be required
Degree Applicability: Applies to Associate Degree
AA/AS GE: None
Transfer Credit: CSU
UC Credit Limitations: None
CSU GE-Breadth: None
IGETC: None

AT R140 Automotive Steering and Suspension 6 Units
Formerly: AT R050
In-Class Hours: 87.5 lecture, 52.5 laboratory
Advisories/Rec Prep: AT R110 and AT R115
C-ID: AUTO 140 X
This course is for the automotive student who wants to understand automotive steering and suspension systems. This course provides the technical skills and preparation required in diagnosis, adjustment, replacement and repair of all types of suspension systems commonly used in the automotive industry. Factory type scan tools will be used for interaction with the vehicle steering and suspension control systems. Skills used for diagnosing body computer systems will be taught as part of the course. Preparation for the ASE certification exam is included. Preparation for the ASE certification exam is included.
Grade Modes: Letter Graded, Credit by exam, license etc.
Field Trips: May be required
Degree Applicability: Applies to Associate Degree
AA/AS GE: None
Transfer Credit: CSU
UC Credit Limitations: None
CSU GE-Breadth: None
IGETC: None

AT R148 Smog Check Procedures 3 Units
Formerly: AT R048
In-Class Hours: 52.5 lecture
Advisories/Rec Prep: AT R113
This course will provide students with the knowledge, skills, and abilities needed to perform smog check inspections. Students who successfully complete this course will have met the California Bureau of Automotive Repair's training requirements to qualify to sit for the smog check inspector licensing examination.
Grade Modes: Letter Graded, Credit by exam, license etc.
Field Trips: May be required
Degree Applicability: Applies to Associate Degree
AA/AS GE: None
Transfer Credit: CSU
UC Credit Limitations: None
CSU GE-Breadth: None
IGETC: None

AT R150 Automotive Braking Systems 6 Units
Formerly: AT R018; AT R018L
In-Class Hours: 87.5 lecture, 52.5 laboratory
Advisories/Rec Prep: AT R110 and AT R115
C-ID: AUTO 150 X
This course is for the student who wants to understand automotive braking systems, including hydraulic and friction principles. This course will study drum and disc brake systems learning how the systems function. The course includes hands on practice and completing tasks directly related to braking systems. The course will cover computerized anti-lock brake controls giving students skills in diagnosis and repair. Preparation for the ASE A-5 certification test is included.
Catalog Notes: A Certificate of Achievement is possible with additional courses.
Grade Modes: Letter Graded, Credit by exam, license etc.
Field Trips: May be required
Degree Applicability: Applies to Associate Degree
AA/AS GE: None
Transfer Credit: CSU
UC Credit Limitations: None
CSU GE-Breadth: None
IGETC: None

AT R161 Automotive Business Management 6 Units
Formerly: AT R060
In-Class Hours: 87.5 lecture, 52.5 laboratory
This course covers the automotive service management operations of an automotive business/dealership as related to service advisor/manager by focusing on the repair order as a legal document, appointment systems, telephone skills, communication strategies, product knowledge, selling skills, customer service, warranties, and cost reduction methods. Successful completion of the class will prepare students for the ASE Automobile Service Consultant (C1) Exam.
Grade Modes: Letter Graded, Credit by exam, license etc., Student Option-Letter/Credit, Pass/No Pass Grading
Field Trips: May be required
Degree Applicability: Applies to Associate Degree
AA/AS GE: None
Transfer Credit: CSU
UC Credit Limitations: None
CSU GE-Breadth: None
IGETC: None

AT R170 Automotive Air Conditioning 3 Units
In-Class Hours: 35 lecture, 52.5 laboratory
Advisories/Rec Prep: AT R110
C-ID: AUTO 170 X
This course provides a comprehensive study of the principles of operation and theory of automotive air conditioning. This course offers a study of design features of each manufacturer to include servicing, troubleshooting, diagnosis and system repair. Students will be given practical skills for servicing, repair, and diagnosis.
Grade Modes: Letter Graded, Credit by exam, license etc.
Field Trips: May be required
Degree Applicability: Applies to Associate Degree
AA/AS GE: None
Transfer Credit: CSU
UC Credit Limitations: None
CSU GE-Breadth: None
IGETC: None

AT R191 Work Experience Education in Automotive Technology 1-14 Units
In-Class Hours: 54-756 paid cooperative
Advisories/Rec Prep: Students should contact the instructor and review the requirements for 3 units of credit
Enrollment Limitations: Instructor approval and completion of or concurrent enrollment in one course within the work experience discipline.
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 with employment.
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: Letter Graded, Student Option- Letter/Credit, Pass/No Pass Grading
Field Trips: May be required
Degree Applicability: Applies to Associate Degree
AA/AS GE: None
Transfer Credit: CSU
UC Credit Limitations: None
CSU GE-Breadth: None
IGETC: None

- Automotive Technology, Associate in Science (http://catalog.vcccd.edu/oxnard/programs-courses/automotive-technology/automotive-technology-as/)
- Automotive Air Conditioning Service, Certificate of Achievement (http://catalog.vcccd.edu/oxnard/programs-courses/automotive-technology/automotive-air-conditioning-service-coa/)
- Automotive Brake Systems, Certificate of Achievement (http://catalog.vcccd.edu/oxnard/programs-courses/automotive-technology/automotive-braking-systems-coa/)
- Automotive Emissions Systems, Certificate of Achievement (http://catalog.vcccd.edu/oxnard/programs-courses/automotive-technology/automotive-emissions-systems-coa/)
- Automotive Engine Performance, Certificate of Achievement (http://catalog.vcccd.edu/oxnard/programs-courses/automotive-technology/automotive-engine-performance-coa/)
- Automotive Service Advising, Certificate of Achievement (http://catalog.vcccd.edu/oxnard/programs-courses/automotive-technology/automotive-service-advising-coa/)
- Automotive Steering and Suspension, Certificate of Achievement (http://catalog.vcccd.edu/oxnard/programs-courses/automotive-technology/automotive-steering-suspension-coa/)
- Automotive Technology, Certificate of Achievement (http://catalog.vcccd.edu/oxnard/programs-courses/automotive-technology/automotive-technology-coa/)
- Automotive Transmission and Driveline Systems, Certificate of Achievement (http://catalog.vcccd.edu/oxnard/programs-courses/automotive-technology/automotive-transmission-driveline-systems-coa/)

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