

# AUTOMOTIVE TECHNOLOGY (AT)

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## AT 101 INTRODUCTION TO BASIC AUTOMOTIVE SERVICE 3 UNITS

Grade Only  
 Fee: \$13  
 Lecture 2 hours, laboratory 4 hours  
 Offered: ALL  
 Introduces basic general automotive tool and shop equipment use, as well as general basic vehicle service procedures. Focuses on classroom instruction providing "how-to" information. Emphasizes hands-on lab activities for student mastery of basic skills. [D; CSU]

## AT 102 AUTOMOTIVE SCIENCE AND BASIC MECHANICS 3 UNITS

Pass/No Pass or Grade is Allowed  
 Fee: \$13  
 Recommended Preparation: AT 101 or equivalent.  
 Lecture 2 hours, laboratory 4 hours  
 Offered: ALL  
 Provides in-depth discussions and understanding of the entire automobile science and technology. Lays the foundation for an educated "diagnostics" approach. Soft skills, customer service, as well as legal aspects of automotive repair will also be addressed. All lab activities will be directly related to classroom topics of discussion. [D; CSU]

## AT 104 AUTOMOTIVE SERVICE CONSULTANT 3 UNITS

Grade Only  
 Lecture 2 hours, laboratory 4 hours  
 Offered: ALL  
 Introduces students to the duties and responsibilities that a service consultant will face at the work place. This course focuses on communication, product knowledge, and shop operations to include service writing programs, parts expediting and technical tools and resources. This Course aligns with ASE C1 Test task list. [ND]

## AT 105 AUTOMOTIVE PARTS SPECIALIST 3 UNITS

Grade Only  
 Lecture 2 hours, laboratory 4 hours  
 Offered: ALL  
 Addresses the aftermarket wholesale and the retail automobile parts industry needs. It focuses on general operations, customer relations and sales skill, vehicle system knowledge, catalog information, inventory management and merchandising. [ND]

## AT 109 AUTOMOTIVE BRAKING SYSTEMS 3 UNITS

Grade Only  
 Fee: \$13  
 Recommended Preparation: AT 101 and AT 102 or equivalent.  
 Lecture 2 hours, laboratory 4 hours  
 Offered: FALL  
 Introduces the theory and principles of brake systems, inspection, and repair. Emphasizes practical experience with drum brakes, disc brakes, power brakes and wheel bearing service, and repair. Prepares students for the California State Brake License and national Automotive Service Excellence (ASE) Exam A5. [D; CSU]

## AT 110 AUTOMOTIVE SUSPENSION, ALIGNMENT, AND STEERING 3 UNITS

Pass/No Pass or Grade is Allowed  
 Fee: \$13  
 Recommended Preparation: AT 101 and AT 102, or equivalent.  
 Lecture 2 hours, laboratory 4 hours  
 Offered: FALL, SPRING  
 Introduces the theory and principles of automotive steering and suspension systems, inspections, and repairs. Emphasizes practical experience with steering, suspension, tires and wheel bearings, inspection, and repair are accomplished using a computerized four-wheel alignment rack. Prepares students for the Automotive Service Excellence (ASE) Test A4. [D; CSU]

## AT 120 ENGINE PERFORMANCE I 3 UNITS

Grade Only  
 Fee: \$13  
 Recommended Preparation: AT 101 and AT 102, or equivalent.  
 Lecture 2 hours, laboratory 4 hours  
 Offered: SPRING  
 Explores engine performance on vehicles in relation to the ignition system function and fuel system delivery. Emphasizes the use of ignition scope and fuel system diagnostic equipment, and covers exhaust out gas analyzer functions. Prepares students for the Automotive Service Excellence Certification Test in Engine Performance (A8). [D; CSU]

## AT 130 AUTOMOTIVE BASIC ELECTRICAL SYSTEMS 3 UNITS

Grade Only  
 Fee: \$16  
 Lecture 2 hours, laboratory 4 hours  
 Offered: SPRING  
 Introduces students to general automotive electrical/electronic diagnostics, battery and starting system diagnostics and repair, and charging system diagnosis and repair. Emphasizes on the understanding of basic electrical theory and application. This Course aligns with ASE A6 Test task list. [D; CSU]

**AT 131  
AUTOMOTIVE HEATING, COOLING, AND AIR CONDITIONING  
3 UNITS**

Grade Only

Fee: \$18

Recommended Preparation: AT 101 and AT 102 or equivalent.

Lecture 2 hours, laboratory 4 hours

Offered: SPRING

Introduces the theory and principles of automotive heating, cooling, and air conditioning systems. Emphasizes practical experience with service, diagnosis, and repair will be accomplished using state-of-the-art equipment. Includes preparation for the Automotive Service Excellence (ASE) Heating and Air Conditioning Test (A7), and Refrigerant Handler Exam and Certification. [D; CSU]

**AT 140  
ENGINE REPAIR  
3 UNITS**

Grade Only

Fee: \$13

Recommended Preparation: AT 101 and AT 102 or equivalent.

Lecture 2 hours, laboratory 4 hours

Offered: SPRING, SUMMER

Introduces the theory and principles of automotive engine system, inspection, and repair. Emphasizes practical experience with engine disassembly and assembly, service, and repair. Prepares students for the Automotive Service Excellence (ASE) Test A1. [D; CSU]

**AT 190  
INTRODUCTION TO HYBRID, ELECTRIC, AND ALTERNATIVE FUEL  
VEHICLES  
1 UNIT**

Pass/No Pass or Grade is Allowed

Prerequisite: AT 130 and AT 230 or equivalent.

Lecture 0.50 hours, laboratory 2 hours

Offered: SPRING

Introduces students to Hybrid, Electric, and Alternative Fueled vehicles. Emphasizes safety, hazards, and basic component identification. [ND; CSU]

**AT 191  
BASIC HYBRID, ELECTRIC, AND ALTERNATIVE FUEL VEHICLE CONCEPTS  
2 UNITS**

Grade Only

Prerequisite: AT 190 or equivalent.

Lecture 1.50 hour, laboratory 2 hours

Offered: SPRING

Focuses on Power Electronics and Battery Systems. Distinguishes differences and similarities of the technology incorporated in Hybrid, Electric, and Alternative Fueled vehicles. [D; CSU]

**AT 192  
INTERMEDIATE HYBRID, ELECTRIC, AND ALTERNATIVE FUEL VEHICLE  
ELECTRONICS  
1 UNIT**

Grade Only

Prerequisite: AT 190 or equivalent; AT 191 or equivalent.

Lecture 0.50 hours, laboratory 2 hours

Offered: ALL

Focuses on DC/DC and AC/AC conversions with Electric Vehicle/Hybrid's for propulsion and support systems. Examines communication protocol between systems using LIN data systems. [D; CSU]

**AT 193  
ADVANCED HYBRID, ELECTRIC, AND ALTERNATIVE FUEL VEHICLE  
CONCEPTS  
2 UNITS**

Grade Only

Prerequisite: AT 190 or equivalent; AT 192 or equivalent.

Lecture 1.50 hour, laboratory 2 hours

Offered: ALL

Emphasizes interlock systems used for redundant protection of high-voltage systems. Close examination of electric automotive drives are involved as well as power down of the system for repairs. [D; CSU]

**AT 220  
ENGINE PERFORMANCE II  
3 UNITS**

Grade Only

Fee: \$13

Recommended Preparation: AT 230, AT 234, and AT 236, or equivalent.

Lecture 2 hours, laboratory 4 hours

Offered: FALL

Covers engine performance and driveability (tune-up) on vehicles with electronic ignition and fuel injection systems. Utilizes computerized diagnostic equipment and four-gas analyzers. Completes preparation for ASE Engine Performance Test (A8). [D; CSU]

**AT 230  
AUTOMOTIVE ADVANCED ELECTRICAL SYSTEMS  
3 UNITS**

Grade Only

Fee: \$13

Recommended Preparation: AT 101 and AT 102, or equivalent.

Prerequisite: AT 130 or equivalent.

Lecture 2 hours, laboratory 4 hours

Offered: FALL, SPRING

Provides an advanced course in automotive electrical and electronic systems. Emphasizes the lighting, instrument cluster, driver information, body electrical system diagnosis and repair. Focuses on the analysis of automotive electronics, and a working knowledge of diagnostic procedures when troubleshooting electronically controlled systems. Includes preparation for the Automotive Service Excellence Exam (A6). [D; CSU]

**AT 234  
AUTOMATIC TRANSMISSIONS AND TRANSAXLES  
3 UNITS**

Grade Only

Fee: \$13

Recommended Preparation: AT 101 and AT 102 or equivalent.

Lecture 2 hours, laboratory 4 hours

Offered: SPRING

Introduces the theory and principles of automatic transmissions and transaxles. Emphasizes practical experience in troubleshooting and rebuilding. Prepares students for the Automotive Service Excellence (ASE) Test (A2). [D; CSU]

**AT 236**  
**MANUAL TRANSMISSION, TRANSAXLES, AND FINAL DRIVES**  
**3 UNITS**

Grade Only

Recommended Preparation: AT 101 and AT 102 or equivalent.

Lecture 2 hours, laboratory 4 hours

Offered: FALL

Explores the theory and principles of manual drive systems. Emphasizes practical experience with clutches, transmissions, drive shafts, final drives, and transaxles. Includes preparation for the Automotive Service Excellence (ASE) Test A3. [D; CSU]

**AT 242**  
**CLEAN AIR CAR**  
**3 UNITS**

Pass/No Pass or Grade is Allowed

Recommended Preparation: AT 120 and AT 220, or equivalent; Students can take this course without the Recommended Preparation, but will not be certified as eligible to take the licensing examination.

Lecture 2 hours, laboratory 4 hours

Offered: FALL

Provides 120-hour minimum instruction required by the State of California and entry-level, upgrading, or advanced training techniques for the automotive field. Uses Bureau of Automotive Repair's curriculum. Prepares students to take the California State Motor Vehicle Pollution Control License Test (I/M Test). [D; CSU]

**AT 247**  
**AUTOMOTIVE EMISSION SYSTEMS AND COMPUTERIZED ENGINE CONTROLS**  
**3 UNITS**

Pass/No Pass or Grade is Allowed

Recommended Preparation: AT 242 or equivalent; or current ASE certification (A-8).

Lecture 2 hours, laboratory 4 hours

Offered: ALL

Prepares students for advanced emission systems diagnosis. Incorporates the Bureau of Automotive Repair (BAR-97), and training courses date (20 hours). Focuses on training in five-gas analysis, Acceleration Simulation Mode (ASM) dynamometer testing, laboratory scope usage, and waveform interpretation, advanced scan tool usage, and On-Board Diagnostics Two (OBD II). [D; CSU]

**AT 290**  
**COOPERATIVE WORK EXPERIENCE IN AUTOMOTIVE TECHNOLOGY I**  
**2-4 UNITS**

Grade Only

Recommended Concurrent Enrollment: Enrollment in one other class directly related to the Automotive Technology major in order to apply learned theory in a practical hands-on setting through an internship class. Limitation on Enrollment: Declared Automotive Technology major.

Laboratory 12 hours

Offered: FALL, SPRING

Introduces principles and skills acquired in the Automotive Technology majors to on-the-job assignments. One unit of credit is granted for every 54 hours of work experience. Credit may be accrued at the rate of 2 to 4 units per semester for a maximum of fourteen units. The job supervisor and instructor will evaluate each student's job performance. [D; CSU]

**AT 291**  
**COOPERATIVE WORK EXPERIENCE IN AUTOMOTIVE TECHNOLOGY II**  
**2-4 UNITS**

Grade Only

Recommended Concurrent Enrollment: Enrollment in one other class directly related to the Automotive Technology major in order to apply learned theory in a practical hands-on setting through an internship class.

Prerequisite: AT 290 or equivalent.

Limitation on Enrollment: Declared Automotive Technology major.

Laboratory 12 hours

Offered: FALL, SPRING

Applies beginning-level principles and skills acquired in the Automotive Technology majors to on-the-job assignments. One unit of credit is granted for every 54 hours of work experience. Credit may be accrued at the rate of 2 to 4 units per semester for a maximum of fourteen units. The job supervisor and instructor will evaluate each student's job performance. [D; CSU]

**AT 292**  
**COOPERATIVE WORK EXPERIENCE IN AUTOMOTIVE TECHNOLOGY III**  
**2-4 UNITS**

Grade Only

Recommended Concurrent Enrollment: Enrollment in one other class directly related to the Automotive Technology major in order to apply learned theory in a practical hands-on setting through an internship class.

Prerequisite: AT 291 or equivalent.

Limitation on Enrollment: Declared Automotive Technology major.

Laboratory 12 hours

Offered: FALL, SPRING

Provides intermediate-level principles and skills acquired in the Automotive Technology majors to on-the-job assignments. One unit of credit is granted for every 54 hours of work experience. Credit may be accrued at the rate of 2 to 4 units per semester for a maximum of fourteen units. The job supervisor and instructor will evaluate each student's job performance. [D; CSU]

**AT 293**  
**COOPERATIVE WORK EXPERIENCE IN AUTOMOTIVE TECHNOLOGY IV**  
**2-4 UNITS**

Grade Only

Recommended Concurrent Enrollment: Enrollment in one other class directly related to the Automotive Technology major in order to apply learned theory in a practical hands-on setting through an internship class.

Prerequisite: AT 292 or equivalent.

Limitation on Enrollment: Declared Automotive Technology major.

Laboratory 12 hours

Offered: FALL, SPRING

Covers advanced-level principles and skills acquired in the Automotive Technology majors to on-the-job assignments. One unit of credit is granted for every 54 hours of work experience. Credit may be accrued at the rate of 2 to 4 units per semester for a maximum of fourteen units. The job supervisor and instructor will evaluate each student's job performance. [D; CSU]

**AT 299**

**INDEPENDENT STUDY**

**1-3 UNITS**

Pass/No Pass or Grade is Allowed

Limitation on Enrollment: Eligibility for independent study.

Lecture 3 hours

Offered: ALL

Individual study or research in some area of automotive technology of particular interest to the student and not included in regular courses of the college. [D; CSU]