AUTOMOTIVE TECHNOLOGY (AUTO)

AUTO-099
Introduction to Automotive Technology **3 UNITS**
3.0 hours lecture
This course presents a basic overview of information about automotive systems. This course serves as a recommended preparation course for students interested in the Automotive Technology major, or for students who want to gain knowledge about vehicle servicing and repair. This course is complemented by AUTO 100L Laboratory where students are able to perform minor inspections, tests, and services to training vehicles using the department laboratory. (CSU)

AUTO-100L
Introduction to Automotive Technology Laboratory **1 UNITS**
3.0 hours laboratory
Basic laboratory environment designed to prepare students for entry into the Automotive Technology major. This course includes repair, service, and basic diagnostic procedures of a typical passenger car or light truck. A student may use the department laboratory to perform hands on tests and repairs, using automotive tools and equipment. AUTO 100L is the lab companion course of AUTO 099 Introduction to Automotive Technology lecture. (CSU)

AUTO-111
Engine Diagnosis and Repair **2 UNITS**
Recommended Preparation: "C" grade or higher or "Pass" in Automotive Technology 162T - Electronics Diagnosis and Repair Assessment Test Out
2.0 hours lecture
This classroom lecture course describes and demonstrates proper operation, disassembly, assembly, repair, and diagnostic techniques for gasoline and diesel engines including the proper timing procedures. The course also includes how to identify and measure critical clearances, and the theory and operation of various combustion engine designs and systems. (CSU)

AUTO-111L
Engine Diagnosis and Repair Laboratory **1 UNITS**
Recommended Preparation: "C" grade or higher or "Pass" in Automotive Technology 162T - Electronics Diagnosis and Repair Assessment Test Out
3.0 hours laboratory
This laboratory course allows a student to practice proper operation, disassembly, assembly, repair, and diagnostic techniques for gasoline and diesel engines including the proper timing procedures. Students will record and demonstrate critical clearance measurements. This course is the lab for students taking AUTO 111 Engine Diagnosis and Repair lecture, and or for students taking work experience and need additional instruction and practice completing required NATEF competencies and tasks. (CSU)

AUTO-111T
Engine Diagnosis and Repair Assessment Test Out **0.5 UNITS**
Recommended Preparation: "C" grade or higher or "Pass" in Automotive Technology 162T - Electronics Diagnosis and Repair Assessment Test Out
1.5 hours laboratory
This assessment course includes summative and repair of engine systems including diesel engines in the department laboratory; or by using distance education technologies such as augmented reality, virtual reality, or mobile technologies. The tests will include engine component systems such as pistons, bearings, camshafts, electronic and mechanical engine control systems, inputs, actuations, or other auxiliary systems. This course allows a student residing distance from training centers to complete certification requirements. This course is complemented by work experience AUTO 111 lecture, and AUTO 111L lab.

AUTO-121
Automatic Transmission Theory and Operation **2 UNITS**
2.0 hours lecture
This lecture course contains information about the theory and operation of automatic transmissions. The course topics include mechanical, hydraulic, and electronic controls of torque distribution. Current computerized control system operation and diagnosis of the drivetrain system will be emphasized. This course is complimented by AUTO 121L Automatic Transmission Theory and Operation Laboratory and AUTO 121T Automatic Transmission Theory and Operation Assessment Test Out. (CSU)

AUTO-121L
Automatic Transmission Theory and Operation Laboratory **1 UNITS**
3.0 hours laboratory
This laboratory course allows a student to practice proper operation, disassembly, and assembly for automatic transmissions. Students will record and demonstrate critical clearance measurements. This course is complimented by AUTO 121 Automatic Transmission Theory and Operation lecture, AUTO 121T Automatic Transmission Theory and Operation Assessment Test Out, and/or for students taking Work Experience who need additional instruction and practice completing required ASE competencies and tasks. (CSU)

AUTO-121T
Automatic Transmission Theory and Operation Assessment Test Out **0.5 UNITS**
Recommended Preparation: "C" grade or higher or "Pass" in AUTO 162T Electronics Diagnosis and Repair Assessment Test Out or equivalent
1.5 hours laboratory
This assessment course includes summative and criterion tests for students to prove knowledge, skills and abilities to perform transmission system repairs, including critical measurements of automatic transmission components using vehicles in the department laboratory; or by using distance education technologies such as augmented reality, virtual reality or mobile technologies. The tests will include drivetrain control systems such as hydraulics, friction clutches, electronic and mechanical transmission control systems, inputs, actuations, or other auxiliary systems. This course allows a student residing at a distance from training centers to complete certification requirements. This course is complemented by AUTO 121 Automatic Transmission Theory and Operation lecture and AUTO 121L Automatic Transmission Theory and Operation laboratory courses.

AUTO-126
Automatic Transmission Diagnosis and Testing **2 UNITS**
2.0 hours lecture
This lecture course provides training about diagnosing automatic transmission concerns. Topics include normal operation, electrical fault diagnosis, diagnosing shift concerns, diagnosing engagement concerns, and the diagnostic process. This course is preparation for ASE certification, and is complimented by AUTO 126L Automatic Transmission Diagnosis and Testing Laboratory, AUTO 126T Automatic Transmission Diagnosis and Testing Assessment Test Out, and/or by work experience. (CSU)

AUTO-126L
Automatic Transmission Diagnosis and Testing Laboratory **1 UNITS**
3.0 hours laboratory
This laboratory course describes and demonstrates proper operation, disassembly, assembly, repair, and diagnostic techniques for various automatic transmission types and designs, including FWD and RWD. The course also includes automatic transmission component diagnosis for electronic, hydraulic and mechanical subsystems. This course is the lab for students taking AUTO 126 Automatic Transmission Diagnosis and Testing lecture, and/or for students taking Work Experience who need additional instruction and practice completing required ASE competencies and tasks. (CSU)

AUTO-126T
Automatic Transmission Diagnosis and Testing Assessment Test Out **0.5 UNITS**
Recommended Preparation: "C" grade or higher or "Pass" in AUTO 121T Automatic Transmission Theory and Operation Assessment Test Out and AUTO 162T Electronics Diagnosis and Repair Assessment Test Out
1.5 hours laboratory
This assessment course includes summative and criterion tests for students to prove knowledge, skills and abilities to perform diagnosis and repair of automatic transmission systems in the department laboratory; or by using distance education technologies such as augmented reality, virtual reality, or mobile technologies. The tests will include automatic transmission component diagnosis for electronic, hydraulic, and mechanical subsystems. This course allows a student residing at a distance from training centers to complete certification requirements. This course is complemented by work experience, AUTO 126 lecture, and AUTO 126L lab.

AUTO-131
Manual Transmission and Transaxle Repair **1 UNITS**
Recommended Preparation: "C" grade or higher or "Pass" in Automotive Technology 162T - Electronics Diagnosis and Repair Assessment Test Out
1.0 hours lecture
This lecture course describes and demonstrates proper operation, disassembly, assembly, repair, and diagnostic techniques for various manual transmission types and designs including electronic shift. The course also includes relationship of torque and coupling using EV electric vehicle motors and traditional clutches. (CSU)

AUTO-131L
Manual Transmission and Transaxle Repair Laboratory **1 UNITS**
Recommended Preparation: "C" grade or higher or "Pass" in Automotive Technology 162T - Electronics Diagnosis and Repair Assessment Test Out
3.0 hours laboratory
This laboratory course describes and demonstrates proper operation, disassembly, assembly, repair, and diagnostic techniques for various manual transmission types and designs including electronic shift. The course also includes relationship of torque and coupling using EV electric vehicle motors and traditional clutches. This course is the lab for students taking AUTO 131 Manual Transmission and Transaxle lecture, and or for students taking work experience and need additional instruction and practice completing required NATEF competencies and tasks. (CSU)

AUTO-131T
Manual Transmission and Transaxle Repair Assessment Test Out **0.5 UNITS**
Recommended Preparation: "C" grade or higher or "Pass" in Automotive Technology 162T - Electronics Diagnosis and Repair Assessment Test out
1.5 hours laboratory
This student portfolio assessment course includes summative and criterion tests using actual transmission repair techniques to allow a student to demonstrate knowledge of proper operation, disassembly, assembly, repair, and diagnostic techniques for various manual transmission types and designs including electronic shift in the department laboratory or by using distance education technologies, live demonstrations, and recordings of work. The assessments will include various tests using transmissions, gears, clutch assemblies, and vehicle symptoms and conditions. This course allows a student residing distance from training centers to complete manufacturers certification requirements. This course compliments AUTO 131L Manual Transmission and Transaxle lab, 131 Lecture, and by work experience classes.

AUTO-132
Differential and 4WD Systems Diagnosis and Service **1 UNITS**
1.0 hours lecture
This lecture course includes a detailed study of modern automotive electronic or manually controlled differential and 4WD systems and service procedures. The course will describe systems inspection, adjustment and repair procedures, including methods of diagnosing and repairing various mechanical and hydraulic drivetrain systems using specified tools and procedures. This course is accompanied by AUTO 132L Differential and 4WD Systems Diagnosis and Service Laboratory, AUTO 132T Assessment Test Out, and Work Experience courses where students will perform specific ASE competencies related to differential and 4WD diagnosis and repair. (CSU)

AUTO-132L
Differential and 4WD Systems Laboratory **1 UNITS**
3.0 hours laboratory
This laboratory course describes and demonstrates proper operation, disassembly, assembly, repair, and diagnostic techniques for various differentials, transfer cases, and axles of standard and 4WD, and all-wheel drive systems types and designs, including electronic shift and hub locking. This course is the lab for students taking courses AUTO 132 Lecture, AUTO 132T Assessment Test Out, and/or for students taking Work Experience who need additional instruction and practice completing required ASE competencies and tasks. (CSU)

AUTO-132T
Differential and 4WD Systems Assessment Test Out **0.5 UNITS**
Recommended Preparation: "C" grade or higher or "Pass" in AUTO 162T Electronics Diagnosis and Repair Assessment Test Out
1.5 hours laboratory
This assessment course includes summative and criterion tests using actual differential and 4WD repair techniques. This course allows a student to demonstrate knowledge of proper operation, disassembly, assembly, repair; and diagnostic techniques for various differentials, axles, 4WD, All-Wheel drive types and designs including electronic controls in the department laboratory or by using distance education technologies, live demonstrations, and recordings of work. The assessments will include various tests using differentials and transfer cases, gears, assemblies, and vehicle symptoms and conditions. This course allows a student residing at a distance from training centers to complete manufacturers certification requirements. This course accompanies AUTO 132L Differential and 4WD Systems Lab, 132 Lecture, and Work Experience classes.

AUTO-143
Steering and Suspension Diagnosis and Repair **1 UNITS**
1.0 hours lecture
This course includes a detailed study of modern suspension systems and service procedures. This course includes inspection, adjustment, and repair procedures for suspension systems, including methods of diagnosing and repairing various mechanical and hydraulic components using specified tools and procedures. Alignments, adjustments, active suspension, and the relationship between suspension and vehicle dynamics, are demonstrated during lectures. This course is complemented by AUTO143L Steering and Suspension Diagnosis and Repair Laboratory, AUTO143T Steering and Suspension Diagnosis and Repair Assessment Test Out, and by Work Experience where students will perform specific ASE competencies related to suspension and steering diagnosis and repair. (CSU)

AUTO-143L
Steering and Suspension Diagnosis and Repair Laboratory **1 UNITS**
3.0 hours laboratory
This laboratory course describes and demonstrates proper operation, disassembly, assembly, repair, and diagnostic techniques for various suspension and steering components. This course is the lab for students taking courses AUTO 143 Steering and Suspension Diagnosis and Repair Lecture, AUTO 143T Steering and Suspension Diagnosis and Repair Assessment Test Out, and/or for students taking Work Experience who need additional instruction and practice completing required ASE competencies and tasks. (CSU)

AUTO-143T
Steering and Suspension Diagnosis and Repair Assessment Test Out **0.5 UNITS**
Recommended Preparation: "C" grade or higher or "Pass" in AUTO 162T Electronics Diagnosis and Repair Assessment Test Out
1.5 hours laboratory
This assessment course includes summative and criterion tests using actual suspension and steering description, diagnosis, and repair. This course allows a student to demonstrate knowledge of proper operation, disassembly, assembly, repair, and diagnostic techniques for various suspension and steering types and designs, including electronic controls in the department laboratory, or by using distance education technologies, live demonstrations, and recordings of work. The assessments will include various tests using vehicles with symptoms and conditions. This course allows a student residing at a distance from training centers to complete ASE certification requirements. This course accompanies AUTO 143L Steering and Suspension Diagnosis and Repair Laboratory, 143 Steering and Suspension Diagnosis and Repair lecture, and Work Experience classes.

AUTO-144
Noise, Vibration, and Harshness **0.5 UNITS**
0.5 hours lecture
This course includes a detailed study of modern Noise, Vibration, and Harshness (NVH) systems and service procedures. This course includes inspection, adjustment, and repair procedures for NVH systems, including methods of diagnosing and repairing various mechanical, electronic, and hydraulic components using specified tools and procedures. This course is complemented by 144L NVH Lab, 144T NVH Assessment Test Out, and Work Experience where students will perform specific ASE competencies related to NVH diagnosis and repair. (CSU)

AUTO-144L
Noise, Vibration, and Harshness Laboratory **1 UNITS**
3.0 hours laboratory
This laboratory course describes and demonstrates proper inspection and diagnostic techniques for various Noise, Vibration, and Harshness (NVH) symptoms and conditions. This course is the lab for students taking courses AUTO 144 Noise, Vibration, and Harshness lecture, AUTO 144T Noise, Vibration, and Harshness Assessment Test Out, and/or for students taking Work Experience. This course assists ASE task completions related to noise and vibration concerns. (CSU)

AUTO-144T
Noise, Vibration, and Harshness Assessment Test Out **0.5 UNITS**
Recommended Preparation: "C" grade or higher or "Pass" in AUTO 161T Electronics Diagnosis and Repair Assessment Test Out
1.5 hours laboratory
This assessment course includes summative and criterion tests using actual noise and vibration concerns, diagnosis, and repair procedures. This course allows a student to demonstrate knowledge of proper diagnostic techniques for various Noise, Vibration, and Harshness (NVH) concerns in the department laboratory or by using distance education technologies, live demonstrations, and recordings of work. The assessments will include various tests using vehicles with symptoms and conditions. This course allows a student residing at a distance from training centers to complete ASE certification requirements. This course compliments AUTO 144L Noise, Vibration, and Harshness Laboratory, 144 Noise, Vibration, and Harshness Lecture, and Work Experience classes.

AUTO-151
Brake System Diagnosis and Repair **2 UNITS**
2.0 hours lecture
This course includes a detailed study of modern automotive braking systems and service procedures. The course will demonstrate drum and disc brake systems inspection, adjustment and repair procedures, including methods of diagnosing and repairing various mechanical and hydraulic brake systems using specified tools and procedures. This course is complemented by AUTO 151L Brake System Laboratory, AUTO 151T Brake System Assessment Test Out, and by Work Experience in the dealership where students will perform specific ASE competencies. (CSU)

AUTO-151L
Brake System Diagnosis and Repair Laboratory **1 UNITS**
3.0 hours laboratory
This laboratory course describes and demonstrates proper inspection and diagnostic techniques for various brake symptoms and conditions. This course is the lab for students taking courses AUTO 151 Brake Diagnosis and Repair Lecture, AUTO 151T Brake Assessment Test Out, and/or for students taking Work Experience who need additional instruction and practice completing required ASE competencies and tasks. (CSU)

AUTO-151T
Brake System Diagnosis and Repair Assessment Test Out **0.5 UNITS**
Recommended Preparation: "C" grade or higher or "Pass" in AUTO 162T Electronics Diagnosis and Repair Assessment Test Out or equivalent
1.5 hours laboratory
This portfolio assessment course includes summative and criterion tests using vehicles with brake system concerns for diagnosis and repair. This course allows a student to demonstrate knowledge of proper diagnostic techniques for various brake component concerns in the department laboratory or by using distance education technologies, live demonstrations, and recordings of work. This course allows a student residing at a distance from training centers to complete ASE certification requirements. This course compliments AUTO 151L Brake Systems Laboratory, AUTO 151 Brake Systems Lecture, and Work Experience classes.

AUTO-153
Advanced Brake System Diagnosis and Repair **2 UNITS**
2.0 hours lecture
This lecture course includes a detailed study of automotive braking systems and service procedures. The course includes electronic braking systems inspection, adjustment and repair procedures, including methods of diagnosing and repairing various electro mechanical and hydraulic brake systems using specified tools and procedures. This course is complemented by AUTO 153L Advanced Brake System Lab, AUTO 153T Advanced Brake Assessment, and by Work Experience courses at the dealership where students will perform specific ASE competencies related to advanced brake diagnosis and repair. (CSU)

AUTO-153L
Advanced Brake System Diagnosis and Repair Laboratory **1 UNITS**
3.0 hours laboratory
This laboratory course describes and demonstrates proper inspection and diagnostic techniques for various electronic brake symptoms and conditions. Electronic braking system components and operation are covered in this course. This course is the lab for students taking courses AUTO 153 Advanced Brake System Diagnosis and Repair Lecture, AUTO 153T Advanced Brake System Assessment Test Out, and/or for students taking Work Experience who need additional instruction and practice completing required ASE competencies and tasks. (CSU)

AUTO-153T
Advanced Brake System Assessment Test Out **0.5 UNITS**
Recommended Preparation: "C" grade or higher or "Pass" in AUTO 162T Electronics Diagnosis and Repair Assessment Test Out and AUTO 151T Brake System Diagnosis and Repair Assessment Test Out or equivalent
1.5 hours laboratory
This portfolio assessment course includes summative and criterion tests for students to prove knowledge, skills, and abilities to perform diagnosis and repair of active brake systems on vehicles in the department laboratory; or by using distance education technologies such as augmented reality or virtual reality. The tests will include recorded and live student demonstrations used for observation and assessment. This course allows a student residing at a distance from training centers to complete certification requirements prior to performing warranty service at a dealership. This course is complemented by AUTO 153 Advanced Brake System Diagnosis and Repair lecture, AUTO 153L Advanced Brake System Lab, and by Work Experience at a dealership.

AUTO-161
Electrical Diagnosis and Repair **2 UNITS**
2.0 hours lecture
This lecture course includes electrical systems theory, diagnosis and repair procedures utilizing state of the art equipment. Systems covered include storage, generating and starting. Accessory systems covered include lighting, power seats, power door locks, cruise controls, electric windows, electronic dashboards, radios, windshield wipers, and introduction to electronic systems such as transistors and electronic computer controls.

AUTO-161L
Electrical Diagnosis and Repair Laboratory **1 UNITS**
3.0 hours laboratory
This laboratory course describes and demonstrates proper operation, repair, and diagnostic techniques for automotive electrical systems. The course also includes the theory of electricity as related to lighting, power seats, power door locks, cruise controls, electric windows, electronic dashboards, radios, windshield wipers and other automotive systems. This course is the lab for students taking AUTO 161 Electrical Diagnosis and Repair lecture, or for students taking work experience who need additional instruction and practice completing required NATEF competencies and tasks. (CSU)

AUTO-161T
Electrical Diagnosis and Repair Assessment Test Out **0.5 UNITS**
Recommended Preparation: "C" grade or higher or "Pass" in AUTO 161L Electrical Diagnosis and Repair Laboratory or equivalent
1.5 hours laboratory
This assessment course includes hands-on summative and criterion tests for students to prove knowledge skills and abilities to perform diagnosis and repair of electrical systems in the department laboratory, or by using distance education technologies such as augmented reality, virtual reality, or mobile technologies. The tests will include electrical systems such as lighting, power seats, power door locks, cruise controls, electric windows, electronic dashboards, radios, windshield wipers, or other systems. This course allows students who reside at a distance from training centers to complete certification requirements. This course is complemented by work experience, AUTO 161 lecture, and AUTO 161L lab.

AUTO-162
Electronics Diagnosis and Repair **2 UNITS**
2.0 hours lecture
This lecture course includes electronic system theory, diagnosis and repair procedures utilizing state of the art equipment. This course applies basic electrical test applications incorporating electronic controls units and computer networks. Covers various vehicle computer functions such as: body electronics, infotainment systems, and electric vehicle and hybrid vehicle system operations. Students will use test equipment to measure sensor outputs used for computer component activation, and study vehicle electronic wiring diagrams in-depth, gaining knowledge, skills and abilities to perform complex tests.

AUTO-162L
Electronics Diagnosis and Repair Laboratory **1 UNITS**
3.0 hours laboratory
This laboratory course describes and demonstrates proper diagnosis and repair of electronics systems of modern vehicles in the department laboratory, or by using distance education technologies such as augmented reality or virtual reality. The course also includes diagnosis of automotive computer modules, inputs and outs. This course is the lab for students taking AUTO 162 Electronics Diagnosis and Repair lecture, and or for students who are taking work experience and who need additional instruction and practice completing required NATEF competencies and tasks. (CSU)

AUTO-162T
Electronics Diagnosis and Repair Assessment Test Out **0.5 UNITS**
Recommended Preparation: "C" grade or higher or "Pass" in AUTO 161T Electrical Diagnosis and Repair Assessment Test Out
1.5 hours laboratory
This assessment course includes summative and criterion tests for students to prove knowledge skills and abilities to perform diagnosis and repair of automotive electronic systems in the department laboratory; or by using distance education technologies such as augmented reality, virtual reality, or mobile technologies. The tests will include electronic component diagnosis and repair using scan tools, digital multi-meters, and lab-scopes. This course allows students who reside at a distance from training centers to complete certification requirements. This course is complemented by work experience, AUTO 162 lecture, and AUTO 162L lab.

AUTO-163T
Ford Electrical and Electronic Supplemental Assessment Test Out **1.5 UNITS**
Prerequisite: Acceptance into Ford ASSET and/or Ford ACE program by faculty approval
Recommended Preparation: Currently co-enrolled or "C" grade or higher or "Pass" in AUTO 161T Electrical Diagnosis and Repair Assessment Test Out and in AUTO 162T Electronics Diagnosis and Repair Assessment Test Out or equivalent
4.5 hours laboratory
This Ford course provides the foundation needed to perform electrical and electronic testing for certified warranty repairs. Topics include electrical and electronic theory and components, using the Digital Multimeter (DMM) and Ford Diagnostic scan tool, navigating the workshop manual and wiring diagrams, and diagnosis and testing of electrical and electronic circuits.

AUTO-171
Climate Control System Diagnosis and Repair **1 UNITS**
1.0 hours lecture
This lecture course demonstrates and describes climate control systems, theory, diagnosis and repair procedures utilizing state of the art equipment. This course applies basic heating and air conditioning test applications incorporating electronic controls units and computer networks. This course covers various vehicle computer functions such as: body electronics, climate control units, and electric vehicle and hybrid vehicle climate system operations. This course is preparation for ASE certification, and complemented by AUTO 171L Climate Control Diagnosis and Repair Lab, AUTO 171T Climate Control Diagnosis and Repair Assessment Test Out, and by Work Experience at the dealership. (CSU)

AUTO-171L
Climate Control System Diagnosis and Repair Laboratory **1 UNITS**
3.0 hours laboratory
This laboratory course describes and demonstrates proper inspection and diagnostic techniques for various electronic climate control symptoms and conditions. This course is the lab for students taking courses AUTO 171 Climate Control System Diagnosis lecture, AUTO 171T Climate Control System Assessment Test Out, and/or for students taking a Work Experience course who need additional instruction and practice completing required ASE competencies and tasks. (CSU)

AUTO-171T
Climate Control System Diagnosis and Repair Assessment Test Out **0.5 UNITS**
Recommended Preparation: "C" grade or higher or "Pass" in AUTO 162T Electronics Diagnosis and Repair Assessment Test Out
1.5 hours laboratory
This portfolio assessment course includes summative and criterion tests for students to prove knowledge, skills, and abilities to perform diagnosis and repair of climate control systems on vehicles in the department laboratory, or by using distance education technologies, such as augmented reality or virtual reality. The tests will include recorded and live student demonstrations used for observation and assessment. This course allows a student residing at a distance from training centers to complete certification requirements prior to performing warranty service at a dealership. This course is complemented by AUTO 171 Climate System Diagnosis lecture, AUTO 171L Climate Diagnosis Lab, and by Work Experience at a dealership.

AUTO-181
Engine Performance I Ignition and Fuel Systems **2 UNITS**
2.0 hours lecture
This lecture course includes an in-depth study of ignition and fuel system engine controls on modern automobiles and trucks, including the diagnosis and repair of these systems. On-board computer logic and strategies of ignition and fuel systems will provide the knowledge needed to describe fundamental engine performance theory and operation. This course is complimented by AUTO 181L Engine Performance I Ignition and Fuel Systems Laboratory, AUTO 181T Engine Performance I Ignition and Fuel Systems Assessment Test Out, and Work Experience courses. (CSU)

AUTO-181L
Engine Performance I Ignition and Fuel Systems Laboratory 1 UNITS
3.0 hours laboratory
This laboratory course demonstrates proper inspection and diagnostic techniques for various engine performance symptoms and conditions, including ignition and fuel systems operations. This course is the laboratory practice opportunity for students taking courses AUTO 181 Engine Performance I Ignition and Fuel Systems lecture, AUTO 181T Engine Performance I Ignition and Fuel Systems Assessment Test Out, and for students taking Work Experience to attain required ASE competencies. (CSU)

AUTO-181T
Engine Performance I Ignition and Fuel Systems Assessment Test Out 0.5 UNITS
Recommended Preparation: "C" grade or higher or "Pass" in AUTO 162T Electronics Diagnosis and Repair Assessment Test Out
1.5 hours laboratory
This assessment course includes summative and criterion tests for students to prove knowledge, skills, and abilities to perform diagnosis and repair of engine performance systems on vehicles in the department laboratory, or by using distance education technologies, such as augmented reality or virtual reality. The tests will include recorded and live student demonstrations used for observation and assessment. This course allows a student residing at a distance from training centers to complete certification requirements. This course is the assessment for AUTO 181 Engine Performance I Ignition and Fuel Systems lecture, AUTO 181L Engine Performance I Ignition and Fuel Systems Laboratory, and Work Experience courses.

AUTO-183
Engine Performance II Intake Exhaust and Emission Systems 2 UNITS
2.0 hours lecture
This lecture course provides the knowledge and skills needed to describe and identify engine performance diagnosis and testing methods of the intake, exhaust, and emission control systems. This course demonstrates diagnostic processes of normally aspirated, forced air systems, exhaust treatment, lambda sensor inputs, and various emission controls. This course is part of a three course series including AUTO 183L Engine Performance II Intake, Exhaust and Emission Systems Laboratory, AUTO 183T Engine Performance II Intake, Exhaust and Emission Systems Assessment Test Out, and Work Experience courses. (CSU)

AUTO-183L
Engine Performance II Intake Exhaust Emission Systems Laboratory 1 UNITS
3.0 hours laboratory
This laboratory course describes and demonstrates proper inspection and diagnostic techniques for various engine performance symptoms and conditions, including intake and exhaust systems operations. This course is the laboratory opportunity for students taking courses AUTO 183 Engine Performance II Intake Exhaust Emission Systems lecture, AUTO 183T Engine Performance II Intake Exhaust Emission Systems Assessment Test Out, and for students taking Work Experience for required ASE competencies. (CSU)

AUTO-183T
Engine Performance II Intake Exhaust Emission Systems Assessment Test Out 0.5 UNITS
Recommended Preparation: "C" grade or higher or "Pass" 162T Electronics Diagnosis and Repair Assessment Test Out or the equivalent
1.5 hours laboratory
This assessment course includes summative and criterion tests for students to prove knowledge, skills, and abilities to perform diagnosis and repair of engine performance systems on vehicles in the department laboratory, or by using distance education technologies such as augmented reality or virtual reality. The tests will include recorded and live student demonstrations used for observation and assessment. This course allows a student residing at a distance from training centers to complete ASE certification requirements. This course is the assessment for AUTO 183 Engine Performance II Intake Exhaust Emission Systems lecture, AUTO 183L Engine Performance II Intake Exhaust Emission Systems Laboratory, and Work Experience courses.

AUTO-194
Diesel Engine Performance and Diagnosis 2 UNITS
2.0 hours lecture
This lecture training course describes and demonstrates diesel engine performance concerns and diagnosis, which includes the use of service publications, diagnostic tests and procedures, as well as special tools and equipment. The information and exercises presented in this course are focused on the common rail diesel engines with electronic fuel injection. This is the lecture course for 194L Diesel Engine Performance and Diagnosis Laboratory and 194T Diesel Engine Performance and Diagnosis Assessment Test Out courses. (CSU)

AUTO-194L
Diesel Engine Performance and Diagnosis Laboratory 1 UNITS
3.0 hours laboratory
This laboratory course describes and demonstrates proper inspection and diagnostic techniques for various diesel engine performance symptoms and conditions, including fuel systems operations. This course is the laboratory practice opportunity for students taking courses AUTO 194 Diesel Engine Performance and Diagnosis lecture, and Diesel Engine Performance and Diagnosis Assessment Test Out, and/or for students taking a Work Experience course who need additional instruction and practice completing required ASE competencies and tasks. (CSU)

AUTO-194T
Diesel Engine Performance and Diagnosis Assessment Test Out 0.5 UNITS
Recommended Preparation: "C" grade or higher or "Pass" in AUTO 162T Electronics Diagnosis and Repair Assessment Test Out or the equivalent
1.5 hours laboratory
This portfolio assessment course includes summative and criterion tests for students to prove knowledge, skills, and abilities to perform diagnosis and repair of diesel engine performance systems on vehicles in the department laboratory, or by using distance education technologies such as augmented reality or virtual reality. The tests will include recorded and live student demonstrations used for observation and assessment. This course allows a student residing at a distance from training centers to complete certification requirements prior to performing warranty service at a dealership. This course is the assessment of AUTO 194 Diesel Engine Performance and Diagnosis lecture, AUTO 194L Diesel Engine Performance and Diagnosis Lab, and is complemented by Work Experience at a dealership.

AUTO-210
Service Management **3 UNITS**
3.0 hours lecture
This lecture course prepares students for management operations of independent Automotive Repair Dealers (ARDs) and/or manufacturer franchise dealerships. This is an in-depth course about service procedures, customer relations, government regulation, licensing, compliance, repair orders, and warranty policies. (CSU)

AUTO-211
Automotive Customer Service **2 UNITS**
2.0 hours lecture
This lecture course prepares students to work in the automotive industry as a service consultant, parts department representative, sales associate, or similar customer service position where communication skills are paramount to customer satisfaction and business success. (CSU)

AUTO-212
Automotive Work Experience **1-4 UNITS**
Students who seek employment in automotive businesses, full-time or part-time, and are able to work specified hours during the semester, are eligible to enroll in this course. Assessment of students will be performed by the instructor using surveys of the mentor and manager, and student self-reflection based on the agreed upon objectives of the course. Work experience compliments classroom curriculum, and is considered essential for student competency. Occupational cooperative work experience credit may accrue at the rate of one to four units per semester for a total of sixteen units, and students must work 75 paid hours or 60 non-paid hours per unit earned. This course may be elected up to five times for a maximum of 16 units. 75 hours paid or 60 hours non-paid work experience per unit, 1-4 units. (CSU)

AUTO-213
ASCCA - Work Experience **1-4 UNITS**
Automotive Service Councils of California (ASCCA) work experience. Students will attain a sponsoring automotive repair business or approved affiliated business at the start of the training program. This course may be paid work experience at the sponsoring Automotive Repair Dealer (ARD). Students work in the area of emphasis that is concurrent with area of training most recently completed at the college, in order to develop skills attained in the ASE content. Occupational cooperative work experience credit may accrue at the rate of one to eight units per semester for a total of twelve - sixteen units, and students must work 75 paid hours per unit earned. Twelve - sixteen units must accrue for graduation or certification. 75 hours paid work experience per unit, 1-4 units. (CSU)

AUTO-214
General Motors ASEP Work Experience **1-4 UNITS**
General Motors ASEP work experience. Students will be placed with a sponsoring dealer at the start of the training program. This course is based on paid work experience at the sponsoring dealership. Assessment of students will be performed by the ASEP coordinator in discussion with appropriate dealership personnel. Students are expected to work in the area of emphasis that is concurrent with area of training most recently completed at the college in order to further develop skills attained in the classroom setting. Occupational cooperative work experience credit may accrue at the rate of one to eight units per semester for a total of sixteen units, and students must work 75 paid hours per unit earned. Must be taken for a total 12-16 units. 75 hours paid work experience per unit, 1-4 units. (CSU)

AUTO-215
Ford ASSET-Work Experience **1-4 UNITS**
Ford ASSET work experience. Students are responsible for attaining sponsoring dealership employment before enrollment in the work experience course. This course is based on paid work experience at the sponsoring Ford dealership. Assessment of students will be performed by the ASSET Instructor with dealership personnel, including the lead technicians, shop foreman, service manager, and through student self-evaluation reflections. Students are expected to work in the content area of diagnosis and repair concurrent with the content area of instruction in order to further develop skills attained in the classroom setting. Ford certifications will not be attained without documentation completed and signed by the student and evaluators in the work experience record book. Each student is required to use a digital portfolio to document competencies and ASE tasks. Occupational cooperative work experience credit may accrue at the rate of one to eight units per semester for a total of twelve - sixteen units, and students must work 75 paid hours per unit earned. 75 hours paid work experience per unit, 1-4 units. (CSU)

AUTO-263
Advanced Electronics **1 UNITS**
1.0 hours lecture
This lecture course will demonstrate and describe how to program software and perform module updates to networked systems. Examples of anti-theft and remote entry with advanced inputs and out-puts may have module related concerns requiring hard fault diagnosis of modules, and networks using integrated scan tools, and tests of network signals using lab scopes for intermittent network concerns. This course is the lecture course accompanying AUTO 263L Advanced Electronics Laboratory, and AUTO 263T Advanced Electronics Assessment Test Out. Work Experience courses at an automotive workplace support competency practice and evaluations critical for student success. (CSU)

AUTO-263L
Advanced Electronics Laboratory **1 UNITS**
3.0 hours laboratory
This laboratory course describes and demonstrates proper inspection and diagnostic techniques for various network symptoms and conditions, including programing and fault symptom processes. This course is the laboratory practice opportunity for students taking courses AUTO 263 Advanced Electronics lecture, AUTO 263T Advanced Electronics Assessment Test Out, and/or for students taking a Work Experience course who need additional instruction and practice completing required ASE competencies and tasks required for certification. (CSU)

AUTO-263T
Advanced Electronics Assessment Test Out **0.5 UNITS**
Prerequisite: "C" grade or higher or "Pass" in AUTO 162T Electronics Diagnosis and Repair Assessment Test Out or the equivalent
1.5 hours laboratory
This portfolio assessment course includes summative and criterion tests for students to prove knowledge, skills, and abilities to perform diagnosis and repair of engine network systems on vehicles in the department laboratory, or by using distance education technologies such as augmented reality or virtual reality. The tests will include recorded and live student demonstrations used for observation and assessment. This course allows a student residing at a distance from training centers to complete certification requirements prior to performing warranty service at a dealership. This course is the assessment of AUTO 263 Advanced Electronics lecture, and AUTO 263L Advanced Electronics Lab. Work Experience at a dealership will ensure a student is prepared to perform network service and repair based on competency evaluation.

AUTO-264
Hybrid and Electric Vehicle Operation and Diagnosis 1 UNITS
Recommended Preparation: "C" grade or higher or "Pass" in AUTO 162T Electronics Diagnosis and Repair Assessment Test out or the equivalent
1.0 hours lecture
This lecture is a manufactures course required for certification of hybrid and electric vehicle (EV) systems for passenger cars and light trucks. The history of battery technologies will apply charging and repair techniques from first generation to present day EVs. EV technologies have evolved rapidly, requiring different methods of service for each new generation and system version. High voltage systems are dangerous. Proper safety procedures for hybrid and EV systems are required and emphasized. This course uses actual hybrids and EVs to perform electrical and electronic diagnosis of various systems. Students must have prerequisite knowledge and skill certifications of automotive electronics prior to enrolling in this course. This course is complemented by AUTO 264L Hybrid and Electric Vehicle Operation and Diagnosis Laboratory and AUTO 264T Hybrid and Electric Vehicle Operation and Diagnosis Assessment Test Out. (CSU)

AUTO-264L
Hybrid and Electric Vehicle Operation and Diagnosis Laboratory 1 UNITS
3.0 hours laboratory
This laboratory course describes and demonstrates proper inspection and diagnostic techniques for various hybrid and electric vehicle symptoms and conditions, including high voltage battery and fault symptom processes. This course is the laboratory practice opportunity for students taking courses AUTO 264 Hybrid and Electric Vehicle Operation and Diagnosis lecture, AUTO 264T Hybrid and Electric Vehicle Operation and Diagnosis Assessment Test Out, and/or for students taking a Work Experience course who need additional instruction and practice completing required ASE competencies and tasks required for certification. (CSU)

AUTO-264T
Hybrid and Electric Vehicle Operation and Diagnosis Assessment Test Out 0.5 UNITS
Prerequisite: "C" grade or higher or "Pass" in AUTO 162T Electronics Diagnosis and Repair Assessment Test Out or the equivalent
1.5 hours laboratory
This portfolio assessment course includes summative and criterion tests for students to prove knowledge, skills, and abilities to perform diagnosis and repair of automotive hybrid and electric vehicle systems in the department laboratory; or by using distance education technologies such as augmented reality, virtual reality, or mobile technologies.
The tests include high voltage electronic component diagnosis and repair using scan tools, digital multi-meters, and lab scopes. This course allows a student residing at a distance from training centers to complete certification requirements. This course is complemented by Work Experience, AUTO 264 Hybrid and Electric Vehicle Operation and Diagnosis lecture, and AUTO 264L Hybrid and Electric Vehicle Operation and Diagnosis Laboratory courses.

AUTO-283
Advanced Engine Performance 1 UNITS
Prerequisite: "C" grade or higher or "Pass" or the equivalent in: AUTO 162T Electronics Diagnosis and Repair Assessment Test Out, and 181T Engine Performance I Ignition and Fuel Systems Assessment Test Out, and 183T Engine Performance II Intake Exhaust Emissions Systems Assessment Test Out
1.0 hours lecture
This lecture course describes and demonstrates proper diagnosis and repair of advanced engine performance systems using diagnostic methods, including programming. Use the scan tool, reference values, mode 6 data, and follow pinpoint tests to diagnose intermittent related DTC's and symptoms. This course is part of a three course series including 283L Advanced Engine Performance Laboratory, 283T Advanced Engine Performance Assessment Test Out, and Work Experience courses. (CSU)

AUTO-283L
Advanced Engine Performance Laboratory 1 UNITS
Prerequisite: "C" grade or higher or "Pass" or the equivalent in: AUTO 162T Electronics Diagnosis and Repair Assessment Test Out, and 181T Engine Performance I Ignition and Fuel Systems Assessment Test Out, and 183T Engine Performance II Intake Exhaust Emission Systems Assessment Test Out
3.0 hours laboratory
This laboratory course describes and demonstrates proper inspection and diagnostic techniques for various advanced engine performance symptoms and conditions, including intermittent problems affecting ignition and fuel systems operations. This course is the laboratory practice opportunity for students taking courses AUTO 283 Advanced Engine Performance lecture, AUTO 283T Advanced Engine Performance Assessment Test Out, and/or for students taking a Work Experience course and need additional instruction and practice completing required ASE competencies. (CSU)

AUTO-283T
Advanced Engine Performance Assessment Test Out 0.5 UNITS
Prerequisite: "C" grade or higher or "Pass" or the equivalent in: AUTO 162T Electronics Diagnosis and Repair Assessment Test Out, and 181T Engine Performance I Ignition and Fuel Systems Assessment Test Out, and 183T Engine Performance II Intake Exhaust Emission Systems Assessment Test Out
1.5 hours laboratory
This assessment course includes summative and criterion tests for students to prove knowledge, skills, and abilities to perform diagnosis and repair of advanced engine performance systems on vehicles in the department laboratory, or by using distance education technologies such as augmented reality or virtual reality. The tests will include recorded and live student demonstrations used for observation and assessment. This course allows a student residing at a distance from training centers to complete ASE certification requirements. This course is the assessment of AUTO 283 Advanced Engine Performance lecture, AUTO 283L Advanced Engine Performance Laboratory, and is complimented by Work Experience courses.

AUTO-284
Level I Inspector Training Emission Control License 2 UNITS
2.0 hours lecture
This lecture course contains the theory of operation and inspection of emission control devices with strong emphasis on federal and state laws and regulations required for licensing and testing of vehicles. This course describes the most current testing devices used for inspection procedures approved by the State of California Bureau of Automotive Repair (BAR). This course prepares students to take the BAR Inspector Only (I.O.) licensing examination. Experienced candidates may skip Level I training if they possess ASE A6, A8, and L1 certification; or have an AA/AS degree or certificate in Automotive Technology and have 1 year experience; or have 2 years of experience and have completed BAR specified diagnostic and repair training. (CSU)

AUTO-284L
Level I Inspector Training Emission Control License Laboratory 1 UNITS
3.0 hours laboratory
This laboratory course describes and demonstrates proper inspection and testing techniques for various emission systems and conditions including, exhaust, evaporative fuel controls, monitors, forced air, and normally aspirated. This course is the laboratory practice opportunity for students taking courses AUTO 284 Level I Inspector Training lecture, AUTO 284T Level I Inspector Training Assessment Test Out, and/or for students taking a Work Experience course at a Smog Inspection Station who need additional instruction and practice completing required ASE competencies and tasks required to properly perform inspections. (CSU)

AUTO-284T
Level I Inspector Training Emission Control License Assessment Test Out 0.5 UNITS
Recommended Preparation: "C" grade or higher or "Pass" in AUTO 162T Electronics Diagnosis and Repair Assessment Test Out, AUTO 181T Engine Performance I Ignition and Fuel Systems Assessment Test Out, and AUTO 183T Engine Performance II Intake, Exhaust and Emission Systems Assessment Test Out
1.5 hours laboratory
This assessment course includes summative and criterion tests for students to prove knowledge, skills, and abilities to perform emission system inspections in the department laboratory, or by using distance education technologies such as augmented reality or virtual reality. The tests will include recorded and live student demonstrations used for observation and assessment. This course allows students residing at a distance from training centers to complete certification requirements prior to performing warranty service at a dealership. This course is the assessment of AUTO 284 Inspector Level I Emissions lecture, AUTO 284L Level I Inspector Emission Training Lab, and complimented by Work Experience at a Smog Inspection Station.

AUTO-285
Level II Inspector Training Emission Control License 1 UNITS
1.0 hours lecture
This lecture class of smog check procedures training must be completed by all Inspector candidates. This training provides students the procedural knowledge skills and abilities to describe and identify emission inspection procedures. This lecture course is part of a three course series: 285 lecture is accompanied by 285 Lab, and 285 Assessment Test Out, required prior to taking the Bureau of Automotive Repair (BAR) Smog Inspector state licensing examination. To pass level II training students must pass a series of hands-on assessments and a written examination. This course is designed for experienced students who possess ASE A6, A8, and L1 certification; or possess an AA/AS degree or Certificate(s) in automotive technology and have 1 year experience; or have 2 years of experience and have completed BAR specified diagnostic and repair training. (CSU)

AUTO-285L
Level II Inspector Training Emission Control License Laboratory 1 UNITS
3.0 hours laboratory
This laboratory course is designed for students with vast engine performance experience and knowledge to perform complete smog inspections on various vehicles and designs. This course is the laboratory practice opportunity for students taking courses AUTO 285 Level II Inspector Training lecture, AUTO 285T Level II Inspector Training Assessment Test Out, and/or for students taking a Work Experience course at a Smog Inspection Station who need additional instruction and practice completing required ASE competencies and tasks required to properly perform inspections. (CSU)

AUTO-285T
Level II Inspector Training Emission Control License Assessment Test Out 0.5 UNITS
Recommended Preparation: "C" grade or higher or "Pass" in AUTO 162T Electronics Diagnosis and Repair Assessment Test Out, AUTO 181T Engine Performance I Ignition and Fuel Systems Assessment Test Out, AUTO 183T Engine Performance II Intake, Exhaust and Emission Systems Assessment Test Out and AUTO 284T Inspector Level I Emissions Control License Training Assessment Test Out
1.5 hours laboratory
This assessment course includes summative and criterion tests for students to prove knowledge, skills, and abilities to perform emission system inspections in the department laboratory, or by using distance education technologies such as augmented reality or virtual reality. The tests include recorded and live student demonstrations used for observation and assessment. This course allows students residing at a distance from training centers to complete certification requirements prior to performing inspections at a Smog Test Station. This course is the assessment of AUTO 285 Inspector Level II Emissions lecture, AUTO 285L Level II Inspector Emission Training Lab, and is complimented by Work Experience at a Smog Inspection Station. This course may be used to satisfy BAR citation requirements.

AUTO-286T
Bar Smog Check Repair Technician Update Training Assessment Test Out **0.5 UNITS**

Recommended Preparation: "C" grade or higher or "Pass" in AUTO 162T Electronics Diagnosis and Repair Assessment Test Out, AUTO 181T Engine Performance I Ignition and Fuel Systems Assessment Test Out, AUTO 182 Engine Performance II Intake, Exhaust, and Emission Systems Assessment Test Out and AUTO 284T Inspector Level I Emissions Control License Training Assessment Test Out
1.5 hours laboratory
This assessment course includes summative and criterion tests for students to prove knowledge skills and abilities to perform emission system diagnosis and repair in the department laboratory, and by using distance education technologies such as augmented reality or virtual reality. This assessment course fulfills BAR licensing update requirements needed every two years for professional development update training. This course allows a student residing distance from training centers to complete certification requirements to update skills, procedures and repairs required at a Smog Test and/or Repair Station. This course compliments industry and college program students by demonstrating the most current diagnosis and repair processes of new systems technologies.