

AUTOMOTIVE (AUTO)

AUTO 100 F Automotive Fundamentals (formerly AUTO 131 F) 4.5 Units

72 hours lecture and 36 hours lab per term. This course emphasizes basic operating principles, nomenclature, preventative maintenance, inspection, and minor repair procedures. Optional field trips may be offered and scheduled during or outside of regularly scheduled class times. (Degree Credit) (CSU)

AUTO 110 F Automotive Engine Rebuilding (formerly AUTO 081 F) 8 Units

Advisory: AUTO 100 F or equivalent work experience.

108 hours lecture and 108 hours lab per term. This course covers operating principles, nomenclature, design, and rebuilding procedures of the automotive engine. Laboratory project emphasis is the procedures of rebuilding an engine while out of the vehicle. Instruction will closely parallel topics addressed on the National Institute of Automotive Service Excellence (ASE) A1 Engine Repair Examination. Optional field trips may be offered and scheduled during or outside of regularly scheduled class times. (Degree Credit) (CSU)

AUTO 111 F Automotive Engine Repair (formerly AUTO 070 F) 7 Units

Advisory: AUTO 110 F or equivalent work experience.

108 hours lecture and 54 hours lab per term. This course covers the operating principles, nomenclature, design, inspection, diagnostic, and mechanical repair procedures of automotive engines. This course offers time management, critical thinking, applied mathematics, applied physics, communication, and lifelong experiences through comprehensive and relevant laboratory projects. Instruction will closely parallel topics addressed on the National Institute of Automotive Service Excellence (ASE) A1 Engine Repair Examination. Optional field trips may be offered and scheduled during or outside of regularly scheduled class times. (Degree Credit) (CSU)

AUTO 112 F Automotive Cylinder Head Repair (formerly AUTO 091 F) 4 Units

Advisory: AUTO 110 F or equivalent work experience.

54 hours lecture and 54 hours lab per term. This course covers operating principles, nomenclature, design and repair procedures of automotive cylinder heads. Emphasis is on cylinder head repair procedures including diagnosis, bench work, removal, and installation. Instruction will closely parallel topics addressed on the National Institute of Automotive Service Excellence (ASE) A1 Engine Repair Examination. Optional field trips may be offered and scheduled during or outside of regularly scheduled class times. (Degree Credit) (CSU)

AUTO 120 F Automatic Transmission Fundamentals (formerly AUTO 086 F) 3 Units

Advisory: AUTO 100 F or equivalent work experience.

36 hours lecture and 54 hours lab per term. This course covers the fundamentals of hydraulic systems, control valves, torque converters, planetary gear sets, clutches, bands, fluids, and filters. Preventative maintenance and diagnostic procedures will be discussed in lecture and laboratory activities with an emphasis on rear wheel drive transmissions. Instruction will closely parallel topics addressed on the National Institute for Automotive Service Excellence (ASE) A2 Automatic Transmission/Transaxle Examination. Optional field trips may be offered and scheduled during or outside of regularly scheduled class times. (Degree Credit) (CSU)

AUTO 121 F Automatic Transmissions (formerly AUTO 084 F) 8 Units

Advisory: AUTO 120 F or equivalent work experience.

108 hours lecture and 108 hours lab per term. This course will review the fundamentals of hydraulic systems, control valves, torque converters, planetary gear sets, clutches, bands, fluids, and filters. After this review of fundamental theory and operation, students will transition to testing, diagnosis, maintenance, and rebuilding of various types of automatic transmissions including electronically controlled transmissions and transaxles. Instruction for this class will closely parallel topics addressed on the National Institute for Automotive Service Excellence (ASE) A2 Automatic Transmission/Transaxle Examination. Optional field trips may be offered and scheduled during or outside of regularly scheduled class times. (Degree Credit) (CSU)

AUTO 130 F Automotive Powertrains (formerly AUTO 060 F) 5 Units

Advisory: AUTO 100 F or equivalent work experience.

72 hours lecture and 72 hours lab per term. This course covers the repair of rear wheel drive (RWD) manual transmissions, front wheel drive (FWD) manual transmissions, clutches, transfer cases, and differentials. Instructional emphasis is placed on the principles, theory, and operation of gears, bearings, drive lines, universal joints, CV joints, drive train electrical/electronic systems, and rear axles. The student will be assigned and perform hands-on lab repair projects. Instruction will closely parallel topics addressed on the National Institute for Automotive Service Excellence (ASE) A3 Manual Drive Train and Axles Examination. Optional field trips may be offered and scheduled during or outside of regularly scheduled class times. (Degree Credit) (CSU)

AUTO 140 F Automotive Suspension and Wheel Alignment (formerly AUTO 083 F) 8 Units

Advisory: AUTO 150 F or equivalent work experience.

108 hours lecture and 108 hours lab per term. This course covers the operation, nomenclature, adjustment, and repair procedures of automotive suspension systems, steering systems, and wheel alignment. Instruction will closely parallel topics addressed on the National Institute for Automotive Service Excellence (ASE) A4 Suspension & Steering Examination. Optional field trips may be offered and scheduled during or outside of regularly scheduled class times. (Degree Credit) (CSU)

AUTO 150 F Automotive Brake Systems (formerly AUTO 073 F) 7 Units

Advisory: AUTO 100 F or equivalent work experience.

108 hours lecture and 54 hours lab per term. This course covers the operation, nomenclature, diagnosis, adjustment, and repair procedures of automotive brake systems including electronically controlled anti-lock braking systems. Instruction will closely parallel topics addressed on the National Institute for Automotive Service Excellence (ASE) A5 Brakes Examination. Optional field trips may be offered and scheduled during or outside of regularly scheduled class times. (Degree Credit) (CSU)

AUTO 160 F Automotive Electrical and Electronic Systems (formerly AUTO 065 F) 5 Units

Advisory: AUTO 100 F or equivalent work experience.

72 hours lecture and 72 hours lab per term. This is an introductory course in the theory of electrical systems and electronic control of the modern automobile. This course covers basic electrical and electronic concepts, batteries, starting and charging systems, body computer systems, passive restraint systems, and diagnostic strategies. Instruction for this class will closely parallel topics addressed on the National Institute for Automotive Service Excellence (ASE) A6 Electrical/Electronic Systems Examination. Optional field trips may be offered and scheduled during or outside of regularly scheduled class times. (Degree Credit) (CSU)

AUTO 170 F Automotive Heating and Air Conditioning (formerly AUTO 089 F) 4 Units**Advisory:** AUTO 100 F or equivalent work experience.

54 hours lecture and 54 hours lab per term. This course covers the theory and principles of automotive air conditioning including service, maintenance, diagnosis, and repair. Students will be given the opportunity to earn the MACS 609 Certification through proctored examination. Topics addressed on the National Institute for Automotive Service Excellence (ASE) A7 Heating & Air Conditioning Examination will be emphasized. Optional field trips may be offered and scheduled during or outside of regularly scheduled class times. (Degree Credit) (CSU)

AUTO 180 F Automotive Engine Performance and Drivability (formerly AUTO 082 F) 8 Units**Advisory:** AUTO 100 F or AUTO 160 F or equivalent work experience.

108 hours lecture and 108 hours lab per term. This course covers the operation, design, diagnosis, and repair of computerized engine management systems. Systems covered include induction, exhaust, input sensors, fuel delivery, fuel injection, ignition, and on-board diagnostics (OBD-II). Diagnostic strategies utilizing scan tools and lab scopes will be covered. Instruction will closely parallel topics addressed on the National Institute for Automotive Excellence (ASE) A8 Engine Performance Examination. Optional field trips may be offered and scheduled during or outside of regularly scheduled class times. (CSU) (Degree Credit)

AUTO 181 F Automotive Fuel Systems and Advanced Drivability Diagnosis (formerly AUTO 088 F) 4 Units**Advisory:** AUTO 180 F or equivalent work experience.

54 hours lecture and 54 hours lab per term. This course covers the theory and principles of carburetors, electrical systems, ignition systems, fuel injection systems, engine powertrain control systems, and the inspection and repair of automotive emission control systems. Modern diagnostic equipment including the exhaust gas analyzer, digital meters, scan tools, and digital storage oscilloscopes will be used in lab sessions. This course helps to prepare a student for The State of California Smog Check Inspector License Examination and for the National Institute for Automotive Service Excellence (ASE) A8 Engine Performance and L1 Advanced Engine Performance Specialist Certification tests. Optional field trips may be offered and scheduled during or outside of regularly scheduled class times. (Degree Credit) (CSU)

AUTO 182 F Automotive Emission Control Systems and Advanced Diagnosis (formerly AUTO 090 F) 6 Units**Advisory:** AUTO 181 F or equivalent work experience

90 hours lecture and 54 hours lab per term. This course covers the theory and principles of automotive ignition systems, electrical systems, emission control systems, fuel injection systems, and California Smog Inspection Procedures. Instructional emphasis is on information needed to prepare for The State of California Smog Check Inspector and/or Smog Check Repair Technician License Examinations and the National Institute for Automotive Service Excellence (ASE) A8 Engine Performance and L1 Advanced Engine Performance Specialist Certification tests. Diagnostic equipment including the exhaust gas analyzer, scan tools, digital meters, and engine oscilloscopes will be used in laboratory sessions. Optional field trips may be offered and scheduled during or outside of regularly scheduled class times. (Degree Credit) (CSU)

AUTO 195 F Automotive Specialty Practice (formerly AUTO 050 F) 2 Units

Corequisite(s): AUTO 100 F or AUTO 110 F or AUTO 111 F or AUTO 112 F or AUTO 120 F or AUTO 121 F or AUTO 130 F or AUTO 140 F or AUTO 150 F or AUTO 160 F or AUTO 170 F or AUTO 180 F or AUTO 181 F or AUTO 182 F or AUTO 196 F or AUTO 197 F, with a grade of C or better. 18 hours lecture and 72 hours lab per term. In this course, emphasis is placed on the development and reinforcement of automotive repair skills in the area of student interest and advanced level of study. Lectures cover automotive repair procedures, service department operation, organization, support staff, repair documentation, technician certification, and customer satisfaction. Topics addressed on the National Institute for Automotive Service Excellence (ASE) G1 Auto Maintenance and Light Repair Examination will be emphasized. Optional field trips may be offered and scheduled during or outside of regularly scheduled class times. (Degree Credit) (CSU)

AUTO 196 F Automotive Internship (formerly AUTO 051 F) 2-4 Units**Prerequisite(s):** Completion of at least two of the following courses

AUTO 100 F or AUTO 110 F or AUTO 111 F or AUTO 112 F or AUTO 120 F or AUTO 121 F or AUTO 130 F or AUTO 140 F or AUTO 150 F or AUTO 160 F or AUTO 170 F or AUTO 180 F or AUTO 181 F or AUTO 182 F or AUTO 195 F or AUTO 197 F, with a grade of C or better.

18 hours lecture and 60-180 hours of unpaid internship or 75-225 hours of paid internship per semester term in an automotive dealership or other automotive related facility. This course requires supervised work experience each week to earn units above the one unit of classroom lecture. The supervised work experience is at an automotive repair facility or related automotive business and subject to NOCCCD Board of Trustee approval. This course is designed to provide learning opportunities and earned college units through internship hours in the Career Education field of Automotive Technology. No more than four units total (lecture and internship) may be applied toward the degree or certificate. Optional field trips may be offered and scheduled during or outside of regularly scheduled class times. (Degree Credit) (CSU)

AUTO 197 F Automotive Service Management (formerly AUTO 055 F) 3 Units**Advisory:** AUTO 100 F or equivalent work experience.

36 hours lecture and 54 hours lab per term. This course covers the automotive service management operations associated with an automotive business and dealership. Instruction focuses on the repair order as a legal document, appointment systems, telephone skills, warranties, communication strategies, product knowledge, selling skills, proactive customer handling, and multiple ways to reduce costs and improve profits. Instruction will closely parallel topics addressed on the National Institute for Automotive Excellence (ASE) C1 Automobile Service Consultant Examination. Optional field trips may be offered and scheduled during or outside of regularly scheduled class times. (Degree Credit) (CSU)