AUTOMOTIVE (AUT)

AUT 100 Intro. to Automotive Shop Practices (2 CR.)
Prerequisite or corequisite for all automotive courses. Introduces shop practices for automotive laboratory and shop safety, identification and use of hand tools, general power equipment, and maintenance of automotive shop. Explains basic operation procedures of standard shop equipment. Presents Occupational Safety and Health Act standards pertaining to the automotive field. Lecture 2 hours per week.
Credit for Prior Learning available for this course. More information at https://www.nvcc.edu/admissions/cpl.html.

AUT 111 Automotive Engines I (4 CR.)
Presents analysis of power, cylinder condition, valves, and bearings in the automotive engine to establish the present condition, repairs, or adjustments. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.
Credit for Prior Learning available for this course. More information at https://www.nvcc.edu/admissions/cpl.html.

AUT 112 Automotive Engines II (4 CR.)
Presents analysis of power, cylinder condition, valves, and bearings in the automotive engine to establish the present condition, repairs, or adjustments. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.
Prerequisite(s) AUT 111

AUT 121 Automotive Fuel Systems I (4 CR.)
Analyzes major domestic and foreign automotive fuel systems to include carburetors and fuel injection systems. Includes detailed inspection and discussion of fuel tanks, connecting lines, instruments, filters, fuel pumps, superchargers, and turbo charger. Also includes complete diagnosis, troubleshooting, overhaul, and factory adjustment procedures of all major carbureted and fuel injection systems. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

AUT 122 Automotive Fuel Systems II (4 CR.)
Analyzes major domestic and foreign automotive fuel systems to include carburetors and fuel injection systems. Includes detailed inspection and discussion of fuel tanks, connecting lines, instruments, filters, fuel pumps, superchargers, and turbo charger. Also includes complete diagnosis, troubleshooting, overhaul, and factory adjustment procedures of all major carbureted and fuel injection systems. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.
Prerequisite(s) AUT 121

AUT 136 Automotive Vehicle Inspection (2 CR.)
Presents information on methods for performing automotive vehicle safety inspection. Lecture 1 hour. Laboratory 2 hours. Total 3 hours per week.
Credit for Prior Learning available for this course. More information at https://www.nvcc.edu/admissions/cpl.html.

AUT 141 Auto Power Trains I (4 CR.)
Presents operation, design, construction, and repair of power train components, standard and automatic transmission. Includes clutches, propeller shaft, universal joints, rear axle assemblies, fluid couplings, torque converters, as well as 2-, 3-, and 4-speed standard, overdrive and automatic transmissions. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

AUT 142 Auto Power Trains II (4 CR.)
Presents operation, design, construction, and repair of power train components, standard and automatic transmission. Includes clutches, propeller shaft, universal joints, rear axle assemblies, fluid couplings, torque converters, as well as 2-, 3-, and 4-speed standard, overdrive and automatic transmissions. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

AUT 197 Cooperative Education (1-5 CR.)
Cooperative Education

AUT 215 Emissions Systems Diagnosis & Repair (2 CR.)
Presents logical diagnostic paths to identify vehicle HC-CO, O2, and NOx failure areas. Teaches a progression of failure detection from most likely to more complex causes. Emphasizes use of infrared analyzer and manufacturer's specified adjustments. Lecture 2 hours per week.
Prerequisite(s) AUT 111 or AUT 241 or program approval

AUT 225 Automotive Emissions Inspection (1 CR.)
Provides training for certified inspectors in the Virginia State Emissions Inspection Program. Emphasizes current legislation and inspection techniques using industry standard emission analyzers. Lecture 1 hour per week.

AUT 226 Advanced ASM Emissions Diagnostics (2 CR.)
Presents logical diagnostic strategies to identify and correct vehicle HC, CO, and NOx emissions failures. Specifically addresses the technologies and techniques required for successful diagnosis and repair of vehicles failing Acceleration Simulation Mode (ASM) and Two-Speed Idle Mode Tests. Current ASM diagnostic equipment will be introduced, discussed, and usage demonstrated. Lecture 2 hours per week. May be repeated as needed.

AUT 233 Hybrid Electric Vehicle Technology (4 CR.)
Presents technologies used in hybrid electrical vehicles (HEV), includes safety, theory, diagnosis, and component replacement. Covers automotive electronics; theory, operation and testing. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.
Prerequisite(s) AUT 242

AUT 236 Automotive Climate Control (4 CR.)
Introduces principles of refrigeration, air conditioning controls, and adjustment and general servicing of automotive air conditioning systems. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.
Prerequisite(s) AUT 241

AUT 241 Automotive Electricity I (4 CR.)
Introduces electricity and magnetism, symbols and circuitry as applied to the alternators, regulators, starters, lighting systems, instruments, gauges, and accessories. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.
Credit for Prior Learning available for this course. More information at https://www.nvcc.edu/admissions/cpl.html.

AUT 242 Automotive Electricity II (4 CR.)
Introduces electricity and magnetism, symbols and circuitry as applied to the alternators, regulators, starters, lighting systems, instruments, gauges, and accessories. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.
Prerequisite(s) AUT 241
Credit for Prior Learning available for this course. More information at https://www.nvcc.edu/admissions/cpl.html.

AUT 245 Automotive Electronics (4 CR.)
Introduces field of electronics as it applies to the modern automobile. Emphasizes basic circuit operation, diagnosis and repair of digital indicator and warning systems. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.
Prerequisite(s) AUT 242
Credit for Prior Learning available for this course. More information at https://www.nvcc.edu/admissions/cpl.html.

AUT 265 Automotive Braking Systems (4 CR.)
Presents operation, design, construction, repair, and servicing of braking system, including Anti-Lock Brake Systems (ABS). Explains uses of tools and test equipment, evaluation of test results, estimation of repair cost for power, standard and disc brakes. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

AUT 266 Auto Alignment, Suspension & Steering (4 CR.)
Introduces use of alignment equipment in diagnosing, adjusting, and repairing front and rear suspensions. Deals with repair and servicing of power and standard steering systems. Lecture 2 hours. Laboratory 6 hours. Total 8 hours per week.

AUT 297 Cooperative Education (1-5 CR.)
Supervised on-the-job training for pay in approved business and government organizations. Applicable to all curricula at the discretion of the College. See eligibility requirements on page 39. Credit/work ratio not to exceed 1:5 hrs. May be repeated for credit. Variable hrs.