BRIDGERLAND TECHNICAL COLLEGE
btech.edu

Automotive Service II 2018
Course Descriptions

AUTO 2110 **Advanced Electrical/Electronics** **120 Clock Hours**

This course covers the electrical system used in the modern automobile. The training covers electrical theory including ohm's law and hands on application of that theory. Students will receive detailed training on onboard electronic control computers and their associated systems, lighting, starting/charging systems, and general electrical systems and accessories. Students will learn the use of specialized test equipment such as digital multimeter and a lab scope.

Objectives:

•Demonstrate safe working habits and handling of hazardous materials.
•Diagnose and repair general electrical problems.
•Diagnose and repair onboard computer controls.
•Diagnose battery, starting and charging systems.
•Utilize wiring diagrams.
•Demonstrate knowledge of lighting systems diagnosis and repair.
Demonstrate electrical accessory and warning systems repair.

AUTO 2120 **Advanced Engine Performance** **120 Clock Hours**

This course covers general engine diagnosis along with tune-up and drivability repair. The ignition system, fuel system, and emission systems will be covered in detail. Use of scan tools and lab scopes for diagnosis of engine control computers and related systems will also be covered.

Objectives:

•Demonstrate safe working habits and handling of hazardous materials.
•Perform general engine evaluation.
•Diagnose computerized engine controls on OBDII systems.
•Perform ignition system diagnosis and repair.
•Perform fuel, air induction, and exhaust systems diagnosis and repair.
•Diagnose emission control devices and system repair.
•Perform engine tune-up along with necessary mechanical adjustments.

AUTO 2130 **Advanced Engine Repair** **60 Clock Hours**

This course covers the diagnosis and repair of the automotive gas engine mechanical systems and components. Students will learn how to diagnose and repair short block and cylinder heads, valve trains, and timing mechanisms. Students will also learn how to perform a complete engine replacement.

Objectives:

•Demonstrate safe working habits and handling of hazardous materials.
•Perform general engine diagnosis.
•Perform engine removal and reinstallation.
•Perform cylinder head and valve train diagnosis and repair.
•Demonstrate engine short block diagnosis and repair.
•Demonstrate lubrication and cooling system diagnosis and repair.

AUTO 2140 **Advanced Steering & Suspension** **60 Clock Hours**

This course covers the suspension and steering systems which include shock absorbers, tie rods, ball joints, tires, McPherson struts, along with conventional steering boxes and rack and pinion steering systems.

Objectives:

•Demonstrate safe working habits and handling of hazardous materials.
•Perform steering system diagnosis and repair.
•Perform suspension system diagnosis and repair.
•Learn wheel alignment theory, adjustment, and repair.
•Perform wheel and tire diagnosis and repair.

AUTO 2150 **Advanced Brakes** **60 Clock Hours**

This course covers the theory of brake operation and repair of mechanical and hydraulic portions of the brake system. Also covered is the diagnosis and repair of the electronic controls used in anti-lock brake systems.

Objectives:

•Demonstrate safe working habits and handling of hazardous materials.
•Perform hydraulic system diagnosis and repair.
•Perform drum and disc brake diagnosis and repair. .
•Diagnose and repair power assist units.
•Demonstrate wheel bearing service.
•Diagnose and repair anti-lock brake systems.

AUTO 2160 **Advanced Manual Drive Train & Axle** **60 Clock Hours**

This course covers operation and repair of manual shift transmissions and transaxles. Clutches, drive axles, u-joints, and CV axles are also covered.

Objectives:

•Demonstrate safe working habits and handling of hazardous materials.
•Perform clutch diagnosis and repair.
•Diagnose and repair hydraulic system operation.
•Perform transmission/transaxle diagnosis and repair.
•Perform drive shaft, universal and Constant Velocity (CV) joint diagnosis and repair.
•Perform drive axle and differential diagnosis and repair.
•Diagnose and repair four wheel drive/All wheel drive component.

AUTO 2170 **Advanced Automatic Transmissions** **60 Clock Hours**

This course covers the automatic transmission and transaxles used in today's cars and light trucks. Students will learn to diagnose and repair mechanical and hydraulic systems along with computer controls.

Objectives:

•Demonstrate safe working habits and handling of hazardous materials.
•Perform general transmission and transaxle diagnosis.
•Perform transmission and transaxle maintenance and adjustment.
•Perform transmission and transaxle on-vehicle repair.
•Demonstrate proper off-vehicle transmission and transaxle repair.

AUTO 2180 **HVAC** **60 Clock Hours**

This course covers the theory, operation, and diagnosis of the modern climate control system. Topics covered include compressors, system controls, and recycling of refrigerant gases.

Objectives:

•Demonstrate safe working habits and handling and recovery of refrigerant gases.
•Diagnose and repair A/C system.
•Demonstrate refrigeration system component diagnosis and repair.
•Perform heating, ventilation, and engine cooling systems diagnosis and repair.
•Diagnose and repair operating systems and related controls.
•Demonstrate proper refrigerant recovery, recycling, and handling.