

ADVANCED TRANSPORTATION

Associate in Science Degrees

- Advanced Transportation Technology - Associate in Science (<https://lbcc-public.courseleaf.com/degrees-certificates/advanced-transportation/advanced-transportation-technology-as/>)

Certificates of Achievement

- Advanced Transportation Technology - Certificate of Achievement (<https://lbcc-public.courseleaf.com/degrees-certificates/advanced-transportation/advanced-transportation-technology-certificate-achievement/>)
- Alternative Fuel Vehicles - Certificate of Achievement (<https://lbcc-public.courseleaf.com/degrees-certificates/advanced-transportation/alternative-fuel-vehicles-certificate-achievement/>)
- Electric & Hybrid Vehicles - Certificate of Achievement (<https://lbcc-public.courseleaf.com/degrees-certificates/advanced-transportation/electric-hybrid-vehicles-certificate-achievement/>)

AUTO 200 (C-ID AUTO 110 X) 3 units

Introduction to Automotive Technology

36 hours lecture, 54 hours laboratory

Grading: letter grade or pass/no pass.

Formerly AMECH 421. This course is an introductory course covering the principles of the operation of the modern automobile. This course will provide practical experience in maintenance and repair at the owner operator level. Consumer awareness is emphasized.

AUTO 201 1 units

Automotive Lubrication Service

18 hours lecture, 18 hours laboratory

Grading: letter grade or pass/no pass.

Formerly AMECH 801, ATT 801. This course prepares students with skills needed for performing oil changes, lubrication, under hood services and vehicle inspections.

AUTO 202 1 units

Automotive Tire Service

18 hours lecture, 18 hours laboratory

Grading: letter grade or pass/no pass.

Formerly AMECH 802, ATT 802. This course prepares students with skills needed for doing tires rotation, repair, replacement, balancing and vehicle inspections.

AUTO 203 1 units

Automotive Brake Inspection

18 hours lecture, 18 hours laboratory

Grading: letter grade or pass/no pass.

Formerly AMECH 803, ATT 803. This course prepares students with the skills needed to do basic Service Brake Inspection, brake pads replacement, and vehicle inspection.

AUTO 211 3 units

Automotive Engine Repair

36 hours lecture, 54 hours laboratory

Recommended Preparation: AUTO 200.

Grading: letter grade or pass/no pass.

Formerly AMECH 434, AMECH 461. This course teaches the students the skills needed to diagnose, service and repair late model engines and related systems. It focuses on all makes and models of gasoline engines with emphasis on using factory service manuals. It prepares the students to take the national A-1 Auto Engine Repair test which is part of the (ASE) Auto Service Excellence program that reflects industry standards.

AUTO 212 (C-ID AUTO 120 X) 3 units

Automotive Automatic Transmission

36 hours lecture, 54 hours laboratory

Recommended Preparation: AUTO 200.

Grading: letter grade or pass/no pass.

Formerly AMECH 436. This course covers the construction, operation, maintenance, adjustment, service and diagnostic of automatic transmissions and trans-axles. It prepares the students to take the national A-2 Automatic Transmissions and Trans-axles test which is part of the (ASE) Auto Service Excellence program which reflects industry standards.

AUTO 213 (C-ID AUTO 130 X) 3 units

Automotive Manual Transmission

36 hours lecture, 54 hours laboratory

Recommended Preparation: AUTO 200 or high school auto.

Grading: letter grade or pass/no pass.

This course covers the construction, operation, maintenance, adjustment, service and diagnostic of manual drive trains and axles. It prepares the students to take the national A-3 Manual Drive Trains and Axles test which is part of the (ASE) Auto Service Excellence program which reflects industry standards.

AUTO 214 (C-ID AUTO 140 X) 3 units

Automotive Wheel Alignment

36 hours lecture, 54 hours laboratory

Recommended Preparation: AUTO 200.

Grading: letter grade or pass/no pass.

Formerly AMECH 430. This course covers automotive wheel alignment theory, design, operation, power flow, suspension and steering in automotive vehicle and small truck. It prepares the students to take the national A-4 automotive suspension and steering test which is part of the (ASE) Auto Service Excellence program which reflects industry standards.

AUTO 215 (C-ID AUTO 150 X) 3 units

Automotive Brake Systems

36 hours lecture, 54 hours laboratory

Recommended Preparation: AUTO 200.

Grading: letter grade or pass/no pass.

Formerly AMECH 432. This course covers automotive brake theory, design, and operation of standard drum, disc and anti-lock brake systems common to most automotive vehicle and small truck. It prepares the students to take the national A-5 automotive brake test which is part of the (ASE) Auto Service Excellence program which reflects industry standards.

AUTO 216 3 units**Automotive Electrical Systems****36 hours lecture, 54 hours laboratory**

Recommended Preparation: AUTO 200.

Grading: letter grade or pass/no pass.

Formerly AMECH 444. This course covers theory and components of automotive electrical systems, and operation of automotive electrical. It prepares the students to take the national A-6 Automatic Electrical test which is part of the (ASE) Auto Service Excellence program which reflects industry standards.

AUTO 217 (C-ID AUTO 170 X) 3 units**Automotive Air Conditioning****36 hours lecture, 54 hours laboratory**

Recommended Preparation: AUTO 200.

Grading: letter grade or pass/no pass.

Formerly AMECH 424. This course covers automotive tools, automotive equipment, automotive refrigeration fundamentals, automotive electrical systems, automotive air distribution, automatic air conditioning, installation, maintenance, and repair of modern automotive air conditioning systems. Emphasis is based on industrial repair and maintenance. It prepares the students to take the national A-7 automotive air conditioning test which is part of the (ASE) Auto Service Excellence program which reflects industry standards.

AUTO 218 3 units**Automotive Fuel Systems****36 hours lecture, 54 hours laboratory**

Recommended Preparation: AUTO 200.

Grading: letter grade or pass/no pass.

Formerly AMECH 442. This course covers theory and components of automotive fuel systems, and operation of automotive fuel system. It prepares the students to take the national A-8 Automotive fuel system test which is part of the (ASE) Auto Service Excellence program which reflects industry standards.

AUTO 219 3 units**Automotive Light Diesel Engines****36 hours lecture, 54 hours laboratory**

Recommended Preparation: AUTO 200 or high school auto.

Grading: letter grade or pass/no pass.

This course covers the theory and components of automotive diesel technology. It prepares students to take the national A-9 Automotive Diesel Technology test which is part of the (ASE) Auto Service Excellence program which reflects industry standards.

AUTO 220 3 units**Automotive Emission Controls****36 hours lecture, 54 hours laboratory**

Recommended Preparation: AUTO 200.

Grading: letter grade or pass/no pass.

Formerly AMECH 438. This course covers the testing and repair of automotive emission control systems and operation of automotive computers scanner testing and oscilloscopes for (Conventional and computer assisted purposes). Prepare students to take the ASE (Automotive Service Excellence) test. This course will also explain electrical and fuel systems on Diesel, Hybrid, LNG (Liquid Natural Gas), CNG (Compressed Natural Gas) and Hydrogen Fuel cells.

AUTO 230 3 units**Automotive Computer Systems****36 hours lecture, 54 hours laboratory**

Recommended Preparation: AUTO 200.

Grading: letter grade or pass/no pass.

Formerly AMECH 440. This course covers theory and components of automotive computer control system operation and testing of computer controlled oxygen feedback system. It prepares the students to take the national (ASE) Auto Service Excellence program which reflects industry standards.

AUTO 270 (C-ID ALTF 100X) 3 units**Intro to Hybrid and Electric Vehicles****36 hours lecture, 54 hours laboratory**

Recommended Preparation: AUTO 200.

Grading: letter grade or pass/no pass.

Formerly ATT 480 and AMECH 480. This course provides a broad introduction to Hybrid, Fuel Cell, and Electric Vehicles. Discover how emerging vehicle technologies are finding solutions for existing fossil fueled engines. Examine existing vehicle technologies and peek into future technologies.

AUTO 271 3 units**Introduction to Alternative Fuel Systems****36 hours lecture, 54 hours laboratory**

Recommended Preparation: AUTO 200.

Grading: letter grade or pass/no pass.

Formerly AMECH 490 and ATT 490. Alternative fueled vehicles are extensively used in fleet service. This course covers the theory of operation, installation, testing, trouble-shooting, and repair of gaseous fuels with a focus on Compressed Natural Gas (CNG) as well as an introduction to Liquefied Natural Gas (LNG). This course discusses both dedicated and after-market systems. Gasoline and diesel powered vehicles are discussed with an emphasis on computer-controlled fuel injection. Components are heavily discussed in this course to include everything from storage up to the injector(s). Successful completion of this course will prepare students for the CNG Inspector's Certification.

AUTO 280 3 units**Light Duty Electric Vehicles****36 hours lecture, 54 hours laboratory**

Recommended Preparation: AUTO 200.

Grading: letter grade or pass/no pass.

Formerly ATT 482. This course focuses on light-duty passenger electric vehicles (EVs). It provides a practical introduction to advanced EV designs and propulsion systems. The course includes: EV design and construction; the testing, assembly, operation, and maintenance of EVs; the influence of aerodynamic design; advanced technology batteries, super-capacitors, intelligent charging systems; hydrogen fuel cell technology, and alternative EV drive systems. Successful completion of this course will prepare students for the ASE L3 (Light Duty Hybrid/EV Vehicle Specialist Certification).

AUTO 281 3 units**Light Duty Hybrid Vehicles****36 hours lecture, 54 hours laboratory**

Recommended Preparation: AUTO 200.

Grading: letter grade or pass/no pass.

Formerly AMECH 481 and ATT 481. This course focuses light-duty passenger hybrid electric vehicles (HEVs). It provides a practical introduction to advanced HEV design and propulsion systems. The course includes: HEV design and construction; the testing, assembly, operation, and maintenance of HEVs; the influence of aerodynamic design; advanced technology batteries, super-capacitors, intelligent charging systems; hydrogen fuel cell technology, and alternative EV drive systems. Successful completion of this course will prepare students for the ASE L3 (Light Duty Hybrid/EV Vehicle Specialist Certification).

AUTO 282 3 units**Light Duty Alternative Fuels****36 hours lecture, 54 hours laboratory**

Recommended Preparation: AUTO 200.

Grading: letter grade or pass/no pass.

Formerly AMECH 493 and ATT 493. This course focuses light-duty passenger with Compressed Natural Gas (CNG) applications. It provides a practical introduction to CNG and propulsion systems. The course includes: CNG design and construction; the testing, assembly, operation, and maintenance of CNG vehicles; the influence of aerodynamic design; slow fill and fast fill systems; cylinder design and construction, and Liquefied Natural Gas (LNG) systems. Successful completion of this course will prepare students for the ASE F1 (Light Vehicle Compressed Natural Gas Specialist Certification).

AUTO 283 3 units**Light Duty EV Powertrain Diagnostics****36 hours lecture, 54 hours laboratory**

Recommended Preparation: AUTO 200.

Grading: letter grade or pass/no pass.

Formerly AMECH 483 and ATT 483. Light Duty Electric Vehicle (EV) Powertrain Diagnostics involves extensive in-depth analysis for each EV component. Students will develop diagnostic strategies and perform repairs on specific components. This course covers the EV components of the Hybrid propulsion systems.

AUTO 292 3 units**Heavy Duty Alternative Fuels****36 hours lecture, 54 hours laboratory**

Recommended Preparation: AUTO 200.

Grading: letter grade or pass/no pass.

Formerly AMECH 491 and ATT 491. This course focuses on heavy-duty passenger with Compressed Natural Gas (CNG) applications used in transit and port vehicles. It provides a practical introduction to CNG and propulsion systems featuring the ISL-G Cummins 8.9L engine. The course includes: CNG design and construction; the testing, assembly, operation, and maintenance of CNG vehicles; the influence of aerodynamic design; slow fill and fast fill systems; cylinder design and construction, and Liquefied Natural Gas (LNG) systems. Successful completion of this course will prepare students for the ASE F1 (Light Vehicle Compressed Natural Gas Specialist Certification).

AUTO 293 3 units**Intro to Rivian****36 hours lecture, 72 hours laboratory**

Recommended Preparation: AUTO 200, 216, 230, 270, 280 and 281.

Grading: letter grade.

This course provides a broad introduction to Rivian systems and applications, shop equipment and service center best practices, and high voltage safety overview. Students will perform and develop Vehicle walkaround/Product familiarity, customer relation experience, Compass values, and service center operation and company projection. This course covers the Beginner Trail Difficulty in the Rivian Trail Guide.

AUTO 294 3 units**Rivian Chassis Systems****36 hours lecture, 72 hours laboratory**

Recommended Preparation: AUTO 200, 216, 230, 270, 280 and 281.

Grading: letter grade.

This course provides an in-depth coverage of Rivian systems such as: Alignments, Chassis, and Brakes. Students will perform and develop alignment adjustments and calibrations, suspension procedures, brake replacement and calibration, and chassis components replacements. This course covers the Intermediate Trail Difficulty in the Rivian Trail Guide.

AUTO 295 3 units**Rivian Electrical and Thermal Management****36 hours lecture, 72 hours laboratory**

Recommended Preparation: AUTO 200, 216, 230, 270, 280 and 281.

Grading: letter grade.

This course provides an in-depth coverage of Rivian thermal and electrical systems such as wiring diagrams, control devices, modules and software programs, and thermal properties. Students will perform and develop electrical diagnosis, communications networks overview, software programming updates, and coolant replacements. This course covers the Advanced Trail Difficulty in the Rivian Trail Guide.

AUTO 296 3 units**Rivian HV Theory and Diagnosis****36 hours lecture, 72 hours laboratory**

Recommended Preparation: AUTO 200, 216, 230, 270, 280 and 281.

Grading: letter grade.

This course provides in-depth coverage of Rivian high voltage systems such as A/C and D/C charging, inverters, converters, and motors. Students will perform and develop high voltage systems diagnosis, on-board chargers overview, isolation fault diagnosis. HV disable and power down, and R&R of heavy components. This course covers the Expert Trail Difficulty in the Rivian Trail Guide.

AUTO 600 0 units**Introduction to Automotive Technology****36 hours lecture, 54 hours laboratory**

Grading: non graded.

This course is an introductory course covering the principles of the operation of the modern automobile. This course will provide practical experience in maintenance and repair at the owner operator level. Consumer awareness is emphasized.

AUTO 601 0 units**Automotive Lubrication Service****18 hours lecture, 18 hours laboratory**

Grading: non graded.

This course prepares students with skills needed for performing oil changes, lubrication, under hood services and vehicle inspections.

AUTO 602 0 units

Automotive Tire Service

18 hours lecture, 18 hours laboratory

Grading: non graded.

This course prepares students with skills needed for doing tires rotation, repair, replacement, balancing and vehicle inspections.

AUTO 603 0 units

Automotive Brake Inspection

18 hours lecture, 18 hours laboratory

Grading: non graded.

This course prepares students with the skills needed to do basic Service Brake Inspection, brake pads replacement, and vehicle inspection.

AUTO 651 0 units

Diesel Generator Engine Fundamentals

36 hours lecture, 54 hours laboratory

Recommended Preparation: AUTO 600.

Grading: non graded.

This course teaches students the fundamentals of diesel engine operation, service and repair of late model engines and related systems. It focuses on all makes and models of diesel generators engines with emphasis on using factory service manuals. It prepares students for entry level positions in the industry.

AUTO 652 0 units

Diesel Engine Maint. & Troubleshooting

36 hours lecture, 54 hours laboratory

Recommended Preparation: AUTO 600.

Grading: non graded.

This course teaches students the skills needed to diagnose, service and maintain late model portable and stationary generators. It focuses on all makes and models of diesel engines with emphasis on using factory service manuals. It prepares students for entry level positions in the industry.