Automotive

Automotive Body and Repair

Program Description
This program is designed to prepare the student for employment as a body repair and paint apprentice in privately owned repair shops or automotive dealerships. A student could be self-employed from the training after completing the program.

Certificate of Achievement and Associate Degree in Science
A Certificate of Achievement can be obtained by completing the 46-unit major below. The Associate in Science Degree can be obtained by completing 67 units, including the major and the general education requirements. All courses in the major must be completed with a grade of C or better or a P if the course is taken on a Pass/No Pass basis.

Program Outcomes
Students who complete the Automotive Body and Repair Certificate of Achievement/ Associate Degree will be able to:
1. Demonstrate knowledge of metal joining and straightening methods.
2. Inspect, remove, install, align panels, doors and trim to meet shop standards
3. Determine type of paint; plan refinishing system; remove, prepare, seal and mask; apply coatings to vehicle.
4. Demonstrate correct use of chemicals within the shop environment.
5. Work safely and responsibly within all safety and environmental guideline standards for a shop.
6. Identify and strategize career plans for employment in the auto collision field.

REQUIRED COURSES . . . . . . . . . . . . . . . . . . . . . . . . Units
AUTB 100 Fundamentals of Auto Body Repair ........... 10
AUTB 101 Spray Paint Theory and Techniques ........... 10
AUTB 102 Automotive Body Panels and Frame Straightening ........... 10
AUTB 103 Advanced Auto Body Repair and Painting ........... 10
IT 140 Industrial Materials .................................. 3
IT 150 Industrial Processes .................................. 3
Total Units ....................................................... 46

Recommended Electives
BUS 005 Introduction to Business
DRFT 079 Blueprint Reading
IT 110 Modern Welding
OCED 070 Occupational Soft Skills
OCED 090 Occupational Work Experience
OCED 091 General Work Experience

Some courses may not be offered. Please contact the Dean of Applied Technology and Business for alternate courses if necessary.

This is a Gainful Employment Program. For additional information, please visit http://www.solano.edu/gainful_employment/ and select “Automotive Body & Repair.”
Automotive

Automotive Technician

Program Description
This program is designed to prepare graduates for employment in the automotive industry as apprentice mechanics, parts people, service station attendants or specialists in one of the many areas in, or jobs related to, the automotive industry.

Certificate of Achievement and Associate of Science Degree
A Certificate of Achievement can be obtained by completing the 40-unit major below. The Associate in Science Degree can be obtained upon completion of 61 units, including the major, and the general education requirements. All courses in the major must be completed with a grade of C or better or a P if the course is taken on a Pass/No Pass basis.

Program Outcomes
Students who complete the Automotive Technician Certificate of Achievement/Associate Degree will be technically proficient in entry level skills as defined by the National Automotive Technician's Education Foundation (NATEF) by demonstrating:
1. 85 percent of the tasks established by NATEF.
2. Proper service and repair procedures of the following systems:
   • Engine Repair
   • Automatic Transaxles/Transmissions
   • Manual Drivetrain
   • Suspension, Steering and Alignment
   • Brakes
   • Electrical Systems
   • Heating and Air Conditioning
   • Engine Performance
3. Proper safety procedures and techniques.
4. Efficient oral and written communication.
5. The ability to apply fundamental automotive technology principles.

REQUIRED COURSES .................................. Units
ATEC 130 Automotive Systems ......................... 10
ATEC 131 Automotive Electrical Systems ............ 10
ATEC 132 Automotive Brakes and
   Suspension Systems .................................. 10
ATEC 133 Internal Combustion Engines
   and Power Transmission ............................. 10
Total Units ............................................. 40

Recommended Electives
BUS 005 Introduction to Business
IT 110 Modern Welding
IT 140 Industrial Materials
OCED 070 Occupational Soft Skills
OCED 090 Occupational Work Experience
OCED 091 General Work Experience

This is a Gainful Employment Program. For additional information, please visit http://www.solano.edu/gainful_employment/ and select “Automotive Technician.”
Automotive Technician
(For additional listings see “Industrial Education” section of this catalog.)

ATEC 070 3.0 Units
Automotive Fundamentals
Course Advisory: SCC minimum English and Math standards. This course serves as the pre-requisite for all automotive technology certificate and/or degree applicable courses and provides the knowledge and skills needed to prepare students for entry into the automotive core curriculum. The study of automotive industry fundamentals including careers; safety; fasteners; hand tool identification and usage; vehicle systems; electrical fundamentals; service information access and use; automotive chemical and fluid applications; hazardous waste handling; general shop equipment usage, and vehicle servicing. The course is designed in conjunction with Automotive Service Excellence (ASE) standards and subsequently will in part prepare the student for the ASE Maintenance and Light Repair G1 Certification Examination. Two hours lecture, three hours lab.

ATEC 130 4.0 Units
Automotive Suspension and Steering
Prerequisite: ATEC 070 with a minimum grade of C (may be taken concurrently). Course Advisory: ATEC 131 Automotive Electrical Systems, and SCC minimum English and Math standard. The study of automotive suspension and steering fundamentals including: Diagnosis, inspection, repair, and adjustment of modern automotive steering, suspension, supplemental restraint, tire pressure monitoring, and alignment systems. Theory of operation, common automotive steering and suspension systems, wheel alignment principles, methods of diagnosis, adjustment and repair, and the use of suspension service equipment will be covered. The course is designed in conjunction with Automotive Service Excellence (ASE) standards and subsequently will in part prepare the student for the ASE Suspension and Steering A4 Certification Examination. Two hours lecture, six hours lab.

ATEC 131 4.0 Units
Automotive Electrical Systems
Prerequisite: ATEC 070 with a minimum grade of C (may be taken concurrently). Course Advisory: SCC minimum English and Math standard. A course covering theory and principles of automotive electrical systems. The course includes basic electrical theory, Ohm’s Law, series and parallel circuits, electrical symbols and schematics, automotive batteries, charging systems, voltage regulation, starting systems, lighting systems, and various accessory systems. The laboratory portion of the course will place emphasis on diagnosis and testing techniques required to effectively determine the necessary action in an electrical system failure. The use of schematics, technical specifications, voltmeters, ohmmeters, ammeters, and circuit testers will be required. The course is designed in conjunction with Automotive Service Excellence (ASE) standards and subsequently will in part prepare the student for the ASE Electrical / Electronic A6 Certification Examination. Two hours lecture, six hours lab.

ATEC 132 4.0 Units
Automotive Brake Systems
Prerequisite: ATEC 070 with a minimum grade of C (may be taken concurrently). Course Advisory: ATEC 131 Automotive Electrical Systems, and SCC minimum English and Math standard. The study of modern automotive braking systems. Hydraulic principles, coefficients of friction, and thermodynamics will be discussed. Diagnosis, repair, overhaul, and adjustment procedures of drum, disc/drum, and four-wheel disc systems will be emphasized. Anti-lock Braking Systems (ABS) diagnostics, servicing, and repair procedures will also be covered. The course will cover common domestic and import passenger vehicles, and light trucks only. The course is designed in conjunction with Automotive Service Excellence (ASE) standards and subsequently will prepare the student for the ASE Brakes A5 Certification Examination. Two hours lecture, six hours lab.
ATEC 133
Automotive Engine Repair
4.0 Units
Prerequisite: ATEC 070 with a minimum grade of C (may be taken concurrently). Course Advisory: ATEC 131 Automotive Electrical Systems, and SCC minimum English and Math standards. The study of four stroke combustion cycle theory, engine torque, horsepower, materials, and manufacturing processes as they relate to internal combustion powerplants used in production automobiles and light trucks. The theory, principles, and diagnosis of cooling systems, lubrication systems, and common engine mechanical failures will be emphasized. The laboratory portion of the course will focus on comprehensive engine testing, in-vehicle engine servicing, engine disassembly / reassembly, precision measuring, and inspection of internal engine components. The course is designed in conjunction with Automotive Service Excellence (ASE) standards and subsequently will prepare the student for the ASE Engine Repair A1 Certification Examination. Two hours lecture, six hours lab.

ATEC 134
Automatic Transmissions/Transaxles
4.0 Units
Prerequisite: ATEC 070 with a minimum grade of C (may be taken concurrently). Course Advisory: ATEC 131 Automotive Electrical Systems, and SCC minimum English and Math standards. The study of hydraulic and electronically actuated automatic transmissions and transaxles. Topics will include positive and variable displacement pumps, torque converters, bands and clutches, hydraulic valves, electronic shift solenoids, governors, and common compound planetary gear arrangements. The laboratory portion of the course will focus on diagnostic and overhaul procedures, in-vehicle testing, and bench testing of various components. The course is designed in conjunction with Automotive Service Excellence (ASE) standards and subsequently will prepare the student for the ASE Automatic Transmission A2 Certification Examination. Two hours lecture, six hours lab.

ATEC 135
Automotive Engine Performance
4.0 Units
Prerequisite: ATEC 070 with minimum grade of C (may take concurrently), or equivalent. Course Advisory: SCC minimum English and Math standards. ATEC 131. Lecture, demonstration and practical lab experience in the operation, troubleshooting and repair of the ignition, fuel and emission control systems of import and domestic passenger vehicles and light trucks. Emphasis is on theoretical knowledge and the proper use of diagnostic tools and equipment. Prerequisite: ATEC0070 or equivalent (may be taken concurrently). The course is designed in conjunction with Automotive Service Excellence (ASE) standards and subsequently, will in part, prepare the student for the ASE Engine Performance A8 Certification Examination. Two hours lecture, six hours lab.

ATEC 136
Automotive Manual Drivetrain and Axles
4.0 Units
Prerequisite: ATEC 070 with a minimum grade of C (may be taken concurrently). Course Advisory: SCC minimum English and Math standards. A course covering theory and principles of manual transmissions / transaxles, clutches, driveshafts, half shafts, variable and constant velocity joints, differentials, rear wheel drive axle assemblies, all wheel drives, and four wheel drives. Gear types, ratios, and noise, vibration, harshness diagnostic routines will be discussed. Diagnosis, repair, overhaul, and adjustment procedures for common domestic, import, and light truck drivetrain components will be emphasized. Prerequisite: ATEC0070 or equivalent (may be taken concurrently). The course is designed in conjunction with Automotive Service Excellence (ASE) standards and subsequently will prepare the student for the ASE Manual Transmission/Transaxle & Drivetrain A3 Certification Examination. Two hours lecture, six hours lab.

ATEC 140
Hybrid Vehicle Maintenance and Repair
2.0 Units
Course Advisory: SCC minimum English and Math standards with a minimum grad of C. Study of hybrid vehicles, safety issues associated with hybrid vehicles, maintenance and repair procedures specific to hybrid vehicles. One hour lecture, three hours lab.
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(For additional listings see "Industrial Education" section of this catalog).

AUTB 100 10.0 Units
Fundamentals of Auto Body Repair
Course Advisory: SCC minimum English standard.
Acquaints the student with the basic skills and fundamental principles of auto body repair. Learned skills are verified through manipulative and written tests. Five hours lecture, fifteen hours lab.

AUTB 101 10.0 Units
Spray Paint Theory and Techniques
Prerequisite: AUTB 100. Course Advisory: SCC minimum English standard. Acquaints the student with the basic principles and techniques of automotive refinishing. Skills acquired are verified through manipulative projects and written tests. Five hours lecture, fifteen hours lab.

AUTB 102 10.0 Units
Automotive Body Panels and Frame Straightening
Prerequisite: AUTB 100. Students will learn to repair and replace body panels. Includes unibody and frame straightening. Learned skills are verified through manipulative projects and written exams. Five hours lecture, fifteen hours lab.

AUTB 103 10.0 Units
Advanced Auto Body Repair and Painting
Prerequisite: AUTB 101, 102. Students are exposed to the fine details of automotive body repair. Excellence and precision of skills are refined and quality work is emphasized. Students demonstrate their achievements through manipulative projects and written tests. Five hours lecture, fifteen hours lab.

AUTB 110 3.0 Units
Special Projects
Prerequisite: AUTB 103. Advanced projects undertaken by students in their field of specialization, under supervision of the instructor. Two hours lecture, three hours lab.