

AUTOMOTIVE

The automotive industry is a continually changing and growing field which offers many employment opportunities.

Career Opportunities

Body and Fender Repair Trainee	Sales
Metalman; Frame-Specialist	Repair Estimator
Engine Repair Technician	Tune-Up Technician
Service and Parts Management	
Diesel Mechanics Technician	
Wheel Alignment and Brake Technician	

Faculty

Full-Time	Part-Time	Counselor
Frank Castro	James Gorenflo	Daniel Goicoechea
Jose Ortega	Juan Perez	
	Henry Segura	
	Don Sisting	
	Bruce Wendt	

Automotive Body and Fender Repair

Associate in Science Degree

Certificate of Achievement

Required Courses:	Units
AB R001 Auto Body/Fender Repair I	4
AB R002 Auto Body/Fender Repair II	4
AB R003 Estimating Damage/Repair	4
AB R004 Collision Damage/Repair	4
AB R005A Painting/Refinishing I	2
AB R005B Painting/Refinishing II	4
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Required Additional Courses:	Units
Complete a minimum of two units from the following:	
AB R007A Automotive Graphics	2
AT R010 Fundamentals of Auto Technology	3
AT R015 Automotive Electrical Systems	4
AT R020 ASE Mechanics Certification	3
BUS R030 Business Mathematics	3
BUS R111A Business Law I	3
	2-4

Total Required Units 24-26

Automotive Body Repair and Paint Courses

AB R001—Auto Body/Fender Repair I	4 units
<i>2 hours lecture, 6 hours lab weekly</i>	
Fundamentals of auto body repair, including arc and oxyacetylene welding, roughing-out and metal finishing, use of body fillers, sanding, masking, and priming. Course may be taken two times. (2)	
AB R002—Auto Body/Fender Repair II	4 units
<i>Prerequisites: AB R001.</i>	
<i>2 hours lecture, 6 hours lab weekly</i>	
This course provides training in special problems in repair of automobiles using advanced techniques with materials such as steel, aluminum, and plastic. Special painting methods are taught. Course may be taken two times. (2)	
AB R003—Estimating Damage/Repair	4 units
<i>Prerequisites: AB R001 and AB R002 or equivalent.</i>	
<i>2 hours lecture, 6 hours lab weekly</i>	

Advanced course in techniques of estimating and repair of heavy auto body and chassis damage; emphasis upon business management techniques as applied to estimating repairs. Course may be taken two times. (2)

AB R004—Collision/Damage Repair **4 units**

Prerequisites: AB R001 and AB R002 or equivalent.

2 hours lecture, 6 hours lab weekly

Advanced course in techniques of estimating and repair of heavy damage to auto body and chassis; emphasis on automobile frame, sectioning, straightening, and advanced welding. Student auto body projects in the scope of complete automotive wrecks. (2)

AB R005A—Painting/Refinishing I **2 units**

1 hour lecture, 3 hours lab weekly

This course is designed to prepare students for entry-level positions in the automotive refinishing industry by providing training in painting and refinishing fundamentals. Topics to be covered include a history of the industry, shop safety, shop equipment and layout, required tools and materials, and surface preparation techniques. Course may be taken three times. (2)

AB R005B—Painting/Refinishing II **4 units**

Prerequisites: AB R001 or AB R005A or concurrent enrollment.

2 hours lecture, 6 hours lab weekly

This course continues training in automotive painting and refinishing. Topics to be covered include application of undercoats and top coats, spot repair procedures, paint job procedures, paint problems, and procedures for securing employment in the field. Course may be taken two times. (2)

AB R007A—Automotive Graphics **2 units**

1 hour lecture, 3 hours lab weekly

A comprehensive overview of automotive graphics including preparation and layout of pinstripping, touch-up, lettering and murals. Course also includes automotive graphics for commercial trucks and boats. Field trips may be required. Materials fee is required. Course may be taken two times. (2)

AB R007B—Advanced Automotive Graphics **2 units**

Prerequisites: AB R007A.

1 hour lecture, 3 hours lab weekly

This course provides instruction in advanced levels of automotive graphic design including color selection and mixing, customized murals, advanced commercial lettering applications, advanced outlines and shadowing, and customized quilts and applications. Field trips may be required. Materials fee is required. Course may be taken two times. (2)

Automotive Technology

Associate in Science Degree

Certificate of Achievement

Required Courses:	Units
ATR004 Automotive Emission Control	3
ATR010 Fundamentals of Auto Technology	3
ATR013 Engine Performance	4
ATR013L Engine Performance Lab	2
ATR015 Automotive Electrical Systems	4
ATR015L Automotive Electrical Systems Lab	2
ATR016 Auto Electronics	3
ATR018 Automotive Brake Systems	4
ATR018L Automotive Brake Systems Lab	2
ATR019 Steering & Suspension	2
ATR019L Steering & Suspension Lab	2
ATR023 Fuel Systems	2
ATR023L Fuel Systems Lab	2
	Total Core Requirements 35

Complete a minimum of five units from the following:

ATR002 Starting & Charging Systems	2
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AT R002L	Starting & Charging Systems Lab	1
AT R005	Computer Diagnostic Systems	4
AT R017	Automotive Wheel Alignment	2
AT R017L	Automotive Wheel Alignment Lab	2
AT R021	Bureau of Automotive Repair	4
AT R026	Automotive Engine Overhaul	4
AT R026L	Automotive Engine Overhaul Lab	2
AT R027	Cylinder Block Service	2
AT R027L	Cylinder Block Service Lab	2
AT R028	Cylinder Head Service	2
AT R028L	Cylinder Head Service Lab	2

Total Required Units 40

Automotive Technology Courses

AT R001—Automotive Technology **15 units**

12 hours lecture, 9 hours lab weekly

An entry level cluster class designed to direct students into a curriculum pattern within the overall automotive program. Students will select the appropriate classes after consultation with faculty and counseling personnel. Students do not receive credit for AT R001, but will be placed in classes totaling 15 units. Course may be taken two times.

AT R002—Starting & Charging Systems **2 units**

Advisory: AT R010.

*Corequisites: AT R002L.
2 hours lecture weekly*

Study of the automotive starting and charging systems beginning with electricity and magnetism and progressing to testing procedures and equipment used to troubleshoot and diagnose problems within systems. Preparation for the ASE certification test included.

AT R002L—Starting & Charging Systems Lab **1 unit**

*Corequisites: AT R002 (first time only).
3 hours lab weekly*

Course provides technical preparation in the skills required to repair and maintain the starting and charging of electrical systems in modern vehicles and electrical service procedures for the overhaul of starters and alternators. Preparation for the ASE certification test included. Course may be taken two times.

AT R003A—Using Technical Manuals **3 units**

3 hours lecture weekly

Course focuses on the modern automobile equipped with on-board computers which control numerous systems. Manual topics cover testing, repair sequences, and adjustment of these systems. Manual information will be presented in the traditional printed form and the more current floppy disk form. (2)

AT R004—Automotive Emission Control **3 units**

3 hours lecture weekly

Course covers a brief history of air pollution, automotive emission control laws, and control systems such as crank case, exhaust, evaporative loss, Nox, and retro-fit devices; also use of infrared and other test equipment and preparation for State Emission Control Installer License.

AT R010—Fundamentals of Auto Technology **3 units**

3 hours lecture weekly

Comprehensive overview of the automobile, including the systems, basic operating principles, and repair procedures. Systems included are ignition, charging, cranking, cooling, fuel, lubricating, brakes, and front end. Field trips may be required.

AT R012—Automotive Air Conditioning **2 units**

Advisory: AT R010.

1 hour lecture, 3 hours lab weekly

Comprehensive study of the principles of operation and theory of automotive air conditioning. Course offers a study of design features of each manufacturer to include servicing, troubleshooting,

and diagnosis. Students given practical application for servicing, repair, and diagnosis.

AT R013—Engine Performance **4 units**

Advisory: AT R010.

*Corequisites: AT R013L.
4 hours lecture weekly*

Detailed coverage of automotive ignition systems, course provides technical preparation in the skills required in diagnostic adjustment of conventional and electronic ignition, carburetor and fuel injection systems. Preparation for ASE certification test included.

AT R013L—Engine Performance Lab **2 units**

*Corequisites: AT R013 (first time only).
1 hour lecture, 3 hours lab weekly*

Course provides technical preparation in skills required in the diagnostic maintenance and repair of standard and electronic ignition systems used in modern automobiles. Computerized test equipment will be used in testing systems. Preparation for the ASE certification test included. Course may be taken two times.

AT R014—Advanced Engine Performance **4 units**

Prerequisites: AT R013.

4 hours lecture weekly

Course provides technical preparation in the skills required to diagnose computerized engine control systems on modern automotive equipment. Ignition, fuel injection, and ABS brake systems are covered. Preparation for the ASE certification test included. Field trips may be required.

AT R015—Automotive Electrical Systems **4 units**

Corequisites: AT R015L.

4 hours lecture weekly

Course covers all aspects of automotive electrical systems including charging, starting, ignition, accessories, and electronics. Preparation for the ASE certification test included.

AT R015L—Automotive Electrical Systems Lab **2 units**

Corequisites: AT R015 (first time only).

1 hour lecture, 3 hours lab weekly

Course provides vocational preparation in the skill required in the diagnosis, adjustment, repair and maintenance of the electrical systems of modern automotive equipment. Course is based on electrical service procedures for the overhaul of electrical units. Preparation for the ASE certification test included. Course may be taken two times.

AT R016—Auto Electronics **3 units**

Advisory: AT R010 or AT R013.

3 hours lecture weekly

For advanced students or mechanics in the auto service industry. Course covers various types of electronic ignition and fuel injection and other electronic devices used on late model cars.

AT R017—Automotive Wheel Alignment **2 units**

Corequisites: AT R017L.

2 hours lecture weekly

Course provides technical preparation in the skills required to accomplish modern two- and four-wheel alignment using mechanical, as well as computerized alignment equipment. Preparation for the ASE certification test included.

AT R017L—Automotive Wheel Alignment Lab **2 units**

Corequisites: AT R017 (first time only).

1 hour lecture, 3 hours lab weekly

Course provides technical preparation in the theory and procedures for setting wheel angles involved in alignment. Electronic wheel alignment equipment, as well as conventional equipment used in the industry today will be used. Preparation for the ASE certification test included. Course may be taken two times.

AT R018—Automotive Brake Systems **4 units**

Corequisites: AT R018L.

4 hours lecture weekly

Course includes the study of automotive brake systems, including hydraulics and friction principles, drum, disc and antilock brake units. In addition, power assist units and computerized systems will be explored. Preparation for the ASE certification test included.

AT R018L—Automotive Brake Systems Lab 2 units

Corequisites: AT R018 (first time only).

1 hour lecture, 3 hours lab weekly

Course covers automotive brake system service procedures: brake drum, rotor, remachining, hydraulic system overhaul, troubleshooting, and diagnosis of all brake operations, including ABS computerized controlled system. Preparation for the ASE certification test included. Course may be taken two times.

AT R019—Steering & Suspension 2 units

Corequisites: AT R019L.

2 hours lecture weekly

Course provides technical preparation in the diagnosis, adjustment, replacement or repair of all types of steering and suspension systems commonly used in the automotive industry today. Preparation for the ASE certification test included.

AT R019L—Steering & Suspension Lab 2 units

Corequisites: AT R019 (first time only).

1 hour lecture, 3 hours lab weekly

Course provides technical preparation in the diagnosis and repair of steering and suspension systems. Wheel alignment will also be covered, along with all types of rack and pinion steering gears and four-wheel steering. Preparation for the ASE certification test included. Course may be taken two times.

AT R020—ASE Mechanics Certification 3 units

Advisory: Major in automotive or employment in auto trade.

3 hours lecture weekly

For employed mechanics or auto mechanics majors who are preparing to take NIASE (National Institute for Automotive Service Excellence) Mechanics Certification Test. Course covers engine repair, manual transmission and rear axle, front end, brakes, electrical systems, and engine tune-up.

AT R021—Bureau of Automotive Repair 4 units

Prerequisites: AT R004.

3 hours lecture, 3 hours lab weekly

For auto mechanics majors or employed mechanics who are preparing to take the State of California Smog Certification Test. Course covers fuel systems, electrical systems, tune-up and emission systems operation, and inspection. Course may be taken two times.

AT R023—Fuel Systems 2 units

Corequisites: AT R023L.

2 hours lecture weekly

Course studies automotive fuel systems including single, multiple and variable Venturi carburetors, fuel circuits and fuel injection. Preparation for the ASE certification test included.

AT R023L—Fuel Systems Lab 2 units

Corequisites: AT R023 (first time only).

1 hour lecture, 3 hours lab weekly

Course provides technical preparation in the skills required in the diagnosis, adjustment, repair and maintenance of conventional carburetors, mechanical and electronic fuel injection systems. Also covers computerized analyzing equipment and self-diagnostic computer system testing. Preparation for the ASE certification test included. Course may be taken two times.

AT R025—High Performance Engines 2 units

2 hours lecture weekly

Course covers high performance production engines, racing engines and after-market products designed to increase drivability,

reliability and power output. Turbo chargers and fuel injection devices will be covered.

AT R026—Automotive Engine Overhaul 4 units

Corequisites: AT R026L.

4 hours lecture weekly

Course provides technical preparation in the basic skills required to diagnose, adjust, repair and overhaul the automotive internal combustion engine. All phases of machine work will be covered and quality inspection and reassembly will be stressed. Preparation for the ASE certification test included.

AT R026L—Automotive Engine Overhaul Lab 2 units

Corequisites: AT R026 (first time only).

1 hour lecture, 3 hours lab weekly

Course uses class projects involving theory and operation of modern engine overhaul equipment. Students will gain experience and skills diagnosing repairs, cleaning, disassembling, repairing and restoring to service engines commonly in use today. Preparation for ASE certification test included. Course may be taken two times.

AT R027—Cylinder Block Service 2 units

Corequisites: AT R027L.

2 hours lecture weekly

An in-depth class with major emphasis devoted to the skills and technical aspects of piston type, gasoline engine block assemblies, piston and crankshaft service. Preparation for the ASE certification test included.

AT R027L—Cylinder Block Service Lab 2 units

Corequisites: AT R027 (first time only).

1 hour lecture, 3 hours lab weekly

Instruction will place major emphasis on skills and materials used in the rebuilding of modern engine assemblies, blocks, crankshafts, connecting rods, oiling systems, camshafts, ring and piston diagnosis, rebuilding, replacement or repair. Preparation for the ASE certification test included. Course may be taken two times.

AT R028—Cylinder Head Service 2 units

Corequisites: AT R028L.

2 hours lecture weekly

An in-depth class with major emphasis devoted to the skills and technical aspects of automotive head and valve repair, crack detection, and valve resurfacing techniques. Preparation for the ASE certification test included.

AT R028L—Cylinder Head Service Lab 2 units

Corequisites: AT R028 (first time only).

1 hour lecture, 3 hours lab weekly

Instruction will place major emphasis on skills and materials used in the rebuilding of modern overhead valve and overhead camshaft cylinder heads and assemblies. Preparation for the ASE certification test included. Course may be taken two times.

AT R098—Short Courses in Automotive Mechanics 1/2-10 units

Lecture and/or lab hours as required by unit formula

Specialized topics designed to inform or update interested persons in various disciplines within the auto repair industry. Length of course determines unit credit.

NOTE: The course listed below has been temporarily suspended. For further information, please contact the Business/Technology division office.

AT R024 Small Engines

Diesel Mechanics

**Associate in Science Degree
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This program will prepare students for repairing and servicing all types of diesel equipment such as stationary engines, highway trucks, construction and agricultural equipment, and diesel powered automobiles. Preventative maintenance, diagnostic procedures, repair and engine overhaul are emphasized. Graduates can expect good job opportunities as entry level technicians.

Required Courses:		Units
ATR010	Fundamentals of Auto Technology	3
DM R004	Engine Overhaul & Repair	4
DM R005	Engine Tune-Up & Troubleshooting	3
DM R008	Power Trains	2
DM R012	Introduction to Hydraulics	3
DM R019	Introduction to Diesel Engines	3
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Required Additional Courses:		Units
Complete a minimum of six units from the following:		
ATR024	Small Engines	2
ATR015	Automotive Electrical Systems	3
ATR020	ASE Mechanics Certification	3
BUS R122	Personnel Management	3
DM R006	Electrical System Theory	3
		3

Total Required Units 24

NOTE: The courses listed below have been temporarily suspended. For further information, please contact the Business/Technology division office.

- DM R004 Engine Overhaul & Repair
- DM R005 Engine Tune-Up & Troubleshooting
- DM R006 Electrical System Theory
- DM R008 Power Trains
- DM R012 Introduction to Hydraulics
- DM R019 Introduction to Diesel Engines
- DM R020 Diesel Engines
- DM R030 Diesel Engine Mechanics
- DM R031 Diesel Equipment Mechanics
- DM R098 Short Courses in Diesel Mechanics