

ACS 145 Intercollegiate Football (2)

A minimum of 175 hours (laboratory) of student participation is required.

Transfer acceptability: CSU; UC - max credit combined with PE activity courses, 4 units

Provides students with the opportunity to develop advanced skills and strategies in intercollegiate football which will be applied to competitive situations.

ACS 150 Intercollegiate Wrestling (2)

A minimum of 175 hours (laboratory) of student participation is required.

Transfer acceptability: CSU; UC - max credit combined with PE activity courses, 4 units

Provides students with the opportunity to develop advanced skills and strategies in intercollegiate wrestling which will be applied to competitive situations.

ACS 155 Intercollegiate Baseball (2)

A minimum of 175 hours (laboratory) of student participation is required.

Transfer acceptability: CSU; UC - max credit combined with PE activity courses, 4 units

Provides students with the opportunity to develop advanced skills and strategies in intercollegiate baseball which will be applied to competitive situations.

ACS 160 Intercollegiate Cross Country (2)

A minimum of 175 hours (laboratory) of student participation is required.

Transfer acceptability: CSU; UC - max credit combined with PE activity courses, 4 units

Provides men and women with the opportunity to develop advanced skills and strategies in intercollegiate cross country which will be applied to competitive situations.

ACS 165 Intercollegiate Track and Field (2)

A minimum of 175 hours (laboratory) of student participation is required.

Transfer acceptability: CSU; UC - max credit combined with PE activity courses, 4 units.

This course provides students with the opportunity to develop advanced skills and the strategies in intercollegiate track and field which will be applied to competitive situations.

ACS 197 Topics in Athletics and Competitive Sports (.5 - 4)

Units awarded in topics courses are dependent upon the number of hours required of the student. Any combination of lecture and/or laboratory may be scheduled by the department. Refer to Class Schedule.

Transfer acceptability: CSU; UC - max credit combined with PE activity courses, 4 units.

Topics in Athletics and Competitive Sports. See Class Schedule for specific topic offered. Course title will designate subject covered.

Automotive Technology (AT)

Contact the Trade and Industry Department for further information.

(760) 744-1150, ext. 2545

Office: T-102A

Associate in Science Degrees -

AS Degree requirements are listed in Section 6 (green pages).

- Auto Chassis and Drive Lines
- Auto Collision Repair
- Electronic Tune Up and Computer Control Systems
- Mechanics - General

Certificates of Achievement -

Certificate of Achievement requirements are listed in Section 6 (green pages).

- Auto Chassis and Drive Lines
- Auto Collision Repair
- Electronic Tune Up and Computer Control Systems
- Mechanics - General

PROGRAMS OF STUDY**Auto Chassis and Drive Lines**

This program will prepare students for entry level positions in all aspects of the Automotive Industry with an emphasis in drive-line repair.

A.S. DEGREE MAJOR OR CERTIFICATE OF ACHIEVEMENT

Program Requirements	Units
AT 105 Automotive Electricity	3
AT 105L Automotive Electricity Computer Training Lab	1
AT 120 Automatic Transmissions and Drive Lines	3
AT 130 Automotive Brakes	3
AT 135 Front End Alignment and Wheel Service	3
AT 160 Associated Studies in Automotives	3
AT 170 Auto Repair Shop Experience	2
AT 220 Advanced Automotive Transmissions	3
IT 108/WELD 108 Technical Mathematics	3
AT 50 or WELD 100 Auto Body Repair I Welding I	3
TOTAL UNITS	27

Auto Collision Repair

This program will prepare students for an entry level position in the automotive collision repair industry.

A.S. DEGREE MAJOR OR CERTIFICATE OF ACHIEVEMENT

Program Requirements	Units
AT 50 Auto Body Repair I	3
AT 51 Auto Body Repair II	3
AT 55 Auto Refinishing I	3
AT 56 Auto Refinishing II	3
IT 108 / WELD 108 Technical Mathematics	3

Elective Courses (Select 6 units)

AT 97 Auto Body Repair/Auto Refinishing Topics	.5 - 4
AT 100 Auto Maintenance and Minor Repair	3
AT 105 Automotive Electricity	3
AT 105L Automotive Electricity Computer Training Lab	1
AT 150 Chassis Restoration and Assembly	3
AT 155 Body Restoration and Assembly	3
AT 170 Auto Repair Shop Experience	2
WELD 100 Welding	3
CE 100 Cooperative Education	1 - 4

TOTAL UNITS 21

Electronic Tune Up and Computer Control Systems

This program will prepare students for entry level positions in all aspects of the Automotive Industry with an emphasis in drive-ability concerns.

A.S. DEGREE MAJOR OR CERTIFICATE OF ACHIEVEMENT

Program Requirements	Units
AT 105 Automotive Electricity	3
AT 105L Automotive Electricity Computer Training Lab	1
AT 110 Automotive Tune up and Engine Analysis	3
AT 110L Automotive Tune up and Computer Training Lab	1
AT 115 Automotive Fuel Injection and Fuel Systems	3
AT 115L Automotive Fuel Systems Computer Training Lab	1
AT 160 Associated Studies in Automotives	3

AT 210	Specialized Automotive Electronics	3
AT 215	Automotive Emission Control	3
IT 108/WELD 108	Technical Mathematics	3

Electives (Select 6-7 units)

AT 100	Auto Maintenance and Minor Repair	3
AT 165	Automotive Air Conditioning	2
AT 170	Auto Repair Shop Experience	2
DMT 70	Medium-Duty Diesel Engine Tune-Up	4
	or	
DMT 105	Heavy-Duty Diesel Tune-Up and Engine Analysis	4
WELD 100	Welding I	3
CE 100	Cooperative Education	2 - 3
TOTAL UNITS		30 - 31

Mechanics-General

This program will prepare students for entry level positions in all aspects of the Automotive Industry.

A.S. DEGREE MAJOR OR CERTIFICATE OF ACHIEVEMENT

Program Requirements		Units
AT 105	Automotive Electricity	3
AT 105L	Automotive Electricity Computer Training Lab	1
AT 110	Automotive Tune up and Engine Analysis	3
AT 110L	Automotive Tune up Computer Training Lab	1
AT 120	Automatic Transmissions and Drive Lines	3
AT 125	Automotive Machining	3
AT 130	Automotive Brakes	3
AT 160	Associated Studies in Automotives	3
AT 220	Advanced Automotive Transmissions	3
AT 225	Automotive Engine Rebuilding	3
IT 108/WELD 108	Technical Mathematics	3
Electives (Select 4 units)		
AT 50	Auto Body Repair I	3
AT 100	Auto Maintenance and Minor Repair	3
AT 115 and	Automotive Fuel Injection and Fuel Systems	3
AT 115L	Automotive Fuel Systems Computer Training Lab	1
AT 165	Automotive Air Conditioning	2
AT 170	Auto Repair Shop Experience	2
WELD 100	Welding I	3
CE 100	Cooperative Education	2, 3, 4
TOTAL UNITS		33

COURSE OFFERINGS

Courses numbered under 100 are not intended for transfer credit.

AT 50 Auto Body Repair I (3)
 1½ hours lecture - 4½ hours laboratory
 Automotive body work with emphasis on repair. Includes welding; working with small damage points; restoring contour of body panels and sections; and realigning bumpers, fenders, doors, and hoods.

AT 51 Auto Body Repair II (3)
 1½ hours lecture - 4½ hours laboratory
Recommended preparation: AT 50
 Automotive body work with emphasis on increasing diagnostic, estimating and repair skills and updating techniques and related technologies. Introduction to collision industry standards including I-CAR and ASE.

AT 55 Auto Refinishing I (3)
 1½ hours lecture - 4½ hours laboratory
 Introduction to auto refinishing. Preparation of auto surfaces for refinishing: tapping, cleaning, and sanding. Refinishing auto surfaces: sanding, application of primers and paint.

AT 56 Auto Refinishing II (3)
 1½ hours lecture - 4½ hours laboratory
Recommended preparation: AT 55

Skills development in automotive refinishing techniques including base-coat clear-coat application. Color matching concepts. Identification, prevention and correction of painting problems. Update on new products, techniques, and trends.

AT 97 Auto Body Repair/Auto Refinishing Topics (.5 - 4)
 Units awarded in topics courses are dependent upon the number of hours required of the student. Any combination of lecture and/or laboratory may be scheduled by the department. Refer to Class Schedule.
 Topics in auto body repair and auto refinishing. See Class Schedule for specific topic offered. Course title will designate subject covered.

AT 100 Auto Maintenance and Minor Repair (3)
 2 hours lecture - 3 hours laboratory
Transfer acceptability: CSU
 Designed for the student with little or no background in the automotive field. The course covers many maintenance and minor repair items as well as basic theory of operation. The areas covered include batteries, cooling systems, drive belts, lubrication, brakes, tires, and consumer education.

AT 105 Automotive Electricity (3)
 2 hour lecture - 3 hours laboratory
Corequisite: AT 105L
Transfer acceptability: CSU
 Auto electrical systems including A.C. generators, batteries, solid state starters, wiring diagrams, and/or electrical troubleshooting and repair that includes solid state and low voltage low amperage systems.

AT 105L Automotive Electricity Computer Training Lab (1)
 3 hours laboratory
Corequisite: AT 105
Transfer acceptability: CSU
 Students will use training computers to complete assignments in automotive electricity. Hi-tech automotive simulators and trainers will be used to enhance student learning. Software will also be used for Automotive Service Excellence (ASE) certification preparation.

AT 110 Automotive Tune Up and Engine Analysis (3)
 2 hours lecture - 3 hours laboratory
Corequisite: AT 110L
Transfer acceptability: CSU
 The use of tune up testing and diagnostic equipment; the study of conventional and electronic ignition systems; compression, cylinder balance, and dynamometer testing.

AT 110L Automotive Tune Up Computer Training Lab (1)
 3 hours laboratory
Corequisite: AT 110
Transfer acceptability: CSU
 Students will use training computers to complete assignments in automotive engine performance. Hi-tech automotive simulators and trainers will be used to enhance student learning. Software will also be used for Automotive Service Excellence (ASE) certification preparation.

AT 115 Automotive Fuel Injection and Fuel Systems (3)
 2 hours lecture - 3 hours laboratory
Corequisite: AT 115L
Transfer acceptability: CSU
 The principles, technical knowledge, and work experience in the field of retion and fuel injection. Specific topics include four barrel carburetors; fuel injection; fuel supply systems; and combustion evaluation instruments.

AT 115L Automotive Fuel Systems Computer Training Lab (1)

3 hours laboratory

Corequisite: AT 115**Transfer acceptability:** CSU

Students will use training computers to complete assignments in automotive fuel systems. Hi-tech automotive simulators and trainers will be used to enhance student learning. Software will also be used for Automotive Service Excellence (ASE) certification preparation.

AT 120 Automatic Transmissions and Drive Lines (3)

2 hours lecture - 3 hours laboratory

Transfer acceptability: CSU

The hydraulic and mechanical function and repair of automatic transmissions. The disassembly, inspection, reassembly, and testing of three speed conventional transmissions, clutches, universal joints, and differentials.

AT 125 Automotive Machining (3)

1½ hours lecture - 4½ hours laboratory

Transfer acceptability: CSU

The various testing and machining operations involved in an automotive machine shop. Areas covered include cylinder head service and repair, connecting rod service, cylinder boring and honing, crankshaft service, and various other automotive machining and measuring techniques.

AT 130 Automotive Brakes (3)

2 hours lecture - 3 hours laboratory

Transfer acceptability: CSU

The hydraulic and mechanical function of automotive brake systems. Brake troubleshooting, complete system repair, and overhaul of power, drum, and disc brakes. Preparation for the State Brake License.

AT 135 Front End Alignment and Wheel Service (3)

2 hours lecture - 4 hours laboratory

Transfer acceptability: CSU

The repair and adjustment of the undercarriage of the automobile. Included are such areas as steering, geometry, turn radius, ball joints, toe track, camber, caster, suspension, bearing service, wheel balance, and tire wear identification. Preparation for the State Lamp License.

AT 150 Chassis Restoration and Assembly (3)

1½ hours lecture - 4½ hours laboratory

Prerequisite: A minimum grade of 'C' in AT 100**Transfer acceptability:** CSU

Covers basic disassembly and documentation of antique automotive chassis and components. Lab activities will focus on correct detailing and reassembly of vintage automobile chassis and related undercarriage elements.

AT 155 Body Restoration and Assembly (3)

1½ hours lecture - 4½ hours laboratory

Prerequisite: A minimum grade of 'C' in AT 50**Transfer acceptability:** CSU

Covers basic disassembly and documentation of antique automotive bodies and components. Lab activities will focus on correct detailing, restoration and reassembly of vintage automobiles and related elements, using historically authentic materials and techniques.

AT 160 Associated Studies in Automotives (3)

3 hours lecture

Transfer acceptability: CSU

Applied science and technology as related to the automotive field. Areas covered include metrics, Ohms Law and electron theory, metal alloys and their properties and uses, thermal expansion, gas laws, limits and fits, and friction and torque.

AT 165 Automotive Air Conditioning (2)

1½ hours lecture - 1½ hours laboratory

Transfer acceptability: CSU

The principles of operation and servicing of modern automotive air conditioning systems. Both lecture and lab time will be devoted to studying the refrigeration

and heating system, ventilation and ducting, and the electrical system. Students will complete and receive their refrigerant license as well as be prepared for ASE certification.

AT 170 Auto Repair Shop Experience (2)

6 hours laboratory

Transfer acceptability: CSU

The student gains valuable skill development in the maintenance, repair and diagnosis in automotive technology. The class runs in a similar format to an actual repair shop where students service cars supplied by the Palomar community.

AT 196 Special Problems in Automotives (1, 2, 3)

3, 6, or 9 hours laboratory

Recommended preparation: Completion of a minimum of 12 units in Automotive Technology (may include 6 concurrent Automotive Technology units)**Transfer acceptability:** CSU

Special study in an area of interest related to automotives; generally research in nature. The content to be determined by the need of the student under signed contract with the instructor.

AT 197 Topics in Automotive (.5-3)

Units awarded in topics courses are dependent upon the number of hours required of the student. Any combination of lecture and/or laboratory may be scheduled by the department. Refer to Class Schedule.

Transfer acceptability: CSU

Topics in automotive technology. See Class Schedule for the specific topic offered. Course title will designate subject covered.

AT 210 Specialized Automotive Electronics (3)

2 hours lecture - 3 hours laboratory

Recommended preparation: AT 105 or 110**Transfer acceptability:** CSU

Electronic principles as they pertain to the automobile. Identification, diagnosis, repair, and verification of malfunctioning electronic components is the major objective of the course. Computer controls fundamentals and diagnosis of GM systems, 1981-1990.

AT 215 Automotive Emission Control (3)

3 hours lecture - 2 hours laboratory

Recommended preparation: AT 110 and 115**Transfer acceptability:** CSU

Auto emission controls as prescribed by Federal Law and California Air Resources Board. Analysis and testing of emission controls will be presented. Study of current laws for state exam preparation.

AT 220 Advanced Automotive Transmissions (3)

2 hours lecture - 3 hours laboratory

Prerequisite: A minimum grade of 'C' in AT 120**Transfer acceptability:** CSU

Advanced specialized training in automatic transmissions currently in use in General Motors vehicles with an emphasis on the 3T40 transaxle.

AT 225 Automotive Engine Rebuilding (3)

2 hours lecture - 4 hours laboratory

Transfer acceptability: CSU

The complete rebuilding of at least one automobile engine using the machine tools and techniques of industry.

Aviation Sciences (AVIA)

Contact the Earth, Space, and Aviation Sciences Department for further information.

(760) 744-1150, ext. 2512

Office: NS-110G

For transfer information, consult a Palomar College Counselor.

Associate in Science Degrees -

AS Degree requirements are listed in Section 6 (green pages).

- Aviation Operations and Management
- Aircraft Commercial Pilot