

ACS 120 Intercollegiate Tennis (2)

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

Note: May be taken 3 times

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 tennis which will be applied to competitive situations.

ACS 125 Intercollegiate Soccer (2)

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

Note: May be taken 3 times

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 soccer which will be applied to competitive situations.

ACS 130 Intercollegiate Volleyball (2)

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

Note: May be taken 3 times

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 volleyball which will be applied to competitive situations.

ACS 135 Intercollegiate Swimming and Diving (2)

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

Note: May be taken 3 times

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

This course provides men and women with the opportunity to develop advanced skills and the strategies in intercollegiate swim/diving which will be applied to competitive situations.

ACS 140 Intercollegiate Water Polo (2)

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

Note: May be taken 3 times

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 water polo which will be applied to competitive situations.

ACS 145 Intercollegiate Football (2)

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

Note: May be taken 3 times

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.

Note: May be taken 3 times

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.

Note: May be taken 3 times

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.

Note: May be taken 3 times

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.

Note: May be taken 3 times

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.

Note: May be taken 4 times

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-1

Associate in Arts Degrees -

AA 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.A. 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.A. DEGREE MAJOR OR CERTIFICATE OF ACHIEVEMENT

Program Requirements

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.A. DEGREE MAJOR OR CERTIFICATE OF ACHIEVEMENT

Program Requirements

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 55	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.A. DEGREE MAJOR OR CERTIFICATE OF ACHIEVEMENT

Program Requirements

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

Note: May be taken 3 times

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

Note: May be taken 3 times

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

Note: May be taken 3 times

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

Note: May be taken 3 times

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.

Note: May be taken 4 times

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 reton 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
Note: May be taken 3 times
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
Note: May be taken 3 times
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
Note: May be taken 4 times
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
Note: May be taken 4 times
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)
Note: May be taken 4 times
Transfer acceptability: CSU

Special study in an area of interest related to automobiles; 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.

Note: May be taken 4 times

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 Arts Degrees -

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

- Aviation Operations and Management
- Aircraft Commercial Pilot

Certificates of Achievement -

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

- Aviation Operations and Management
- Aircraft Commercial Pilot

PROGRAMS OF STUDY

Aviation Operations and Management

For students interested in the business or piloting aspects of aviation. Transfers to some four year programs in this field.

A.A. DEGREE MAJOR OR CERTIFICATE OF ACHIEVEMENT

Program Requirements		Units
AVIA 100	Introduction to Aviation Sciences	3
AVIA 105	Basic Pilot Ground School	3
AVIA 120	Aviation Weather	3
BUS 205	Business Writing	3
ECON 101	Principles of Economics (Macro)	3
ECON 102	Principles of Economics (Micro)	3

Elective Courses (Select 15 units minimum)

ACCT 201 and	Financial Accounting	4
ACCT 104	Accounting Spreadsheet Concepts	2
AVIA 106	Commercial Pilot Ground School	3
AVIA 107	Instrument Pilot Ground School	3
AVIA 145	Glass Cockpits and GPS Navigation	1
BUS 115	Business Law	3
BUS 155	Marketing	3
BMGT 110	Human Resource Management	3
BMGT 115	Organizational Theory and Design	3
CSIT 105	Computer Concepts and Applications	3
GEOG 110	Meteorology: Weather and Climate	3
MATH 115	Trigonometry	3
MATH 120	Elementary Statistics	3
PHYS 120	General Physics	4
PHYS 121	General Physics	4
CE 100	Cooperative Education	1, 2, 3, 4

TOTAL UNITS 33

Flight training is the sole responsibility of each student and is contracted with an F.A.A. approved flight school at the student's own expense. The Palomar Community College District accepts no responsibility or liability for the student's flight training program.

Aircraft Commercial Pilot

Prepares students for employment as commercial pilots in air taxi and other field related flying operations. Transfers to some four year programs in this field.

A.A. DEGREE MAJOR OR CERTIFICATE OF ACHIEVEMENT

Program Requirements		Units
AVIA 75	Private Pilot Certification	2
AVIA 80	Instrument Rating Certification	2
AVIA 85	Commercial Pilot Certification	3
AVIA 100	Introduction to Aviation Sciences	3
AVIA 105	Basic Pilot Ground School	3
AVIA 106	Commercial Pilot Ground School	3
AVIA 107	Instrument Pilot Ground School	3
AVIA 120	Aviation Weather	3
AVIA 145	Glass Cockpits and GPS Navigation	1

TOTAL UNITS 23

COURSE OFFERINGS

Courses numbered under 100 are not intended for transfer credit.

AVIA 75 Private Pilot Certification (2)

1 hour lecture - 3 hours laboratory

Note: Pass/No Pass grading only

Upon presentation of a Private Pilot Certificate, the student will be given credit (no grade). Flight training is to be completed off campus with an F.A.A. certified flight instructor of the student's choice and at the student's own expense. The Palomar Community College District accepts no responsibility or liability for the flight training obtained from private instructors. The student should register for this course in the semester during which the training is to be completed.