

ACS 150 Intercollegiate Wrestling (2)
 175 instructional hours.
Transfer acceptability: CSU; UC - max credit combined with KINE 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)
 175 instructional hours.
Transfer acceptability: CSU; UC - max credit combined with KINE 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)
 175 instructional hours.
Transfer acceptability: CSU; UC - max credit combined with KINE 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)
 175 instructional hours.
Transfer acceptability: CSU; UC - max credit combined with KINE 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 180 Intercollegiate Sand Volleyball (3)
 9 hours laboratory
Transfer acceptability: CSU; UC
 Provides women with the opportunity to develop advanced skills and strategies in intercollegiate sand volleyball 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 KINE activity courses, 4 units.
 Topics in Athletics and Competitive Sports. See Class Schedule for specific topic offered. Course title will designate subject covered.

Auto Body (AB)

Contact the Trade and Industry Department for further information.
 (760) 744-1150, ext. 2545
 Office: T-102A

AB 50 Auto Body Repair I (3)
 (Formerly AT 50)
 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.

AB 51 Auto Body Repair II (3)
 (Formerly AT 51)
 1½ hours lecture - 4½ hours laboratory
Recommended preparation: AB 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.

AB 55 Auto Refinishing I (3)
 (Formerly AT 55)
 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.

AB 56 Auto Refinishing II (3)
 (Formerly AT 56)
 1½ hours lecture - 4½ hours laboratory
Recommended preparation: AB 55
 Skill development in automotive refinishing techniques, including base-coat, clear-coat application; color matching concepts; and identification, prevention and correction of painting problems. New products, techniques, and trends will be covered.

AB 97 Auto Body Repair/Auto Refinishing Topics (.5 - 4)
 (Formerly AT 97)
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.

AB 105 Chassis Restoration and Assembly (3)
 (Formerly AT 150)
 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.

AB 110 Body Restoration and Assembly (3)
 (Formerly AT 155)
 1½ hours lecture - 4½ hours laboratory
Prerequisite: A minimum grade of 'C' in AB 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.

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/WELD 108	Technical Mathematics	3
AB 50	Auto Body Repair I	3
	or	
WELD 100	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
AB 50	Auto Body Repair I	3
AB 51	Auto Body Repair II	3
AB 55	Auto Refinishing I	3
AB 56	Auto Refinishing II	3
IT/WELD 108	Technical Mathematics	3
Elective Courses (Select 6 units)		
AT 100	Auto Maintenance and Minor Repair	3
AT 105	Automotive Electricity	3
AT 105L	Automotive Electricity Computer Training Lab	1
AB 105	Chassis Restoration and Assembly	3
AB 110	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/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 130	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/WELD 108	Technical Mathematics	3
Electives (Select 4 units)		
AB 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 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 retraction 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 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

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.S. 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 Communication	3
ECON 101 Principles of Economics (Macro)	3
ECON 102 Principles of Economics (Micro)	3

Elective Courses (Select 15 units minimum)

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

TOTAL UNITS 33

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.S. 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

*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.

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.

AVIA 80 Instrument Rating Certification (2)

1 hour lecture - 3 hours laboratory

Note: Pass/No Pass grading only

Upon presentation of an Instrument Rating, 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.

AVIA 85 Commercial Pilot Certification (3)

1 hour lecture - 6 hours laboratory

Note: Pass/No Pass grading only

Upon presentation of a Commercial 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.

AVIA 100 Introduction to Aviation Sciences (3)

3 hours lecture

Transfer acceptability: CSU

A survey of the aerospace field including the functions and operations of various federal and state regulating aviation agencies and airport based companies such as air carrier, general aviation, aviation maintenance, flight schools, and other major occupational and supportive areas.