

**ACS 135 Intercollegiate Swimming and Diving (2)**

A minimum of 175 hours (lecture/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 (lecture/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 water polo which will be applied to competitive situations.

**ACS 145 Intercollegiate Football (2)**

A minimum of 175 hours (lecture/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 football which will be applied to competitive situations.

**ACS 150 Intercollegiate Wrestling (2)**

A minimum of 175 hours (lecture/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 wrestling which will be applied to competitive situations.

**ACS 155 Intercollegiate Baseball (2)**

A minimum of 175 hours (lecture/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 baseball which will be applied to competitive situations.

**ACS 160 Intercollegiate Cross Country (2)**

A minimum of 175 hours (lecture/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 cross country which will be applied to competitive situations.

**ACS 165 Intercollegiate Track and Field (2)**

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

**Note:** May be taken 3 times

**Transfer acceptability:** CSU; UC (pending)

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, laboratory, or lecture/laboratory may be scheduled by the department. Refer to Class Schedule

**Note:** May be taken 4 times

**Transfer acceptability:** CSU; UC - Credit determined by UC upon review of course syllabus.

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 Body Work
- Auto Chassis and Drive Lines
- Electronic Tune Up and Computer Control Systems
- Mechanics - General

**Certificates of Achievement -**

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

- Auto Body Work
- Auto Chassis and Drive Lines
- Electronic Tune Up and Computer Control Systems
- Mechanics - General

**PROGRAMS OF STUDY****Auto Body Work**

In order to earn a certificate, students must achieve a minimum grade of 'C' in each of the certificate program courses.

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

Program Requirements		Units
R AT 50	Auto Body Repair I	4
R AT 51	Auto Body Repair II	4
R AT 55	Auto Refinishing I	4
R AT 56	Auto Refinishing II	4
<b>Elective Courses (Select 6 Units)</b>		
AT 100	Auto Maintenance and Minor Repair	3
AT 105	Automotive Electricity	2
CE 100	Cooperative Education	1,2,3,4
IT/WELD 108	Technical Mathematics	3
WELD 100	Welding I	3
<b>TOTAL UNITS</b>		<b>22</b>

Auto Body Work A.A. Degree or Certificate of Achievement is also listed under R.O.P. Automotive Technology.

**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
IT/WELD 108	Technical Mathematics	3
R AT 50 or WELD 100	Auto Body Repair I	4
	Welding I	3
AT 105	Automotive Electricity	2
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 175	Automotive Computer Training Lab	1
AT 220	Advanced Automotive Transmissions	3
<b>TOTAL UNITS</b>		<b>24 - 25</b>

## 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		Units
IT/WELD 108	Technical Mathematics	3
AT 105	Automotive Electricity	2
AT 110	Automotive Tune up and Engine Analysis	3
AT 115	Automotive Fuel Injection and Fuel Systems	3
AT 160	Associated Studies in Automotives	3
AT 175	Automotive Computer Training Lab	1
AT 210	Specialized Automotive Electronics	3
AT 215	Automotive Emission Control	3
<b>Electives (Select 6-7 units)</b>		
AT 100	Auto Maintenance and Minor Repair	3
AT 145	Auto Emissions/Diagnosis	3
AT 165	Automotive Air Conditioning	1
DMT 70 or DMT 55	Med-Duty Diesel Engine Tune up/Heavy-Duty Diesel Tune up/Analysis	4
WELD 100	Welding I	3
CE 100	Cooperative Education	2,3
<b>TOTAL UNITS</b>		<b>27 - 28</b>

## 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		Units
IT/WELD 108	Technical Mathematics	3
AT 160	Associated Studies in Automotives	3
AT 105	Automotive Electricity	2
AT 110	Automotive Tune up and Engine Analysis	3
AT 120	Automatic Transmissions and Drive Lines	3
AT 125	Automotive Machining	3
AT 130	Automotive Brakes	3
AT 175	Automotive Computer Training Lab	1
AT 220	Advanced Automotive Transmissions	3
AT 225	Automotive Engine Rebuilding	3
RAT 50 or WELD 100	Auto Body Repair I/Welding I	4/3
<b>Electives (Select 2 courses)</b>		
AT 100	Auto Maintenance and Minor Repair	3
AT 115	Automotive Fuel Injection and Fuel Systems	3
AT 165	Automotive Air Conditioning	1
CE 100	Cooperative Education	2,3,4
<b>TOTAL UNITS</b>		<b>33 - 38</b>

### COURSE OFFERINGS

**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 (2)**

*1 hour lecture-3 hours laboratory*

**Corequisite:** AT 175

Auto electrical systems including A.C. generators, batteries, solid state starters, wiring diagrams, and/or electrical troubleshooting that includes solid state and low voltage low amperage systems.

**AT 110 Automotive Tune Up and Engine Analysis (3)**

*2 hours lecture-3 hours laboratory*

**Corequisite:** AT 175

The use of tune up testing and diagnostic equipment; the study of conventional and electronic ignition systems; compression, cylinder balance, and dynamometer testing.

**AT 115 Automotive Fuel Injection and Fuel Systems (3)**

*2 hours lecture-3 hours laboratory*

**Corequisite:** AT 175

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 120 Automatic Transmissions and Drive Lines (3)**

*2 hours lecture-3 hours laboratory*

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)**

*6 hours lecture/laboratory*

The various testing and machining operations involved in an automotive machine shop. Areas covered include cylinder head service and repair; pin fitting, cylinder boring, milling, align boring, and various other automotive machining and measuring techniques.

**AT 130 Automotive Brakes (3)**

*2 hours lecture-4 hours laboratory*

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*

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 145 Auto Emissions, Diagnosis, Drivability, and Repair (3)**

*6 hours lecture/laboratory*

Auto emissions diagnosis and repair using an individual baseline approach and loaded-mode testing equipment to solve emission failures. Includes use of scan tools, digital storage oscilloscopes, and inflight analyzers to logically repair the vehicles.

**AT 150 Chassis Restoration and Assembly (3)**

*6 hours lecture/laboratory*

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

**Note:** May be taken 3 times

Course 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)**

*6 hours lecture/laboratory*

**Prerequisite:** A minimum grade of 'C' in RAT 50

**Note:** May be taken 3 times

Course 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

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 (1)**

2 hours lecture/laboratory

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 175 Automotive Computer Training Lab (1)**

3 hours laboratory

**Corequisite:** AT 105 or AT 110 or AT 115

**Note:** May be taken 4 times

Students will use training computers to complete assignments in engine performance and 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 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

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, laboratory, or lecture/laboratory may be scheduled by the department. Refer to Class Schedule.

**Note:** May be taken 4 times

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

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

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)**

6 hours lecture/laboratory

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

Advanced specialized training in automatic transmissions currently in use in General Motors, Ford, and Chrysler cars and light trucks.

**AT 225 Automotive Engine Rebuilding (3)**

2 hours lecture-4 hours laboratory

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 115	Air Traffic Control	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
<b>Elective Courses (Select 15 units minimum)</b>		
ACCT 103 and	Financial Accounting	4
ACCT 104	Accounting Spreadsheet Laboratory	1
AVIA 106	Commercial Pilot Ground School	3
AVIA 107	Instrument Pilot Ground School	3
AVIA 108	Flight Instructor Ground School	3
AVIA 125	Instrument Simulator Lab	1.5
AVIA 145	Glass Cockpits and GPS Navigation	1
AVIA 205	Principles of Aerodynamics	3
AVIA 210	Aviation Safety and Accident Investigation	3
AVIA 220	Regional Airline Aircraft Systems	3
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
<b>TOTAL UNITS</b>		<b>36</b>

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.