

**AT 155 Body Restoration and Assembly (3)**

6 hours lecture/laboratory

**Prerequisite:** A minimum grade of 'C' in R AT 50**Note:** May be taken 2 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 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 110 or 115

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 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. For transfer information, consult a Palomar College counselor.

Associate in Arts degree requirements, Certificate of Achievement requirements, and Certificate of Proficiency requirements are listed in Section 6 (green pages) of the catalog.

**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

**Elective Courses (Select 15 units minimum)**

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
CSIS 105	Computer Concepts/Microcomputer Apps.	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 36**

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 110	Basic Pilot Flight Procedures	2
AVIA 115	Air Traffic Control	3
AVIA 120	Aviation Weather	3
AVIA 125	Instrument Simulator Laboratory	1.5
AVIA 140	Aviation Math/ Modern Navigation	3
AVIA 205	Principles of Aerodynamics	3
AVIA 210	Aviation Safety and Accident Investigation	3
AVIA 215	Complex Aircraft Systems and Propulsion	3

**TOTAL UNITS 40.5**

Recommended Electives: AVIA 108, 145; BUS 205; GEOG 110

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)** (Formerly AERO 75)

**Note:** Credit/No Credit 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)** (Formerly AERO 80)

**Note:** Credit/No Credit 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)** (Formerly AERO 85)

**Note:** Credit/No Credit 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 90 Multi-Engine Rating Certification (1)** (Formerly AERO 90)

**Note:** Credit/No Credit grading only

Upon presentation of a Multi Engine 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 100 Introduction to Aviation Sciences (3)** (Formerly AERO 100)

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.

#### **AVIA 105 Basic Pilot Ground School (3)** (Formerly AERO 105)

3 hours lecture

**Transfer acceptability:** CSU

A study of Federal Aviation Regulations, flight data, aerodynamics, weather and navigation, radio communications, aircraft and engine operation, flight instruments, and aircraft performance. Prepares the student for the Federal Aviation Administration's Private Pilot written examination.

#### **AVIA 106 Commercial Pilot Ground School (3)** (Formerly AERO 106)

3 hours lecture

**Prerequisite:** Private Pilot Certificate or AVIA 105 with concurrent or prior flight training

**Transfer acceptability:** CSU

A comprehensive study of aircraft performance, Federal Aviation Regulations, navigation, flight charts and graphs, radio navigation and communications, meteorology, emergency procedures, aerodynamics, flight instruments, and multi engine procedure. Prepares the student for the Federal Aviation Administration's Commercial Pilot written examination.

#### **AVIA 107 Instrument Pilot Ground School (3)** (Formerly AERO 107)

3 hours lecture

**Prerequisite:** Private Pilot Certificate or AVIA 105 with concurrent or prior flight training

**Transfer acceptability:** CSU

The rules and regulations for instrument flight, interpretation of flight instruments, air navigation, meteorology, instrument flight techniques, air traffic control, and flight planning. Prepares the student for the Federal Aviation Administration's Instrument written examination.

#### **AVIA 108 Flight Instructor Ground School (3)** (Formerly AERO 108)

3 hours lecture

**Prerequisite:** AVIA 106 and 107

**Transfer acceptability:** CSU

Learning characteristics, teaching techniques, student evaluation, instructor duties/responsibilities, and all private and commercial pilot maneuvers. Prepares the student for the Federal Aviation Administration's written and practical tests for flight instructor airplane.

#### **AVIA 110 Basic Pilot Flight Procedures (2)** (Formerly AERO 110)

2 hours lecture

**Prerequisite:** Completion of, or concurrent enrollment in, AVIA 105

**Transfer acceptability:** CSU

A classroom study of procedures required for the private pilot practical test. Includes discussion of cross country flight planning, radio navigation, communication procedures, controlled airspace, and airport operations.

#### **AVIA 115 Air Traffic Control (3)** (Formerly AERO 115)

3 hours lecture

**Prerequisite:** AVIA 105

**Transfer acceptability:** CSU

The national airspace system and the handling of air traffic within this area. Emphasis is placed on the operation of Federal Aviation Administration controlling agencies.

#### **AVIA 120 Aviation Weather (3)** (Formerly AERO 120)

3 hours lecture

**Transfer acceptability:** CSU

Basic principles relating to weather with particular emphasis placed upon the relationship of weather to aviation. Practical instruction is given in the use and interpretation of weather reports, forecasts, and charts.

#### **AVIA 125 Instrument Simulator Laboratory (1.5)** (Formerly AERO 125)

1 hour lecture-2 hours laboratory

**Prerequisite:** Private Pilot Certificate

**Note:** May be taken 3 times for increased proficiency by utilizing more advanced lesson plans and taped lesson plans in the lab.

**Transfer acceptability:** CSU

Instrument flight including VOR navigation, holding patterns, and ILS, LOC, NDB, and VOR approaches through use of a ground trainer.

**AVIA 140 Aviation Mathematics and Modern Navigation Systems (3)**

(Formerly AERO 140)

3 hours lecture

**Transfer acceptability:** CSU

The nature and properties of numbers and arithmetic operations utilizing the flight computer for improvement in operational efficiency and applications involving all forms of air navigation. Basic principles of modern navigation systems such as Loran, INS/IRS, R NAV, TCAS, GPWS, Flight Directors, and GPS will be examined.

**AVIA 145 Glass Cockpits and GPS Navigation (1)**

1 hour lecture

**Transfer acceptability:** CSU

A practical examination of glass cockpit technology and global positioning system navigation in aviation.

**AVIA 197 Aviation Sciences Topics (5-4)**

(Formerly AERO 197)

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 Aviation Sciences. See class schedule for specific topic covered. Course title will designate subject covered.

**AVIA 205 Principles of Aerodynamics (3)**

(Formerly AERO 205)

3 hours lecture

**Transfer acceptability:** CSU

Introduction to the theory of flight; applications of the basic laws of physics to the principles of flight. Aircraft design is considered with respect to airfoils, wings, viscous effects, propellers, and aircraft performance.

**AVIA 210 Aviation Safety and Accident Investigation (3)**

(Formerly AERO 210)

3 hours lecture

**Prerequisite:** AVIA 105 or Private Pilot Certificate**Transfer acceptability:** CSU

Accident prevention principles through a study of recent mishaps. Pilot physical and psychological factors and their role in mishaps. A study of crash survival and post crash survival techniques. Fundamentals of mishap investigation and reporting.

**AVIA 215 Complex Aircraft Systems and Propulsion (3)**

(Formerly AERO 215)

3 hours lecture

**Prerequisite:** AVIA 105 or Private Pilot Certificate**Transfer acceptability:** CSU

Turboprop and turbojet engines and their operation. Electrical, pressurization, hydraulic, and fuel systems will be examined.

**AVIA 220 Regional Airline Aircraft Systems (3)**

(Formerly AERO 220)

3 hours lecture

**Prerequisite:** AVIA 105**Transfer acceptability:** CSU

Engine, fuel, hydraulic, electrical, flight control, pressurization, ice protection, pneumatic, warning, and navigation systems of a typical regional airline jet will be examined. Aircraft performance will be calculated.

**AVIA 295 Directed Study in Aviation Sciences (1,2,3)**

(Formerly AERO 295)

3, 6, or 9 hours field work

**Prerequisite:** AVIA 100 and approval of project proposal**Note:** May be taken 4 times

Individual study in field or library within the field of air transportation.

**Biology (BIOL)**

Contact the Life Sciences Department for further information, (760) 744-1150, ext. 2275

Associate in Arts degree requirements, Certificate of Achievement requirements, and Certificate of Proficiency requirements are listed in Section 6 (green pages) of the catalog.

**PROGRAMS OF STUDY****Biology – General****A.A. DEGREE MAJOR OR CERTIFICATE OF ACHIEVEMENT**

Program Requirements		Units
BIOL 200	Foundations of Biology I	5
BIOL 201	Foundations of Biology II	5
ZOO 100 or	General Zoology	4
ZOO 101/101L	Animal Kingdom	4
<b>Group One (Select 3-4 units)</b>		
BOT 101/101L	General Botany	4
BOT 110	Botany of Spring Wildflowers	4
BOT 115	Plants and People	3
<b>Group Two (Select 4-5 units)</b>		
BIOL 114/114L	Ecosystem Biology	4.5-5
BIOL 118/118L	General Ecology	4
BIOL 130 or	Marine Biology	4
BIOL 131/131L	Marine Biology	4
ZOO 115 or	Natural History of Animal Life	4
ZOO 116/116L	Natural History of Animal Life	4
<b>Group Three (Select 9-11 units)</b>		
Biology	Any course not used above (100 and up)	
Botany	Any course not used above	
Microbiology	Any course	
Zoology	Any course not used above	

**MINIMUM TOTAL UNITS 32**

Recommended Electives: BIOL 215; CHEM 100, 110, 110L, 115, 115L; MATH 110, 115, 135; CSIS 105

**Biology-Preprofessional**

Provides intensive lower division preparation for pursuing advanced studies in biological science, premedical, pre dental, or preveterinarian programs leading towards a Bachelor's degree and beyond.

Students are advised to consult catalogs of the institution to which they plan to apply to determine special or additional requirements, or see a Palomar College Counselor.

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

Program Requirements		Units
BIOL 200	Foundations of Biology I	5
BIOL 201	Foundations of Biology II	5
CHEM 110/110L	General Chemistry and Laboratory	5
CHEM 115/115L	General Chemistry and Laboratory	5
CHEM 220	Organic Chemistry	5
CHEM 221	Organic Chemistry	5
MATH 140	Calculus/Analytic Geometry, First Course	5
MATH 141	Calculus/Analytic Geometry, Second Course	4

**TOTAL UNITS 39**

Recommended Electives: BIOL 215; MATH 205; PHYS 230, 231, 232; ZOO 203