

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 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 (1,5-3)
 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: 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
Elective Courses (Select 15 units minimum)	
ACCT 103 and ACCT 104 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
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

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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

Prerequisite: AVIA 105 or Private Pilot Certificate

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

AVIA 197 Aviation Sciences Topics (5-4)

(Formerly AERO 197)

Transfer acceptability: CSU

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

Transfer acceptability: CSU

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

Office: NS-207A

Associate in Arts Degrees -

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

- Biology - General
- Biology - Preprofessional

Certificates of Achievement -

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

- Biology - General
- Biology - Preprofessional

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 ZOO 101/101L General Zoology Animal Kingdom	4
Group One (Select 3-4 units)	
BOT 101/101L General Botany	4
BOT 110 Botany of Spring Wildflowers	4
BOT 115 Plants and People	3
Group Two (Select 4-5 units)	
BIOL 114/114L Ecosystem Biology	4.5-5
BIOL 118/118L General Ecology	4
BIOL 130 or BIOL 131/131L Marine Biology Marine Biology	4
ZOO 115 or ZOO 116/116L Natural History of Animal Life Natural History of Animal Life	4
Group Three (Select 9-11 units)	
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; CSIT 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.