

FREN 296 Special Studies in French (1,2,3)
1, 2, or 3 hours lecture

Note: May be taken 4 times for a maximum of 6 units

Transfer acceptability: CSU

Improve French language competency and cultural awareness through individualized study, lectures or cultural activities.

General Studies

Contact the Counseling Center for further information.
(760) 744-1150, ext. 2179
Office: SSC-18A

Associate in Arts Degrees -

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

- General Studies - Emphasis in Arts and Humanities
- General Studies - Emphasis in Science and Mathematics
- General Studies - Emphasis in Social and Behavioral Sciences

PROGRAMS OF STUDY**General Studies**

This program is designed for students who may not be planning to transfer to a four-year college and who need to explore possibilities before committing themselves to a major program. The program may serve the purposes of students who have been out of school and who need to review and assess their academic skills and interests before deciding on a definite major program. Students planning to transfer to a four-year institution are cautioned that this curriculum may not provide for completion of the lower-division requirements for transfer to a four-year institution.

A.A. DEGREE MAJOR**Select One Emphasis:****Emphasis in Arts and Humanities**

(Select 18 units minimum)

Africana Studies 100, 115, 116
 American Indian Studies 100, 104, 105, 108A, 108B, 135, 145, 150, 153, 154, 207A, 207B
 American Sign Language 100, 101, 110, 205, 206
 American Studies 100, 105
 Anthropology 135, 145, 155
 Arabic 101A, 101B, 102A, 102B, 201A, 201B
 Art 100, 102, 104, 105, 165, 166, 167, 168
 Chicano Studies 100, 105, 110, 115, 130, 135, 155
 Chinese 101, 101A, 101B, 102, 102A, 102B, 130, 201, 201A, 201B
 Cinema 100, 102, 103, 110, 120, 122
 Dance 100, 101, 102, 105
 Drafting Technology 120, 121, 155
 English 202, 203, 205, 210, 211, 215, 220, 221, 225, 226, 230, 240, 245, 250, 255, 260, 265, 270, 280, 290
 English as a Second Language 101, 102, 103
 Fashion 130
 Foreign Languages 108A, 108B, 207A, 207B
 French 101, 101A, 101B, 102, 102A, 102B, 201, 202
 German 101, 101A, 101B, 102, 102A, 102B, 201, 202
 Graphic Communications 101, 102
 Graphic Communications-Multimedia & Web 100 (pending)
 History 105, 106
 Humanities 100, 101
 Interior Design 115
 Italian 101, 102, 201, 201A, 201B
 Japanese 101, 101A, 101B, 102, 201, 202
 Judaic Studies 106
 Library Technology 154
 Multicultural Studies 120, 122, 124, 157
 Music 100, 101, 102, 103, 166, 167, 170, 171
 Philosophy 100, 101, 102, 103, 105, 110, 115, 120, 130, 250
 Photography 100, 125
 Radio and Television 100

Reading 110, 120
 Religious Studies 101, 105, 106, 108, 110, 120, 124
 Spanish 101, 101A, 101B, 102, 102A, 102B, 201, 201A, 201B, 202
 Speech 100, 105, 115
 Tagalog 101, 102, 201
 Theatre Arts 100, 140, 141, 150, 157

Emphasis in Science and Mathematics

(*Select 18 units minimum)

Anthropology 100, 101
 Astronomy 100, 120
 Biology 100, 101, 102, 105, 106, 110, 114, 118, 130, 131, 185, 200, 201, 215
 Botany 100, 101, 110, 115
 Business 110
 Chemistry 100, 102, 104, 105, 110, 115, 205, 210, 220, 221
 Earth Sciences 100, 115
 Engineering 210
 Family and Consumer Sciences 185
 Geography 100, 110, 115, 125
 Geology 100, 110, 120, 125, 150
 Mathematics 56, 60, 100, 105, 106, 110, 115, 120, 130, 135, 140, 141, 200, 205, 206, 245
 Microbiology 200
 Oceanography 100, 101, 115
 Physical Science 100, 101
 Physics 101, 102, 120, 121, 200, 201, 230, 231, 232
 Psychology 205, 210
 Sociology 205
 Zoology 100, 101, 115, 116, 120, 145, 200, 203
 *Although not listed, related lab courses may be included as part of the 18 unit minimum.

Emphasis in Social and Behavioral Sciences

(Select 18 units minimum)

Administration of Justice 100
 Africana Studies 101, 102, 110, 120, 125, 126
 Alcohol and Other Drug Studies 150
 American Indian Studies 101, 102, 110, 120, 125, 130, 140, 165
 American Studies 110, 200
 Anthropology 105, 107, 110, 115, 125, 126, 130, 137, 140, 145, 150
 Chicano Studies 101, 102, 120, 125
 Child Development 100, 110, 115
 Communications 100, 105
 Counseling 100, 110, 120
 Economics 100, 101, 102, 110, 115
 English 150
 Family and Consumer Sciences 101, 105
 Fashion 132
 Geography 103, 105
 History 101, 102, 107, 108, 121, 130, 135, 140, 141, 150, 151, 152
 Judaic Studies 107
 Legal Studies 121, 240
 Multicultural Studies 100, 110, 165, 200
 Paralegal Studies 121, 240
 Political Science 100, 101, 102, 110
 Psychology 100, 105, 110, 115, 120, 125, 130, 145, 150, 225, 235
 Religious Studies 102, 103, 107, 108
 Sociology 100, 105, 110, 115, 120, 125, 130, 145, 150, 200
 Speech 120, 131

Geography (GEOG)

Contact the Earth, Space, and Aviation Sciences Department for further information.

(760) 744-1150, ext. 2512

Office: NS-110G

Associate in Arts Degree -

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

- Advanced Geographic Information Systems

Certificates of Achievement -

Certificate of Achievement requirements are listed in Section 6 (green pages).
 • Advanced Geographic Information Systems

Certificates of Proficiency -

Certificate of Proficiency requirements are listed in Section 6 (green pages).
 • Geographic Information Systems

PROGRAM OF STUDY

Advanced Geographic Information Systems

The Advanced Geographic Information Systems (GIS) Certificate program at Palomar College is designed to provide students with the technical and theoretical knowledge needed to pursue a successful career in growing field of geospatial analysis. Through a combination of lectures, learning modules, case studies, internships, and projects, students will learn to manage, plan, and implement GIS projects.

A.A. DEGREE MAJOR OR CERTIFICATE OF ACHIEVEMENT*

Program Requirements		Units
GEOG 120	Intro to Geographic Information Sys/GIS Software	4
GEOG 132	Database Management and Data Acquisition	4
GEOG 134	GIS Applications	2
GEOG 136	Intermediate ArcGIS: GIS Analysis	2
GEOG 138	GIS Internship	2
Specialized Concentration (Select 2 courses)		
GEOG 140	Introduction to Remote Sensing	1
GEOG 141	Transportation Systems Analysis	1
GEOG 142	Environmental Applications of GIS	1
Electives (Select 1 course)		
CSIT 170	Visual Basic I	4
DT 110	Technical Drafting I with AutoCAD	4
TOTAL UNITS		20

* Advanced Geographic Information Systems A.A. Degree Major or Certificate of Achievement pending approval by the California Community Colleges System Office at the time of catalog publication.

PROGRAM OF STUDY

Geographic Information Systems

The Geographic Information Systems Certificate program is designed to provide entry-level training for students seeking employment in this fast-growing profession, or to upgrade the skills for those already working in the field of Geographic Information Systems. The program may be completed in one year including summer session.

Associate in Arts degree requirements are listed in Section 6 of the catalog. Certificates of Achievement or Proficiency require a minimum grade of 'C' in each of the required courses.

CERTIFICATE OF PROFICIENCY

Program Requirements		Units
GEOG 120	Intro to Geographic Information Sys/GIS Software	4
GEOG 132	Database Management and Data Acquisition	4
GEOG 136	Intermediate ArcGIS: GIS Analysis	2
GEOG 138	GIS Internship	2
Electives (Select 1 course)		
CSIT 170	Visual Basic I	4
GEOG 134	GIS Applications	2
TOTAL UNITS		14 - 16

COURSE OFFERINGS

GEOG 100 Physical Geography (3)
 3 hours lecture
Transfer acceptability: CSU; UC; TCSU GEOG 120
 A study of earth's physical environment with emphasis on weather, climate, landform, soils, and natural vegetation and the interrelationship between these elements within unique physical landscapes.

GEOG 100L Physical Geography Laboratory (1)
 3 hours laboratory
Prerequisite: A minimum grade of 'C' in GEOG 100, or concurrent enrollment in GEOG 100
Transfer acceptability: CSU; UC; TCSU GEOG 120
 Laboratory and field investigations in weather elements, climate regions, soils, world ecosystems, and Earth's landform features. Satisfies laboratory requirement in physical sciences.

GEOG 103 World Regional Geography (3)
 3 hours lecture
Transfer acceptability: CSU; UC
 Critical survey of the major world regions with specific focus on physical and cultural components, such as development, economics, population and migration, political structure, and natural resources and the physical environment.

GEOG 105 Introduction to Human Geography (3)
 3 hours lecture
Transfer acceptability: CSU; UC; TCSU GEOG 130
 Human elements of geography, including population distribution, general land use patterns, religion, trade and economy, and their correlation with the physical elements. Emphasis on world cultural regions with attention paid to interdependence and globalization.

GEOG 110 Meteorology: Weather and Climate (3)
 3 hours lecture
Transfer acceptability: CSU; UC
 Elements of weather including temperature, moisture, air pressure, and circulation of the atmosphere; air masses, storms, and their geographical distribution. Practical applications in the use of weather instruments, and the reading and interpretation of weather maps and climatological data.

GEOG 115 Natural Disasters and Environmental Hazards (3)
 3 hours lecture
Note: Cross listed as ES 115
Transfer acceptability: CSU; UC
 Examination and analysis of natural disasters and environmental hazards including earthquakes, tsunamis, volcanic activity, hurricanes, flooding, air and water pollution, and global climate change.

GEOG 120 Introduction to Geographic Information Systems and GIS Software (4)
 3 hours lecture-3 hours laboratory
Recommended preparation: GEOG 100 and CSIT 105
Transfer acceptability: CSU; UC
 An introduction to the mapping sciences with a primary focus on Geographic Information Systems (GIS). Covers the trends, history, structure, application, hardware and software, and basic operations of GIS in order to provide a foundation for the use of GIS software. Related geographic technologies to be examined include mapping, aerial and satellite imagery, and Global Positioning Systems (GPS). The lab portion will provide introductory training in the use of ArcGIS software including identifying, evaluating, and inputting spatial data, developing and using raster and vector data sets, converting data from one form to another, and applying programming with GIS software.

GEOG 125 California Geology and Geography (3)
 3 hours lecture
Note: Cross listed as GEOL 125
Transfer acceptability: CSU; UC
 Emphasizes the physical geographic and geologic factors that have combined to form the varied landscapes of California. Climate and vegetation patterns, as well as the various geomorphic processes will be studied.

GEOG 132 Database Management and Data Acquisition (4)

4 hours lecture

Prerequisite: A minimum grade of 'C' in GEOG 120, or concurrent enrollment in GEOG 120

Transfer acceptability: CSU

Course provides students with knowledge and practical experience in the fundamentals of database management, and the acquisition, conversion, and creation of spatial data within Geographic Information Systems (GIS). Topics to include strategic design, querying, modeling techniques, data appropriateness and accuracy, hardware and software requirements, conversion of digital data, creating digital data using digitizers, scanners and Global Positioning Systems (GPS), and utilization of remote sensing, photogrammetry, and web-based data. This course provides hands-on experience with database management and data acquisition using ArcGIS software.

GEOG 134 GIS Applications and Programming (2)

4 hours lecture/laboratory

Prerequisite: A minimum grade of 'C' in GEOG 120

Transfer acceptability: CSU

Course provides students with advanced knowledge and practical experience in developing Geographic Information Systems (GIS) applications. Students will learn the fundamentals of GIS and database programming, as well as the customization of GIS applications. The lab portion of this course provides hands-on experience with GIS programming using Visual Basic for Applications (VBA), data management using geodatabases, and applications development using ArcObjects.

GEOG 136 Intermediate ArcGIS: GIS Analysis (2)

4 hours lecture/laboratory

Prerequisite: A minimum grade of 'C' in GEOG 120

Transfer acceptability: CSU

Course will focus on performing complex operations using the ArcGIS software. Students will gain hands-on experience in advanced querying operations, Spatial Analyst and Network Analyst, coordinate geometry, ArcGIS ModelBuilder, and the application of ArcGIS in a variety of disciplines.

GEOG 138 GIS Internship (2)

6 hours laboratory

Prerequisite: A minimum grade of 'C' in GEOG 120

Transfer acceptability: CSU

The Geographic Information Systems (GIS) internship is a directed program allowing students to apply classroom instruction to real-world GIS problem solving by working with a government or private agency. Students will be under the supervision of an instructor from the college and an advisor from the agency while working in one or more aspects of GIS operations.

GEOG 140 Introduction to Remote Sensing (1)

1 hour lecture

Recommended preparation: Basic familiarity with computers and the windows operating system.

Transfer acceptability: CSU; UC (Pending)

Provides students with a basic understanding of remote sensing theory and implementation. Topics include satellite imageries, data acquisition, and image interpretation.

GEOG 141 Transportation Systems Analysis (1)

1 hour lecture

Prerequisite: A minimum grade of 'C' in GEOG 120

Transfer acceptability: CSU

Provides students with more advanced practical experience in applying GIS to transportation systems. Students will gain more advanced hands-on experience using GIS as a tool to help model transportation planning, find the shortest routes, and analyze service areas and optimum routing. Introduces students to ESRI's network analyst extension and the various ways this tool can enhance transportation analysis.

GEOG 142 Environmental Applications of GIS (1)

1 hour lecture

Prerequisite: A minimum grade of 'C' in GEOG 120

Transfer acceptability: CSU; UC (Pending)

Provides students with knowledge and practical experience in the application of GIS in an environmental setting. We will explore how location-based GIS tools

are used in many areas of environmental management such as natural disasters, biodiversity, water resources, and pollution. Case studies will be used to explore and understand how GIS is being used to help preserve the earth's resources and environment.

GEOG 195 Regional Field Studies in Geography (1,2,3)

2, 4, or 6 hours lecture/laboratory

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

Extended field studies of the geography of selected regions. Emphasis upon field observation and interpretation of climate, meteorology, vegetation, soils, and landforms.

GEOG 295 Directed Study in Geography (1,2,3)

3, 6, or 9 hours laboratory

Prerequisite: Approval of project or research by instructor

Note: May be taken 4 times for a maximum of six units

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

Independent study for students who have demonstrated skills and/or proficiencies in geography subjects and have the initiative to work independently on projects or research outside the context of regularly scheduled classes. Students will work under the personal supervision of an instructor.

Geology (GEOL)

Contact the Earth, Space, and Aviation Sciences Department for further information.

(760) 744-1150, ext. 2512

Office: NS-110G

Associate in Arts Degrees -

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

- Geology

PROGRAM OF STUDY

Geology

Provides the student with sufficient background to begin upper division coursework and will prepare the student for entry-level jobs that require geologic knowledge. The student is advised to check with the school to which he/she may wish to transfer for additional courses which may be required.

A.A. DEGREE MAJOR

Program Requirements

Group One		Units
GEOG 100	Basic Geology	3
GEOG 100L	Basic Geology Laboratory	1
GEOG 150	Dinosaurs and Earth History	3
GEOG 150L	Dinosaurs and Earth History Laboratory	1
GEOG 195	Regional Field Studies in Geology	2

Group Two (Select at least two sets of courses listed below)

Set 1		Units
MATH 140 and	Calculus/Analytic Geometry, First Course	5
MATH 141	Calculus/Analytic Geometry, Second Course	4

Set 2		Units
PHYS 120 and	General Physics	8
PHYS 121		
or	Principles of Physics	10
PHYS 230 and		
PHYS 231		

Set 3		Units
CHEM 110	General Chemistry	3
CHEM 110L	General Chemistry Laboratory	2
CHEM 115	General Chemistry	3
CHEM 115L	General Chemistry Laboratory	2