

**GEOG 143 Introduction to Cartography and Computer Mapping (1)**

1 hour lecture

**Prerequisite:** A minimum grade of 'C' in GEOG 120**Transfer acceptability:** CSU; UC

Provides the technical and design skills needed to create an effective map using Geographic Information Systems (GIS). Students will receive a review on map projection, coordinate systems, and datum transformation issues. In addition, students will learn about map templates, map annotations, and other tools that are used to enhance spatial data presentation.

**GEOG 144 Internet Mapping and Application Development (3)**

2½ hours lecture - 1½ hours laboratory

**Prerequisite:** A minimum grade of 'C' in GEOG 120**Transfer acceptability:** CSU

Involves the design, creation, configuration, and optimization of geospatial services and applications to deliver content across the Internet. The student will construct web mapping applications with a variety of user interfaces.

**GEOG 150 Geographic Information Science and Spatial Reasoning (3)**

3 hours lecture - 3 hours laboratory

**Prerequisite:** A minimum grade of 'C' in MATH 60**Transfer acceptability:** CSU; UC

An introduction to spatial analyses and spatial distribution theories within the field of Geographic Information Science (GISci). Students will learn about fundamentals of cartography, GIS theory, global positioning systems, spatial relationships, and remote sensing in this course. Students will analyze environmental problems and the human landscape by using open-source GIS software packages to visualize, query, manipulate, and interpret temporal and spatial data.

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

½, 1, or 1½ hours lecture - 1½, 2, 2½, 3, 3½, 4, or 4½ hours laboratory

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

C-ID GEOG 160

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

C-ID GEOG 160

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 Science Degrees -**

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

- Geology

**Associate in Science for Transfer -**

AS-T, IGETC, and CSUGE requirements are listed in Section 6 (green pages).

- Geology

**PROGRAMS 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 basic 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.S. DEGREE MAJOR****Program Requirements****Group One**

GEOG 100	Physical Geology	3
GEOG 100L	Geology Laboratory	1
GEOG 150	Dinosaurs and Earth History	3
GEOG 150L	Dinosaurs and Earth History Laboratory	1

**Group Two (A minimum of 2 units from the following)**

GEOG 195A	Field Studies in Geology: Regional	1 - 3
GEOG 195B	Field Studies in Geology: Southern California Coastal Region	1 - 3
GEOG 195C	Field Studies in Geology: Salton Trough Region	1 - 3
GEOG 195D	Field Studies in Geology: Colorado Plateau Region	1 - 3
GEOG 195E	Field Studies in Geology: Sierra Nevada Region	1 - 3
GEOG 195F	Field Studies in Geology: Death Valley Region	1 - 3

**Group Three (Select at least two of the three options)****Option 1**

MATH 140	Calculus with Analytic Geometry, First Course	5
MATH 141	Calculus with Analytic Geometry, Second Course	4

**Option 2**

PHYS 120	General Physics	4
PHYS 121	General Physics	4
	or	
PHYS 230	Principles of Physics	5
PHYS 231	Principles of Physics	5

**Option 3**

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

**Group Four (Select at least 8 units)**

Any courses in Group Three not taken above.		0
BIOL 100	General Biology	4
GEOG 120	Introduction to Geographic Information Systems and GIS Software	4
GEOG 110	General Geology: National Parks and Monuments	3
GEOG/ASTR 120	Planets, Moons, and Comets	3
GEOG 195A	Field Studies in Geology: Regional	1 - 3
GEOG 195B	Field Studies in Geology: Southern California Coastal Region	1 - 3
GEOG 195C	Field Studies in Geology: Salton Trough Region	1 - 3
GEOG 195D	Field Studies in Geology: Colorado Plateau Region	1 - 3
GEOG 195E	Field Studies in Geology: Sierra Nevada Region	1 - 3
GEOG 195F	Field Studies in Geology: Death Valley Region	1 - 3
GEOG 197	Geology Topics	1 - 3
GEOG 295	Directed Study in Geology	1 - 3
MATH 205	Calculus with Analytic Geometry, Third Course	4
MATH 206	Calculus with Differential Equations	4
OCN 100	Oceanography Lecture	3
OCN 100L	Oceanography Laboratory	1
PHYS 232	Principles of Physics	4

**TOTAL UNITS****34 - 38**

## Geology

Geology is the study of the dynamic processes that shape Earth. Geology incorporates a multidisciplinary approach to describe and solve a variety of problems, including those related to human interaction with natural systems, geologic hazards, and resources. Students who successfully complete this degree will be prepared for transfer into upper division coursework in geology and will meet transfer requirements for admission to CSU.

### AS-T TRANSFER MAJOR

#### Program Requirements

GEOL 100	Physical Geology	3
GEOL 100L	Geology Laboratory	1
GEOL 150	Dinosaurs and Earth History	3
GEOL 150L	Dinosaurs and Earth History Laboratory	1
CHEM 110	General Chemistry	3
CHEM 110L	General Chemistry Laboratory	2
CHEM 115	General Chemistry	3
CHEM 115L	General Chemistry Laboratory	2
MATH 140	Calculus with Analytic Geometry, First Course	5
MATH 141	Calculus with Analytic Geometry, Second Course	4

**TOTAL UNITS** 27

#### Additional Recommended Preparation

PHYS 230 Principles of Physics 5  
PHYS 231 Principles of Physics 5  
BIOL 100 General Biology 4

### COURSE OFFERINGS

#### GEOL 100 Physical Geology (3)

3 hours lecture

**Note:** Together with GEOL 150, a prerequisite to upper division courses in Geology

**Transfer acceptability:** CSU; UC

C-ID GEOL 100

Geology is the study of Earth and the processes that shape the world around us. Geologic concepts and principles provide a framework for understanding the dynamics of Earth's interconnected cycles and processes. Topics covered will include: The origin and composition of the earth, formation and classification of minerals and rocks, tectonic processes, concept of geologic time, geologic processes that shape Earth's landscape, and the influence of geology on society.

#### GEOL 100L Geology Laboratory (1)

3 hours laboratory

**Prerequisite:** A minimum grade of 'C' in GEOL 100, or concurrent enrollment in GEOL 100

**Note:** May be offered as a field laboratory; satisfies lab requirement in Physical Science

**Transfer acceptability:** CSU; UC

C-ID GEOL 100L

Laboratory and field identification of rocks and rock forming minerals. Study of geologic processes by means of geologic and topographic maps.

#### GEOL 110 General Geology: National Parks and Monuments (3)

3 hours lecture

**Transfer acceptability:** CSU

Geologic history and processes of formation of our natural landscape. Principles of physical and historical geology as revealed in the structure, stratigraphy, and rock types of the parks and monuments.

#### GEOL 120 Planets, Moons, and Comets (3)

3 hours lecture

**Note:** Cross listed as ASTR 120

**Transfer acceptability:** CSU; UC

The astronomy and geology of the solar system, observations, dynamics, relativistic ideas, including theories of formation and evolution. Comparative survey of the atmospheres, surface features, and interiors of planets and satellites. Minor objects, such as comets and asteroids, will be included.

#### GEOL 150 Dinosaurs and Earth History (3)

3 hours lecture

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

**Transfer acceptability:** CSU; UC

C-ID GEOL 110

Principles of historical geology. The origin and evolution of Earth and its biosphere, incorporating global tectonics, stratigraphy, fossils, biological evolution, geologic dating, and the processes that have influenced paleogeography during the past 4.6 billion years. Together with GEOL 100, a prerequisite to upper division courses in geology.

#### GEOL 150L Dinosaurs and Earth History Laboratory (1)

3 hours laboratory

**Prerequisite:** A minimum grade of 'C' in GEOL 150, or concurrent enrollment in GEOL 150

**Transfer acceptability:** CSU; UC

C-ID GEOL 110L

Lab component exploring the principles of historical geology. Activities investigate the origin and evolution of Earth and its biosphere, global tectonics, stratigraphy, fossils, biological evolution, geologic dating, and the processes that have influenced paleogeography during the past 4.6 billion years.

#### GEOL 195A Regional Field Studies in

**Geology: Regional**

(1, 1.5, 2, 2.5, 3)

1 ½ - 4 ½ hours lecture - ½ - 1 ½ hours laboratory

**Prerequisite:** A minimum grade of 'C' in GEOL 100 and 110

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

Extended field studies of the geology of western North America over weekends and during vacation and summer sessions. Emphasis upon field observation and interpretation of rock types, landforms, and structure. Locations will not duplicate those specified in Geology 195B through 195F. Localities visited may vary from year to year.

#### GEOL 195B Field Studies in Geology:

**Southern California Coastal Region**

(1-3)

½ - 1 ½ hours lecture - 1 ½ - 4 ½ hours laboratory

**Prerequisite:** GEOL 100, or GEOL 110

**Transfer acceptability:** CSU; UC

Extended field studies of the geologic processes that shape the coastal region of Southern California. Emphasis on coastal processes and landforms, oceanographic climate, geologic development of the Continental Borderland and Transverse Ranges, formation and development of oil and gas resources, coastal sediment resource management, geologic hazards and human impacts in the coastal zone.

#### GEOL 195C Field Studies in Geology: Salton Trough Region (1-3)

½ - 1 ½ hours lecture - 1 ½ - 4 ½ hours laboratory

**Prerequisite:** GEOL 100, or GEOL 110

**Transfer acceptability:** CSU; UC

Extended field studies of the geologic processes that shape the Salton Trough region of Southern California. Emphasis on the active plate boundary zone, including opening of the Gulf of California and development of the San Andreas Fault system. Specific topics include tectonic-related landforms, earthquake dynamics and history, stratigraphy, evolution of Cenozoic climate and fauna, geothermal resources, and Salton Sea history and environmental management.

#### GEOL 195D Field Studies in Geology: Colorado Plateau Region (1-3)

½ - ½ hours lecture - 1 ½ - 4 ½ hours laboratory

**Prerequisite:** GEOL 100, or GEOL 110

**Transfer acceptability:** CSU; UC

Extended field studies of the geologic processes that shape the Colorado Plateau region. Emphasis on stratigraphy and paleogeography, development and hydrology of the Colorado River system, erosional landforms, fossil and mineral resources, regional structural deformation, igneous and volcanic history, and relationship to the ancestral and modern Rocky Mountains.

**GEOL 195E Field Studies in Geology: Sierra Nevada Region (1-3)**

½ - 1½ hours lecture - 1½ - 4½ hours laboratory

**Prerequisite:** GEOL 100, or GEOL 110

**Transfer acceptability:** CSU; UC

Extended field studies of the geologic processes and landscape evolution of the Sierra Nevada region. Emphasis on Pleistocene glacial history and glacial landforms, subduction zone processes including pluton emplacement and terrane docking history, Long Valley-Inyo Craters volcanic history, gold mineralization and mining history, regional fault systems, volcanism and uplift of the modern Sierra Nevada range.

**GEOL 195F Field Studies in Geology: Death Valley Region (1-3)**

½ - 1½ hours lecture - 1½ - 4½ hours laboratory

**Prerequisite:** GEOL 100, or GEOL 110

**Transfer acceptability:** CSU; UC

Extended field studies of the geologic processes that shape the Death Valley region. Emphasis on the tectonic evolution of the Death Valley and the Basin and Range province, depositional history of stratigraphic units from Proterozoic through Paleozoic, volcanic history, mineral and mining resources, structural landforms including the extensive faulting and folding, water resources, and climate history and development of desert landforms.

**GEOL 197 Geology Topics (1-3)**

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.

**Note:** Graded only

**Transfer acceptability:** CSU

Topics in Geology. See Class Schedule for specific topic offered. Course title will designate subject covered.

**GEOL 295 Directed Study in Geology (1, 2, 3)**

Arrange 3, 6, or 9 hours laboratory with department chairperson

**Prerequisite:** A minimum grade of 'C' in GEOL 150

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

Individual study in field, library, or laboratory for interested students.

**German (GERM)**

Contact the World Languages Department for further information.

(760) 744-1150, ext. 2390

Office: H-201

**COURSE OFFERINGS**

For students who have completed foreign language course work at the high school level, and need clarification regarding placement in college level course work, contact the Counseling Center. Universities have varying policies regarding the granting of transfer credit when there is a combination of high school and college level course work.

**GERM 101 German I (5)**

5 hours lecture - 1 hour laboratory

**Note:** Corresponds to two years of high school study.

**Transfer acceptability:** CSU; UC

This course is the first semester of German. This elementary level course is a study of the German language and German-speaking cultures, with emphasis on the development of communicative skills and basic structures. Course combines in-class instruction and practice with self-paced study in the Foreign Language Laboratory. This beginning-level course is for students with no previous course-work in German.

**GERM 102 German II (5)**

5 hours lecture - 1 hour laboratory

**Prerequisite:** A minimum grade of 'C' in GERM 101 or two years of high school German

**Transfer acceptability:** CSU; UC

This course is the second semester of German. This elementary level course is a study of the German language and German-speaking cultures, with continued emphasis on the development of communicative skills and basic structures. Course combines in-class instruction with self-paced study in the Foreign Language Laboratory.

**GERM 201 German III (5)**

5 hours lecture - 1 hour laboratory

**Prerequisite:** A minimum grade of 'C' in GERM 102 or three years of high school German

**Transfer acceptability:** CSU; UC

This course is the third semester of German. This intermediate level course is a study of the German language and German-speaking cultures, focusing on intermediate level structures and readings of culturally relevant authentic materials. Emphasis is on developing oral, listening, reading and writing skills in order to acquire proficiency in German. Class is largely conducted in German.

**GERM 202 German IV (5)**

5 hours lecture

**Prerequisite:** A minimum grade of 'C' in German 201 or four years of high school German

**Transfer acceptability:** CSU; UC

This course is the fourth semester of German. This intermediate level course is a study of the German language and of special topics on the culture of the German-speaking world. Emphasis is on further development of cross-cultural awareness, as well as, the development of oral, listening, reading and writing skills in order to improve communicative competence in German. Class is largely conducted in German.

**Graphic Communications (GC)**

See also **Graphic Communications - Imaging & Publishing**, and **Graphic Communications - Multimedia & Web**

Contact the Graphic Communications Department for further information.

(760) 744-1150, ext. 2452

Office: MD-114

For transfer information, consult a Palomar College Counselor.

**COURSE OFFERINGS****GC 100 Graphic Communications (3)**

3 hours lecture

**Transfer acceptability:** CSU

Explores the history and theory of effective mass communication from prehistoric cave art, to invention of the printing press, and modern graphic communication techniques using computers and the Internet. The class examines communication models revolving around imagery, type, delivery systems, and technology. The students will be able to understand and establish the effects of a clear visual message. Learning modules include slideshow, field trips, guest speakers, discussion, lectures and hands-on application with computers and the Internet to promote an understanding of graphic communications and visual messages and their impact on society.

**GC 101 History of Graphic Communications (3)**

3 hours lecture

**Transfer acceptability:** CSU

This course focuses on the history and evolution of graphic communications from prehistoric pictographs to present day graphic design. Topics include the invention of writing and the creation of alphabets. Other topics include world influences on print and aesthetic design, and an understanding of the stylistic, social, political, economic, and historical events as related to communication and graphic design. The emphasis is on art movements, schools of thought, influential individuals, and technology as they interrelate with the history of graphic arts. Historical topics are applied to photography, print media graphics and motion graphics. Field trips to museums and guest speakers will be integrated into the topics as appropriate.