GEOG 1: PHYSICAL GEOGRAPHY

Foothill College Course Outline of Record

Effective Term:	Summer 2025
Units:	5
Hours:	4 lecture, 3 laboratory per week (84 total per quarter)
Advisory:	Demonstrated proficiency in English by placement via multiple measures OR through an equivalent placement process OR completion of ESLL 125 & ESLL 249; Intermediate Algebra or equivalent.
Degree & Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Area 5: Natural Sciences w/ Lab
Transferable:	CSU/UC
Grade Type:	Letter Grade (Request for Pass/No Pass)
Repeatability:	Not Repeatable

Student Learning Outcomes

- Analyze relationships between humans and the environment
- Apply the major concepts of physical geography to specific locations on Earth. These concepts include climate change, the seasons, landforms, the hydrological cycle, ecosystems, and other major concepts in physical geography.
- Describe spatial patterns observed in maps and remotely sensed images, and explain the physical geography processes that created them
- Use tools of Geography including maps, graphs and/or Geographic Information Systems (GIS) to analyze and interpret data and draw valid conclusions

Description

Study of the Earth's surface, including the earth's dimensions and systems; atmospheric processes; patterns of climate, vegetation, and soils; and features, processes, and interactions of land, water, and various energy sources. Use of maps for interpretation.

Course Objectives

The student will be able to:

1. Use maps, graphs, and Geographic Information Systems (GIS) to interpret data.
2. Explain the causes of season, climate patterns, and major landforms.
3. Describe the function and composition of the atmosphere, and how it affects our daily lives.
4. Discuss the hydrologic cycle, and the distribution and allocation of water resources for humans.
5. Describe the structure of the solid earth and relate it to such phenomena as earthquakes, mountain ranges, and volcanoes.
6. Discuss the potentials and limitations of scientific innovations to mitigate natural hazards.
7. Evaluate the effects of the atmosphere and the hydrosphere on the lithosphere.
8. Assess activities through which humans have modified the environment.
9. Relate climate patterns and soils to the Earth's ecosystems.

Course Content

1. Use maps, graphs, and Geographic Information Systems (GIS) to interpret data
    a. The field of physical geography
        i. The Earth in space; seasons
        ii. The scientific method
    b. The physical Earth
        i. Instrumentation and methods used to study the Earth
        ii. Remote sensing

iii. GIS

iv. Analysis and interpretation of maps

v. Analysis and interpretation of graphs and data animations

c. The atmosphere: weather and climate

i. Isolation and the electromagnetic spectrum

ii. Surface temperature

iii. Atmospheric pressure and wind

iv. Air masses

v. Classifications of climate

d. The lithosphere

i. Plate tectonics

ii. Volcanism, earthquakes, orogenesis

iii. Weathering: atmosphere/hydrosphere/lithosphere interaction

e. The hydrosphere

i. Distribution of water on Earth

ii. The water cycle

iii. Water resources: distribution and allocation

f. The biosphere

i. Soil formation and classifications

ii. Ecosystems and biomes

iii. Range and distribution of plant and animal species on Earth

2. Explain the causes of seasons, climate patterns, and major landforms

a. The atmosphere: weather and climate

i. Isolation and the electromagnetic spectrum

ii. Surface temperature

iii. Atmospheric pressure and wind

iv. Air masses

v. Classifications of climate

b. The lithosphere

i. Plate tectonics

ii. Volcanism, earthquakes, orogenesis

iii. Weathering: atmosphere/hydrosphere/lithosphere interaction

c. The hydrosphere

i. Distribution of water on Earth

ii. The water cycle

iii. Fresh water resources: distribution and allocation

3. Describe the function and composition of the atmosphere, and how it affects our daily lives

a. Isolation and the electromagnetic spectrum

b. Surface temperature

c. Atmospheric pressure and wind

d. Air masses

e. Violent weather: hurricanes, tornadoes, and thunderstorms

4. Discuss the hydrologic cycle, and evaluate the distribution and allocation of water resources for humans

a. Distribution of water on Earth

b. The water cycle

c. Fresh water resources: distribution and allocation locally and globally

5. Describe the structure of the solid earth and relate it to such phenomena as earthquakes, mountain ranges, and volcanoes

a. Plate tectonics

b. Volcanism, earthquakes, orogenesis

c. Weathering: atmosphere/hydrosphere/lithosphere interaction

6. Discuss the potentials and limitations of scientific innovations to mitigate natural hazards

a. Cyclones and tornadoes

i. Satellite monitoring and prediction

ii. Radar monitoring and prediction

b. Earthquakes and volcanoes

i. The uses of seismic monitoring

ii. GPS and remote sensing monitoring

iii. Mitigation and zoning

    c. Tsunamis: early warning networks
7. Evaluate the effects of the atmosphere and the hydrosphere on the lithosphere
    a. Weathering: atmosphere/hydrosphere/lithosphere interaction
    b. Physical and chemical weathering
    c. Eolian environments
    d. Glacial weathering and landforms
    e. The coastal environment
    f. Soil formation and classifications
    g. Fluvial processes
8. Assess the activities by which humans have modified the environment
    a. Fresh water resources: distribution and allocation
    b. Ecosystems and biomes
    c. Human effects on the atmosphere:
        i. Ozone depletion
        ii. Climate change
        iii. Acid rain
    d. Modification and destruction of natural ecosystems
9. Relationship of climate patterns and soils to the Earth's ecosystems, including:
    a. Energy flows of biogeochemical cycles, such as the Carbon cycle, Nitrogen cycle, Oxygen cycle, and mineral cycles
    b. Biomes and ecosystem health
    c. Terrestrial flora and fauna

Lab Content

1. The scientific method
    a. Hypothesis
    b. Theory
    c. Law
2. Use of data collection tools

a. Accuracy
b. Precision
c. Error

3. Use tools, data collection techniques, models, and theories of science most prevalent in relevant research laboratories, such as:
   a. GIS (Geographic Information Systems)
   b. Remote sensing
   c. GPS (Global Positioning Systems)
   d. Paper maps
   e. Thermometers
   f. Hygrometers
   g. Anemometers
   h. Seismographs
4. Collection of data
5. Analysis and interpretation of data collected by students
6. Analysis and interpretation of large datasets drawn from the material world
7. Formulation and testing of hypothesis
8. Written laboratory reports which interpret results and draw reasonable conclusions
9. A minimum of one collaborative activity in which students must work effectively in small groups and teams

Special Facilities and/or Equipment

1. For laboratory activities, students need computers with internet access.
2. When taught as an online distance learning section, students and faculty need ongoing and continuous internet and email access.

Method(s) of Evaluation

Methods of Evaluation may include but are not limited to the following:

One comprehensive final exam or comprehensive final project
One or more additional exam(s) or assessments
Laboratory projects covering areas of expanded description of course content. Projects must include data analysis, interpretation, and hypothesis formulation

Method(s) of Instruction

Methods of Instruction may include but are not limited to the following:

Lecture
Discussion
Cooperative learning exercises
Electronic discussions/chat
Laboratory

Representative Text(s) and Other Materials

Hess, Darrel. McKnight's Physical Geography A Landscape Appreciation, 12th ed.. 2021.

Dastrup, R. Adam. Physical Geography and Natural Disasters. 2024.

Ritter, Michael E.. The Physical Environment. 2024.

Dastrup text available as OER: **https://slcc.pressbooks.pub/physicalgeography/**

Ritter text available as OER: **https://geo.libretexts.org/Bookshelves/Geography_(Physical)/The_Physical_Environment_(Ritter)**

Types and/or Examples of Required Reading, Writing, and Outside of Class Assignments

1. Weekly reading assignments from the textbook and formative exercises
2. Comprehensive midterm and final examinations or equivalent projects
3. Written laboratory reports involving hypothesis formation, interpretation, and analysis of data

4. Laboratory projects that involve individual data collection using tools relevant to the discipline
5. Written assessments that determine student's mastery of course learning outcomes (SLOs)

Discipline(s)

Geography