Lecture Contact Hours: 48-54; Homework Hours: 96-108; Total Student Learning Hours: 144-162

CUYAMACA COLLEGE
COURSE OUTLINE OF RECORD

GEOGRAPHY 120 – PHYSICAL GEOGRAPHY: EARTH SYSTEMS

3 hours lecture, 3 units

Catalog Description
Physical geography is the study of the patterns and processes that underlie the fundamental nature and dynamics of the physical world. Topics will be investigated from a systems perspective, with particular attention to the spatial relationships among the atmosphere, hydrosphere, lithosphere and biosphere. Global, regional and local environmental concerns will be discussed as relevant to course topics.

Prerequisite
None

Course Content
1) Introduction to the guiding principles of geography as applied to the physical world
2) Introduction to the scientific method and the principles of systems analysis
3) Basic training in map reading and spatial analysis
4) Modeling of Earth-Sun relations as applied to daily and seasonal changes in solar radiation
5) Analysis of the interactions within and between the atmosphere, hydrosphere, lithosphere and biosphere
6) Modeling of heat and energy flows within and between Earth's natural systems
7) Overview of atmospheric and oceanic structure, composition, circulation patterns and interactive dynamics
8) Introduction to the elements, controls and spatial patterns of weather and climate-related processes
9) Delineation of cycles and patterns within the biosphere
10) Survey of soil and vegetation distributions
11) Scientific analysis of the theory of plate tectonics
12) Survey of volcanic and tectonic processes and landforms
13) Overview of weathering, erosion and mass wasting processes
14) Survey of fluvial, Aeolian and glacial processes and landforms
15) Identification of key characteristics that define mountain, desert, coastal and interior environments
16) Assessment of global, regional and local environmental concerns as relevant to topic discussions

Course Objectives
Students will be able to:
1) Identify and utilize the guiding principles of physical geography to analyze and interpret geospatial relationships within and between Earth's four major environmental spheres (atmosphere, hydrosphere, lithosphere, and biosphere).
2) Outline the scientific method, describe its applications, and explain its relevance to real world problem solving.
3) Analyze geospatial data on maps, tables and graphs, and draw conclusions based on subsequent interpretations.
4) Describe seasonal Earth-Sun relations and explain resulting physical phenomena on Earth's surface.
5) Model atmospheric and oceanic circulation patterns in order to predict seasonal changes in the weather.

6) Utilize basic meteorological information to describe daily weather patterns, and explain the necessary conditions for the development of severe weather.
7) Compare and contrast daily, seasonal and annual atmospheric phenomena in order to differentiate between short-term weather processes and resulting long-term climate patterns.
8) Identify local, regional and global scale biogeographic patterns based on soil and climate factors, and evaluate their significance within the context of Earth's biosphere.
9) Describe the Theory of Plate Tectonics, provide scientific evidence in its support, and explain its significance within the field of geography.
10) Model surficial geomorphic processes and apply to the real world in order to explain the development and evolution of common landforms.
11) Compare and contrast competing scientific interpretations of geospatial data, and explain how divergent conclusions can be drawn from the analysis of similar data.
12) Evaluate the relationships between humans and their surrounding environment, and assess the significance of the human imprint on Earth’s natural systems.

Method of Evaluation
A grading system will be established by the instructor and implemented uniformly. Grades will be based on demonstrated proficiency in subject matter determined by multiple measurements for evaluation, one of which must be essay exams, skills demonstration or, where appropriate, the symbol system.
1) Quizzes and exams that measure students' ability to recognize, explain and provide examples of the patterns, processes and relationships associated with Earth's natural systems.
2) Spatial problem solving exercises in which students model real world applications of classroom and textbook materials (e.g., map reading and interpretation, daily and seasonal earth-sun relationships, watershed analyses, etc.).
3) Physical geography research project(s) in which students are required to analyze, interpret and draw conclusions from scientific sources.
4) Written student analysis of contemporary environmental concerns based on historic and modern scientific evidence.

Special Materials Required of Student
Colored pencils, ruler, calculator, atlas

Minimum Instructional Facilities
1) Smart classroom
2) Wall maps illustrating global/regional scale spatial distributions of physical phenomena at Earth’s surface
3) Physiographic globe(s)

Method of Instruction
1) Integrated classroom lecture, discussion and demonstration
2) Small and large group discussion
3) In-class activities and independent homework/research projects
4) Field trips designed to link course materials to real world phenomena
5) Instructional slides, audio/video presentations
6) Auxiliary use of study groups, peer tutoring and/or instructional office hours

Out-of-Class Assignments
1) Required reading assignments in textbook or other supplementary reading sources
2) Problems to practice use of maps, graphs and analysis of meteorological phenomena, etc.
3) Small group/individual research projects

Texts and References

1) Required (representative example): Christopherson, R.W. *Elemental Geosystems*, 8th edition. Pearson, 2015.
2) Supplemental: As assigned by instructor.

Exit Skills

Students having successfully completed this course exit with the following skills, competencies and/or knowledge:

1) Spatial thinking and understanding of systems theory as applied to real world phenomena.
2) Understanding and application of the scientific method.
3) Analysis and interpretation of spatial data on maps, tables and graphs.
4) Modeling of seasonal Earth-Sun relations and resulting physical phenomena on Earth's surface.
5) Analysis of relationships within and between Earth's systems at global, regional and local scales.
6) Modeling of weather and climate patterns at global, regional and local scales.
7) Relation of soil and climate factors to biogeographic patterns and processes.
8) Descriptive assessment of surficial processes resulting from geologic and geomorphic phenomena.
9) Evaluation of competing scientific theories used to explain geo-spatial phenomena.
10) Analyze historical and modern relationships between humans and their surrounding environment.

Student Learning Outcomes

Upon successful completion of this course, students will be able to:

1) Apply the principles of physical geography to analyze and interpret geospatial relationships within and between the atmosphere, hydrosphere, lithosphere, and biosphere.
2) Evaluate atmospheric and oceanic processes and assess how they impact weather variations and climate conditions.
3) Utilize geologic principles to investigate the formation and development of Earth's landscapes.
4) Identify the spatial distribution of ecosystems and biodiversity cycles at local, regional and global scales and evaluate their connection to geologic and atmospheric phenomena.
5) Assess data regarding human impact on the environment and climate change at both local and global scales.
6) Use the scientific process and scientific principles to critically analyze divergent viewpoints about geographical information.