Revised: Fall 2016

GEO 200
Intro to Physical Geography

COURSE OUTLINE

Prerequisites: None

Course Description:

Studies major elements of the natural environment including earth-sun relationship, land forms, weather and climate, natural vegetation and soils. Introduces the student to types and uses of maps.

This course provides an introduction to the Earth, including its environmental features and processes; uses the spatial science perspective of physical geography to investigate location, distribution, and spatial interaction of the Earth's natural phenomena; applies traditional physical geographic concepts of models and systems analysis toward the investigation of Earth processes and patterns; broadens the students' knowledge, understanding, and appreciation of the Earth through discussion of a wide variety of topics involved in the study of physical geography, such as introduce the changing world, the major events of Hurricane Katrina, the South Asia Tsunami, and global warming.

Students will interpret maps and understand basic map fundamentals. Students will strengthen skills in interdisciplinary studies and physical global awareness.

Semester Credits: 3 **Lecture Hours:** 3

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Course Outcomes:

At the completion of this course, the student should be able to:

- Understand models and systems theory as well as apply to physical processes within the biosphere, hydrosphere, lithosphere, and atmosphere.
- Use the geographic grid to locate Earth phenomena and have a basic understanding of maps and their various projections.
- Describe the relationship between the Earth—Sun and explain the occurrence of seasons.
- Describe the characteristics of the atmosphere, air temperature, and define weather and climate.
- Understand basic pressure systems and their affects.
- Explain the hydrologic cycle and the process of precipitation.
- Identify climates based on temperature and precipitation rates using a climograph and identify the causes of climate change.
- Describe the basic differences in world climate regions.
- Classify terrestrial ecosystems based on their characteristics.
- Evaluate soil and identify soil characteristics and the development of soil horizons.
- Understand basic Earth structures and the notion of plate tectonics.
- Identify volcanic and tectonic landforms.
- Explain weathering and mass wasting providing examples of each.
- Identify Earth landforms resulting from underground water, fluvial processes, arid regions, glacial systems, and coastal processes.

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GEO 200: Intro to Physical Geography

Required Materials:

1. Textbook
2. Internet access
3. Blackboard

Textbook:

De Bliij, H. J. et al. Physical Geography: The Global Environment. New York, New York: Oxford University Press, 5th ed., 2015. ISBN: 978-0-190-24686-0

The following supplementary materials are available: None

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Topical Description:

Physical Geography—Earth Elements and Systems: Major perspectives of spatial, physical, and environmental science perspectives in geography. Models and Systems.

Representations of Earth: Locations on Earth and the geographic grid. Maps and map projections, displaying spatial projections, modern mapping technology and remote sensing.

Earth-Sun Relationships and Solar Energy: The solar system, the Earth-Sun system, including sun angle, duration, and insolation. Understanding the seasons and the uses of the Analemma.

The Atmosphere, Temperature, and the Heat Budget: Characteristics of the atmosphere, the heat energy budget, and air temperature.

Atmospheric Pressure, Winds, and Circulation Patterns: Variations in atmospheric pressure, pressure systems, global pressure belts, and global surface wind systems. Upper air winds and the jet stream.

Moisture, Condensation, and Precipitation: The hydrologic cycle, atmospheric water and sources of atmospheric moisture. Condensation and precipitation processes.

Air Masses and Weather Systems: Air masses and fronts, atmospheric disturbances such as cyclones, anti-cyclones, hurricanes, thunderstorms, tornadoes, weak tropical disturbances, and Blizzards.

Global Climates and Climate Change: Classifying climates under Thornthwaite and Köppen systems. Climates of the past and rates of climate change. Causes of climate change and future climate predictions.

Low-Latitude and Arid Climate Regions: Humid tropical and arid climate regions.

Middle-Latitude, Polar, and Highland Climate Regions: Middle-latitude climates, humid microthermal and polar climate regions, including tundra, ice-sheet, and highland (mountain) climates.

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Biogeography: Ecosystems, succession and climax communities and environmental controls. Classification of terrestrial ecosystems including forest, grassland, desert, artic and alpine tundra, and marine ecosystems.

Soils and Soil Development: Soil components and characteristics. Development of soil horizons and factors affecting soil formation, including soil forming regimes. Soil classifications system.

Earth Structure, Earth Materials, and Plate Tectonics: Earth's planetary structure, minerals and rocks, and the continents in motion. Continental drift, plate tectonics, and the growth of continents. Paleogeography.

Volcanic and Tectonic Processes and Landforms: Igneous processes and landforms, tectonic forces, rock structure, and landforms, including compressional, tensional, and shearing forces. Earthquakes and their size and hazards.

Weathering and Mass Wasting: Exogenic processes of physical, chemical, and mechanical weathering. Variability of weathering based on rock type, climate, weaknesses, and topography. Mass wasting and its characteristics.

Underground Water and Karst Landforms: Underground water and its utilization from wells and artesian systems. Groundwater quality and development of subsurface landforms such as Karst, limestone caverns and caves.

Fluvial Processes and Landforms: The stream system, including drainage basins, density and drainage patterns. Fluvial processes of erosion, transportation, and deposition. Channel patterns and sculpture by streams. Deltas, stream hazards, and the importance of surface waters.

Arid Region Landforms and Eolian Processes: Water as a geomorphic agent in arid lands including arid landforms of fluvial erosion and deposition. Wind as a geomorphic agent in erosion, transportation, and deposition.

Glacial Systems and Landforms: Glacier formation and the types of glaciers including alpine and continental. Glacial lakes and periglacial landscapes.

Coastal Processes and Landforms: Origin and nature of waves including tides, tsunamis, and wind waves. Coastal erosion and deposition as well as coastal landforms, islands, and reefs.

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Notes to Instructors

- Lab manual and projects available, including globes.

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