Course Outline for Geography 1L

INTRODUCTION TO PHYSICAL GEOGRAPHY LABORATORY

Catalog Description:

GEO 1L - Introduction to Physical Geography Laboratory 1.00 units

Application of the concepts, techniques, tools, and materials of physical geography. Practical exercises, experiments, observations, data analyses, and computer applications/simulations which augment understanding of geographic processes, interrelationships, spatial patterns and distributions. Use of maps, remotely-sensed imagery, and geographic information systems. Includes locational reference systems, time-space relationships, weather, climate, soils, vegetation, and landforms. Field trips/field projects may be included.

Prerequisite: GEO 1 may be taken concurrently

Grading Option: Optional

Discipline:

<table>
<thead>
<tr>
<th>Units</th>
<th>Contact Hours</th>
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<tbody>
<tr>
<td></td>
<td>Week</td>
</tr>
<tr>
<td>Lecture</td>
<td>0.00</td>
</tr>
<tr>
<td>Laboratory</td>
<td>0.00</td>
</tr>
<tr>
<td>Clinical</td>
<td>0.00</td>
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<tr>
<td>Total</td>
<td>1.00</td>
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Prerequisite Skills:

None

Measurable Objectives:

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

1. apply observational, critical thinking, and problem-solving skills through analytical viewing, writing, and quantitative techniques which demonstrate understanding of the processes that produce patterns on the landscape;
2. measure, interpret, and analyze spatial data on maps, aerial photographs, and satellite imagery;
3. synthesize and integrate various forms of spatial data in geographic information systems;
4. apply geographic computer simulations/models to the analysis of spatial interactions, distributions, and relationships;
5. apply selected meteorological techniques and tools to the observation, measurement, analysis, and portrayal of weather data;
6. identify, classify, map, or perform other laboratory/field activities which demonstrate the properties and/or spatial covariation of selected climate, soil, and vegetation types;
7. classify and identify properties of the most common earth materials;
8. apply map/image analysis techniques to identify and explain selected landform types, their associated erosional and depositional features, and land use patterns;
9. recognize his/her awareness of local and regional atmospheric, fluvial, coastal, and tectonic processes/hazards.

Course Content:

1. Distance concepts
   A. Length of a degree on a great circle
   B. Proportional relationship of a globe to the earth
   C. Verbal, representative fraction, graphic scales
2. Locational reference systems
   A. Geographic grid and coordinates
   B. Metes and bounds
   C. Land Ordinance of 1785 (Township and Range)
   D. French Long Lot
   E. Land grants
3. Longitude and time relationships
4. Maps
   A. Marginal information, symbols, legends
   B. Relief representation
   C. Scale, area, detail relationships
   D. Measurements of distance and direction
   E. Slope measurements, profiles
   F. Projections and their properties
   G. Thematic and topographic map interpretation
5. Remotely-sensed imagery (satellite, photographic)
   A. Platforms and sensors
   B. Physical and cultural signatures
6. Geographic information system applications
7. Earth-sun and seasonal relationships
   A. Determination of sun's declination, altitude angle
   B. Determination of duration of daylight
   C. Temporal and spatial distribution of insolation
8. Multiple applications in weather topics
   A. Temperature measures, distribution, cycles
   B. Atmospheric pressure/winds and oceanic circulation
   C. Atmospheric moisture and stability
   D. Precipitation processes/distribution and water budgets
   E. Frontal analysis and identification of associated weather characteristics on synoptic charts
9. Climate applications
   A. Climate controls
   B. Climate classification and use of climographs
   C. Computer simulations/modeling of climate change
10. Soils applications
    A. Soil properties
    B. Classification
    C. Soil survey map interpretation
11. Vegetation applications
    A. Plant identification and adaptations
    B. Classification
    C. Climate, soils, vegetation associations
12. Earth materials
    A. Mineral and rock classification and identification
    B. Landscape expression
13. Landform map/image analysis/interpretation, exercises, simulations
    A. Types
    B. Processes
    C. Spatial distribution and environments
    D. Land use and modification
    E. Drainage patterns

Methods of Presentation
1. Lecture/Discussion
2. Laboratory
3. Demonstration/Exercise
4. Use of computers and/or other laboratory/field facilities

Assignments and Methods of Evaluating Student Progress
1. Typical Assignments
   A. Define and apply geographic elements and principles, draw and label specified parallels and meridians, locate grid
      coordinates on a world map, correct latitude and longitude readings, interpret grid patterns according to azimuthal, conic,
      and cylindrical projections, and interpret the geographic grid on the Hayward, CA 7.5 minute topographic quadrangle.
   B. Complete the Plate Tectonics lab exercise by means of the following: 1) interpret the ABAG shaking intensity damage map to
      determine the potential shaking that would occur at their residences and Chabot College if a magnitude 7.1 earthquake were
      to occur on selected Bay Area faults 2) plot current earthquake and volcano location data on a provided map 3) differentiate
      and draw plate boundaries on the map 4) answer questions about the relationship of the plotted data and the plate boundary
      locations and types 5) write a description that critically assesses the relationship between the earthquake and volcanic
      events and plate boundaries around the edge of the Pacific Ocean.
2. Methods of Evaluating Student Progress
   A. Exams/Tests
   B. Papers
   C. Projects
   D. Class Participation
   E. Lab Activities
   F. Assessment of written, quantitative, and interpretative solutions to/analysis of laboratory/field exercises, problems, and
      projects
   G. Final Examination or Project
3. Student Learning Outcomes
   Upon the completion of this course, the student should be able to:
   A. Articulate spatial interactions between atmosphere, ocean, and land surface
   B. Critically differentiate regional similarities and contrasts in climate types, landform styles, and biomes
   C. Evaluate the usefulness and value of emerging technologies in observing physical processes and human adaptation to the
      natural environment
   D. Identify improved skills in observing the world

Textbooks (Typical):
   Pearson Prentice Hall.

Special Student Materials
1. Pencils
2. soft eraser
3. colored pencils
4. Practical application could include: -Sling psychrometer -Stream Survey Kit -Pocket transit/compass Listed items above can be
   shared with GEO 1, GEO 1L, GEO 8, and GEO 10 -Topography maps -Atlas Listed items above can be shared with GEO 1, 1L, 2, 5,
   8, 10, 12, and 3

Abbreviated Class Schedule Description:

Practical application of the concepts, techniques, tools, and materials of physical geography.
Prerequisite: GEO 1 may be taken concurrently