GEOG A180L: PHYSICAL GEOGRAPHY LAB

Item	Value
Curriculum Committee Approval Date	12/06/2023
Top Code	220600 - Geography
Units	1 Total Units
Hours	54 Total Hours (Lab Hours 54)
Total Outside of Class Hours	0
Course Credit Status	Credit: Degree Applicable (D)
Material Fee	No
Basic Skills	Not Basic Skills (N)
Repeatable	No
Grading Policy	Standard Letter (S)
Associate Arts Local General Education (GE)	• OC Physical/Biological Sci - AA (OB)
Associate Science Local General Education (GE)	• OCC Physical/Biological Sci-AS (OSB)
California General Education Transfer Curriculum (Cal-GETC)	• Cal-GETC 5C Laboratory Activity (5C)
Intersegmental General Education Transfer Curriculum (IGETC)	• IGETC 5C Laboratory Activity (5C)
California State University General Education Breadth (CSU GE-Breadth)	• CSU B3 Laboratory Activity (B3)

Course Description

This course is designed to provide supplemental exercises in topics covered in GEOG A180. Lab experience will include map analysis and interpretation, weather prognostication, landform processes and evolution, tectonics, biogeography, and habitat analysis. PREREQUISITE: GEOG A180 or GEOG A180H or concurrent enrollment. Transfer Credit: CSU; UC. C-ID: GEOG 111.**C-ID:** GEOG 111.

Course Level Student Learning Outcome(s)

1. Student will identify, analyze and interpret spatial information for the earth's physical features.
2. Student will understand the spatial distributions, processes and controls of the earth's physical features from the global to local scale.

Course Objectives

- 1. Find locations using latitude and longitude.
- 2. Identify distortions on various map projections.
- 3. Find great circle routes and calculate rhumb lines for navigation.
- 4. Identify and create fraction, graph and verbal map scales.
- 5. Calculate the distance between two points using a fraction scale.
- 6. Calculate time differences and elapsed time between locations using standard time zones and International Date Line.
- 7. Identify time of maximum insolation for various locations based on seasons and types of rays and surface albedo.
- 8. Identify locations using the Township and Range grid system.
- 9. Determine elevation or temperature using the normal lapse rate 3.5/1000 ft.
- 10. Calculate relative humidity using sling psychomotor.
- 11. Classify clouds and weather associated with each cloud type.
- 12. Calculate distance from source of lightning using thunder.
- 13. Calculate air mass temperature using wet and dry lapse rates for orographic lifting.
- 14. Identify major wind, pressure, and ocean circulation systems.
- 15. Determine current and forecast weather conditions based on cyclones location and direction.
- 16. Classify point data using isolines.
- 17. Classify annual rainfall and temperature date by the Koppen climate system.
- 18. Identify structural adaptations of plants of various climate regimes.
- 19. Identify types of plate boundaries and landforms.
- 20. Calculate rate of plate movement using distance and time.
- 21. Identify types of faults based on cross-section of rock layers.
- 22. Classify soils based on o/o silt, sand, and clay and determine porosity.
- 23. Identify landform types on a quadrangle map.
- 24. Identify river stages (young, mature, old).
- 25. Identify sand dune types.
- 26. Identify glacier types and glacial landforms (valleys, moraines).
- 27. Create a habitat area for a given species based on its habitat needs.

Lecture Content

I. Geographic Grid A. Identify location using latitude and longitude B. Axial tilt and important lines of latitude (Tropics, Equator, Circles) C. Map Projections 1. Identify distortions on various projections 2. Find great circle routes and calculate rhumb lines for navigation II. Map Scale A. Differentiate between large scale and small scale maps B. Identify and create fraction, graph, and verbal scales C. Calculate the distance between two points using a fraction scale and graph scale III. Time Zones A. Relationship between longitude and standard time zones B. Calculate time differences between locations C. Calculate elapsed time (account for time in flight) D. International Date Line ; IV. Earth/Sun Relationships A. Concepts of parallelism, seasons, direct vs. oblique rays B. Conditions during solstice and equinox C. Identify time of maximum insolation for various locations V. Map Investigation and Cartographic Techniques A. Using the Township and Range grid system to identify locations B. Identify sub-divisions of a section C. Drawing isolines to classify spatial point data - isobars D. Identification of landform types of interpreting isoline pattern VI. Temperature Variation A. Surface albedo - absorption or reflection of incoming solar radiation B. Coastal vs. continental differences in temperature - comparison of annual temperature date and analysis C. Lapse rate - determine elevation or temperature using the normal lapse rate 3.5/1000 ft. VII. Humidity and Precipitation A. Calculate relative humidity using sling psychomotor B. Determine dew point temperature C. Cloud classification D. Adiabatic Heating and Cooling - calculate

temperature using wet and dry lapse rates for orographic lifting VIII. Global Circulation and Weather Prognostication A. Identify major wind, pressure, and ocean circulation systems B. Types of front (cold, warm, stationary, occluded) C. Determine current and forecast weather conditions based on a cyclones location and direction D. Calculate distance from source of lightning using thunder IX. Climate Classification A. Analysis of annual rainfall and temperature data to determine Koppen symbols for climate type B. Constructing climographs X. Biogeography and Fauna A. Identify structural adaptations of plants to various climate regimes B. Overlays of various conditions to determine a habitat area for a given species XI. Tectonics and Diastrophism A. Identify types of plate boundaries and landforms B. Calculate rate of plate movement using distance and time C. Identify types of faults based on cross-sections of rock layers XII. Soils A. Classify soils based on the percent of silt, and sand and clay B. Examination of porosity and drainage of various soil types C. pH testing XIII. Landforms - Erosion, Transportation and Deposition A. Identify river stage of stream course as young, mature, or old B. Identify sand dune type C. Identify glaciers and glacial landform (valleys, moraines, cirque, tidewater, mountain)

Lab Content

See Course Content.

Method(s) of Instruction

- Lab (04)
- DE Live Online Lab (04S)
- DE Online Lab (04X)

Instructional Techniques

1. Lecture of basic principles and instructions for completing the lab exercise. 2. Use of slides, transparencies, and videos in conjunction with lecture or as part of the lab exercise. 3. Lab assignments - independent or collaboration on lab exercise. 4. Supervised assignments - instructor led lab exercise. 5. Instructor will provide verbal feedback to student questions in the lab. 6. Exams are practical; students must repeat exercises and experiments from the lab on the exam. 7. Extra credit field trips may be scheduled.

Reading Assignments

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Writing Assignments

1. Students will construct hypothesis and write an assessment of one to two paragraphs in length incorporating the learning objectives of the exercise to the outcome of the lab activity. 2. Students will demonstrate proficiency by taking three practical examinations based on the lab exercises. Exams will require students to solve problems and provide short written answers.

Out-of-class Assignments

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Demonstration of Critical Thinking

1. Students will complete weekly lab exercises by working independently or in small groups. 2. Each student will return a complete exercise at the end of each session to be graded. 3. Students will take practical examinations repeating tasks from the lab exercises. Exams will include objective and short essay questions in addition to work problems.

Required Writing, Problem Solving, Skills Demonstration

1. Students will construct hypothesis and write an assessment of one to two paragraphs in length incorporating the learning objectives of the exercise to the outcome of the lab activity. 2. Students will demonstrate proficiency by taking three practical examinations based on the lab exercises. Exams will require students to solve problems and provide short written answers.

Textbooks Resources

1. Required Corbet, J.J. . Physical Geography Manual, ed. Dubuque, IA: Kendall Hunt Publishing, 2010 Rationale: - 2. Required Hess, D.. Physical Geography Laboratory Manual, ed. Upper Saddle River, NJ: Pearson, 2021 Rationale: - 3. Required Naesse, I. . Orange Coast College Physical Geography Laboratory Manual, ed. Upper Saddle River, NJ: Pearson, 2007 Rationale: -

Other Resources

1. Instructor prepared handouts of important information and instructions for the completion of the lab exercise. 2. Recommended references: Students may refer to their assigned text in the Physical Geography lecture course in which they are concurrently enrolled to supplement information from the lab manual and instructor handouts. The textbook will vary by lecture instructor choice.