College of San Mateo
Official Course Outline

1. **COURSE ID:** GEOG 100 **TITLE:** Physical Geography **C-ID:** GEOG 110
   Units: 3.0 units **Hours/Semester:** 48.0-54.0 Lecture hours; and 96.0-108.0 Homework hours
   Method of Grading: Grade Option (Letter Grade or P/NP)
   Recommended Preparation:
   Eligibility for ENGL 838 or ENGL 848
   Eligibility for ESL 400, MATH 110

2. **COURSE DESIGNATION:**
   Degree Credit
   Transfer credit: CSU; UC
   AA/AS Degree Requirements:
   CSM - GENERAL EDUCATION REQUIREMENTS: E5a. Natural Science
   CSU GE:
   CSU GE Area B: SCIENTIFIC INQUIRY AND QUANTITATIVE REASONING: B1 - Physical Science
   IGETC:
   IGETC Area 5: PHYSICAL AND BIOLOGICAL SCIENCES: A: Physical Science

3. **COURSE DESCRIPTIONS:**
   Catalog Description:
   This course is a spatial study of the Earth's dynamic physical systems and processes. Topics include: Earth-sun geometry, weather, climate, water, landforms, soil, and the biosphere. Emphasis is on the interrelationships among environmental and human systems and processes and their resulting patterns and distributions. Tools of geographic inquiry are also briefly covered; they may include: maps, remote sensing, Geographic Information Systems (GIS) and Global Positioning Systems (GPS).

4. **STUDENT LEARNING OUTCOME(S) (SLO'S):**
   Upon successful completion of this course, a student will meet the following outcomes:
   1. Demonstrate an understanding of the size, shape, and movements of the Earth in space and their importance to environmental patterns and processes
   2. Demonstrate an understanding of the atmospheric, geomorphological, and biotic processes that shape the Earth's surface environments
   3. Demonstrate an understanding of the global distribution of the world's major climates, ecosystems, and physiographic (landform) features
   4. Demonstrate an understanding of basic concepts of physical geography in the analysis of real-world variations in environmental patterns
   5. Demonstrate an understanding of the scientific method and practical experience using the tools and concepts of physical geography (laboratory component)

5. **SPECIFIC INSTRUCTIONAL OBJECTIVES:**
   Upon successful completion of this course, a student will be able to:
   1. Demonstrate an understanding of the size, shape, and movements of the Earth in space and their importance to environmental patterns and processes
   2. Demonstrate an understanding of the atmospheric, geomorphological, and biotic processes that shape the Earth's surface environments
   3. Demonstrate an understanding of the global distribution of the world's major climates, ecosystems, and physiographic (landform) features
   4. Demonstrate an understanding of basic concepts of physical geography in the analysis of real-world variations in environmental patterns
   5. Demonstrate an understanding of the scientific method and practical experience using the tools and concepts of physical geography (laboratory component)

6. **COURSE CONTENT:**
   Lecture Content:
   1. Introduction
   2. Chapter 1—The Field of Geography
      A. What is Geography? Fundamental Spatial Concepts of Geography

- B. The Four Basic Traditions of Geography
- C. A Brief History of the Development of Geography
- D. Physical Geography
- E. Systems Science
- F. Earth's Four Spheres: Atmosphere, Lithosphere, Hydrosphere, Biosphere

3. Chapter 2—Planet Earth
   - A. Earth's Formation—The Current Paradigm
   - B. Earth's Shape, Size and Movements: Centrifugal Force and Other Complications
   - C. Latitude and Longitude—The Geographic Grid
   - D. The Problem of Accurate Navigation: Great Circles and Small Circles
   - E. Earth in Space
   - F. Time
   - G. Maps: The Geographer's Tool
     - a. Modern Mapping Techniques and Tools
4. Chapter 3—Earth's Atmosphere
   - A. Earth's Primordial Atmosphere and Its Evolution
   - B. General Description of the Atmosphere
   - C. Composition and Vertical Structure of the Atmosphere
   - D. Weather and Climate
   - E. Earth's Energy Budget and Global Heat Balance; Energy Transfer
   - F. Temperature and Global Temperature Patterns
   - G. Air Pollution; Increasing CO2 Levels and Global Temperatures
5. Chapter 4—Wind: Atmosphere In Motion
   - A. Atmospheric Pressure
   - B. Wind (Advection)
     - a. Convection Cells; Local Winds; Three Forces Affecting Wind Motion
   - C. High and Low Pressure Cells
   - D. Global Atmospheric Circulation Patterns; Seasonal Variations
6. Chapter 5—Clouds and Precipitation: The Transfer of Latent Heat
   - A. Latent Heat Transfer—Water Changing State: Gas, Liquid, Solid
   - B. Saturation of an Air Parcel
   - C. Humidity
   - D. The Adiabatic Process
   - E. Stability of Air and Causes of Uplift
   - F. Clouds and Precipitation
     - a. Global Distribution and Seasonal Precipitation Patterns
     - b. Acid Precipitation
7. Chapter 6—Air Masses, Fronts, and Storms
   - A. Air Masses—Characteristics, Source Regions, and Classification
   - B. Fronts
   - C. Major Midlatitude Disturbances; Tropical Disturbances; Hurricanes, Tornadoes
   - D. Easterly Waves and Weak Equatorial Lows
   - E. Thunderstorms
8. Chapter 7—Global Climates
   - A. Classifying Climates—The Modified Koppen Classification System; Climographs
   - B. Global Distribution of Climates
9. Chapter 8—The Hydrosphere
   - A. The Hydrologic Cycle
   - B. Underground Water
   - C. Surface Water
   - D. Oceans—Characteristics and Movements: Waves, Tides, and Currents
     - a. El Nino Southern Oscillation (ENSO)
10. Chapter 9—Rocks, Minerals, and Plate Tectonics
    - A. Earth's Interior
      - a. Crust, MohoroviCi6 Discontinuity ("Moho"), and Mantle
    - B. Composition of Earth's Interior
      - a. Minerals, Rocks, and The Rock Cycle
    - C. Continental Drift and the Theory of Plate Tectonics
    - D. Plate Boundaries
    - E. Volcanism

F. Diastrophism
G. Earthquakes

11. Chapter 10—Weathering Processes and Soils (Biotic Processes)
    A. Weathering—Mechanical vs. Chemical Weathering
    B. Karst Landscapes
    C. Mass Wasting
    D. Soils
12. Chapter 11—Fluvial Geomorphology
    A. Fluvial Processes: Erosion, Transportation, Deposition
    B. Channel Flow
    C. Graded Streams and Stream Rejuvenation
13. Chapter 12—Coastal Geomorphology
    A. Shore-Shaping Forces
    B. Landforms Created by Coastal Erosion and Deposition
    C. Types of Coastlines
    D. Human Intervention
14. Chapter 13—Arid and Glacial Processes and Landforms (Physiographic Features)
    A. ARID LANDS
        a. Processes At Work In Arid Lands
            i. Fluvial Activity and Eolian Processes in the Desert
        b. Desert Landforms and Landscapes
    B. GLACIAL LANDSCAPES
        a. What is a Glacier?
            i. Glaciations Past and Present
        b. How Glaciers Form
        c. Glacial Movement; Erosion, Transportation, and Deposition by Glaciers
        d. Continental Ice Sheets and Alpine Glaciers
15. Real-World Applications: Basic concepts of physical geography in the analysis of real-world variations in environmental patterns.

7. **REPRESENTATIVE METHODS OF INSTRUCTION:**
   Typical methods of instruction may include:
   A. Lecture
   B. Discussion
   C. Field Trips

8. **REPRESENTATIVE ASSIGNMENTS**
   Representative assignments in this course may include, but are not limited to the following:
   Writing Assignments:
   Short, in-class writing assignments. Worksheets and chapter study guides focus on critical thinking skills and reinforce lecture topics.
   Reading Assignments:
   Weekly readings from the assigned textbook as well as assigned articles.
   Other Outside Assignments:
   In order to encourage student interest in Physical Geography, extra credit assignments are offered on an irregular basis, according to students' expressed interests in specific topics.

9. **REPRESENTATIVE METHODS OF EVALUATION**
   Representative methods of evaluation may include:
   A. Class Participation
   B. Exams/Tests
   C. Quizzes
   D. Written examination

10. **REPRESENTATIVE TEXT(S):**
    Possible textbooks include:
    A. Tom McKnight and Darrel Hess. *Physical Geography: A Landscape Appreciation* , 12th ed. Pearson, 2017
    B. R. W. Christopherson. *Geosystems: An Introduction to Physical Geography* , 9th ed. Pearson, 2015
    C. Strahler, A. *Introducing Physical Geography*, 6th ed. Wiley, 2013
    Other:

A. Use of the Internet, google earth

B. A current world atlas of the student's choosing
C. Maps of California and the Bay Area

Origination Date: October 2016
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Effective Term: Fall 2017
Course Originator: Margaret Kaluzny