Print Date: 8/17/14

Course Objectives/Course Outline
Spokane Community College

Course Title: The Violent Earth
Prefix and Course Number: GEOG 260

Course Learning Outcomes:
By the end of this course, a student should be able to:

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- Understand the dynamic relationships between humans and the natural hazards of the earth.
- Identify and understand the various influences at local, national and international levels.
- Understand environmental, cultural, and political explanations and implications of each natural hazard studied.
- Identify, distribution and geographic patterning of hazards discussed and recognize the risk assessment and disaster planning procedures associated with each.
- Understand the complex physical processes related to natural hazards that affect patters of human settlement, economy and cultural structure.
- Understand the broad ecological connections related to human activities and the natural hazards in a world of ever-increasing pressures connected to living space, resources and environmental quality.

Course Outline:

I. Earth's Human Population
   A. Population distribution worldwide
   B. Population growth and growth rates
   C. Carrying capacity and population
   D. Natural events and historic population changes

II. Earth's Systems, Natural Disaster and Human Interactions
   A. What are natural disasters
   B. Earth's energy sources
   C. Geologic dating and Earth history
   D. Energy circulation, disasters and human risk

III. Natural Disaster Policy
   A. Mitigation
   B. Disaster planning, risk assessment, implementation
   C. Costs of disasters: human life, property damage, social and political ramifications

IV. Weather Principles
   A. Solar input, latitudes and temperature, atmospheric heating
   B. Global wind and ocean circulation patterns
   C. Coriolis effect and the jet stream
   D. Air masses and fronts
   E. Precipitation and weather systems

V. Severe Weather and Societal Impact
   A. Thunderstorms, supercells and tornadoes

B. Historic “great storms and tornadoes”
C. Living in Tornado Alley
D. Wind and microbursts
E. Hail, lightening and blizzards
F. Extreme heat, droughts, disease and famine

VI. Hurricanes and Coastal Development
A. How hurricanes work
B. Hurricane evaluation and tracking techniques
C. Historic hurricanes and associated hazards
D. Coastal erosion

VII. Flooding and the Effects of People
A. Stream flow principles
B. Flood types
C. Floodplains
D. Flood frequency analysis
E. Urban development, flooding and flood mitigation
F. Case study: historic floods

VIII. Wildfires: Living in Fire Prone Regions
A. The chemistry of fire
B. The stages of fire development and the spread of fire
C. Fire weather; seasons, wind and human contributions
D. Living in fire prone regions
E. Case study: historic wildfires

IX. Plate Tectonics
A. The history of plate tectonic theory
B. Earth’s structural zonation
C. Crustal plates, plate motions, and plate boundaries
D. Associated processes of plate tectonics; earthquakes, volcanism, crustal uplift, etc.

X. The Basic Principles of Earthquakes and their Effects to Human Populations
A. What is an earthquake and elastic rebound theory
B. Faults and earthquakes: people living along fault lines!
C. Seismic waves; types and movement of seismic waves
D. Ground motion; acceleration period, resonance and structural damage
E. Economic and social factors contributing to death tolls and property destruction
F. Engineering of earthquake resistant structures
G. Other associated disasters: aftershocks, tsunamis, fire, liquefaction

XI. Earthquakes, Plate Tectonics and Human Geography
A. Earthquakes and plate boundaries
B. Earthquakes belts worldwide
C. Earthquakes in western North America
D. Giant earthquakes and subduction zones
E. Case studies: Kobe, Northridge, Loma Prieta, San Francisco, Alaska, etc.
F. Modern research in earthquake analysis and prediction

XII. Volcanism and Volcanic hazards Worldwide
A. Styles of volcanic activity: types of eruptions
B. Magma types, magma viscosity and volcanic explosivity index
C. Volcanic landforms and materials: volcano types, flows and pyroclastics

D. Volcanoes and plate tectonics, spreading centers, subduction zones and hot spots
E. Hazards: pyroclastic flows, gas emissions, lahars, etc.
F. World population and active volcanoes
G. Case studies: historic eruptions

XIII. Mass Wasting Processes and the Impacts on Human Development
A. Gravity and slope stability
B. Types and classification of mass wasting, creep flows, slides and falls
C. Humans and mass wasting
D. Historical disasters associated with mass wasting

XIV. Global Climate Change: What Does the Future Hold for Human Population Distribution?
A. Climate vs. weather?
B. Earth's ancient atmosphere and climate change through geologic time
C. Global warming vs. global cooling, short term vs. long term climate change
D. Volcanic activity and climate change
E. Global warming and the potential effects to human population