

# ILLINOIS VALLEY COMMUNITY COLLEGE



## Course Outline

**DIVISION: Natural Sciences Business**

**Course: GEG 1002 - Physical Geography**

Date: December 10, 20010

Semester Hours: 4

Prerequisite(s): none

Delivery Method:

<input type="checkbox"/> Lecture	0 Credit Hours
<input type="checkbox"/> Seminar	0 Credit Hours
<input type="checkbox"/> Lab	0 Credit Hours
<input type="checkbox"/> Clinical	0 Credit Hours
<input checked="" type="checkbox"/> Online	
<input type="checkbox"/> Blended	

Offered:  Fall  Spring  Summer

IAI Equivalent –**Only for Transfer Courses**–go to <http://www.itransfer.org>:

### CATALOG DESCRIPTION:

This course identifies key elements within the Earth's atmosphere, hydrosphere, lithosphere and biosphere, and explains the processes that shape these subsystems and that govern their interaction. Special emphasis is given to the geographic distribution of these phenomena and the manner in which human populations are affected by their natural surroundings and how they impact the physical environment.

## GENERAL EDUCATION GOALS ADDRESSED

*[See the last page of this form for more information.]*

### Upon completion of the course, the student will be able:

[Choose those goals that apply to this course. ]

- To apply analytical and problem solving skills to personal, social and professional issues and situations.
- To communicate orally and in writing, socially and interpersonally.
- To develop an awareness of the contributions made to civilization by the diverse cultures of the world.
- To understand and use contemporary technology effectively and to understand its impact on the individual and society.
- To work and study effectively both individually and in collaboration with others.
- To understand what it means to act ethically and responsibly as an individual in one's career and as a member of society.
- To develop and maintain a healthy lifestyle physically, mentally, and spiritually.
- To appreciate the ongoing values of learning, self-improvement, and career planning.

## EXPECTED LEARNING OUTCOMES AND RELATED COMPETENCIES:

*[Outcomes related to course specific goals.]*

### Upon completion of the course, the student will be able to:

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1. Know that geography is a spatial science and that "where?" is the first question postulated in geographic investigations.

Competency 1.1: Formulate a geographic grid and be able to utilize latitude and longitude to locate features on the earth's surface.

Competency 1.2: Identify various types of map projections and the spatial distortions that are inherent to each type.

2. Explain how inputs of solar energy affect the circulation of the earth's atmosphere and hydrosphere.

Competency 2.1: Differentiate shortwave (ultraviolet) radiation and longwave (infrared) radiation.

Competency 2.2: Provide examples of sensible heat and latent heat transfers

Competency 2.3: Discuss role of latitude in determining total insolation

Competency 2.4: Describe daily and seasonal surface temperature cycles

Competency 2.5: Explain how the greenhouse effect contributes to global warming.

Competency 2.6: Identify and explain the significance of each component of the hydrologic cycle.

3. Explain how major weather systems develop and move within the general circulation of the earth's atmosphere.

Competency 3.1: Discuss the significance of atmospheric pressure and the pressure gradient force.

Competency 3.2: Locate the intertropical convergence zone (ITCZ), areas of subtropical high pressures and the polar front.

Competency 3.3: Identify the five types of air masses and their respective source regions.

Competency 3.4: Explain the process of cyclogenesis

Competency 3.5: Plot the seasonal tracks of the polar jet stream

4. Identify the major climate types and explain their spatial distributions.

Competency 4.1: Describe the principle controls of climate.

Competency 4.2: Utilize the Koppen climate classification system.

Competency 4.3: Use climographs to identify the five principle climate types.

5. Comprehend plate tectonics theory and the rock cycle.

Competency 5.1: Identify the three principle classes of rock

Competency 5.2: Explain the geochemical processes that contribute to the formation of rocks and minerals

Competency 5.3: Identify plate boundaries by location and type

Competency 5.4: Explain continental drift

6. Identify geomorphological structures and describe geophysical processes.

Competency 6.1 Identify volcanic and tectonic landforms

Competency 6.2 Discuss origins and impacts of earthquakes

Competency 6.3 Explain processes of weathering and mass wasting

Competency 6.4 Identify fluvial landscapes and describe the role that water plays in shaping the earth's surface.

Competency 6.5 Describe landscapes formed by wave and wind action

Competency 6.6 Explain how glaciers form and reshape landforms

7. Describe the nature of soil.

Competency 7.1 Identify the key components of soil

Competency 7.2 Explain how soils form over time.

Competency 7.2 Describe the global distribution of soil types.

8. Comprehend biogeographic processes.

Competency 8.1	Describe energy and matter flows in an ecosystem
Competency 8.2	Explain the concept of biodiversity
Competency 8.3	Define biome.
Competency 8.4	Describe the global distribution of biome types.

**COURSE TOPICS AND CONTENT REQUIREMENTS:**

1. The Earth as a Rotating Planet
  - A. Shape of the Earth
  - B. Earth's Rotation
  - C. Geographic Grid
  - D. Map Projections
  - E. Time Zones
  - F. Revolution around the Sun
  
2. Earth's Global Energy Balance
  - A. Electromagnetic Radiation
  - B. Insolation
  - C. Composition of the Atmosphere
  - D. Sensible Heat and Latent Heat
  - E. Global Energy System
  - F. Latitude and Energy Balance
  
3. Air Temperature
  - A. Surface and Air temperature
  - B. Daily and Annual Cycles
  - C. Global patterns
  - D. Temperature structure of atmosphere
  - E. Global warming and Greenhouse effect
  
4. Atmospheric Moisture and Precipitation
  - A. Water and the Hydrosphere
  - B. Humidity
  - C. Adiabatic Process
  - D. Clouds
  - E. Precipitation
  - F. Air Quality
  
5. Winds and Global Circulation
  - A. Atmospheric Pressure
  - B. Local Wind Patterns
  - C. Cyclones and Anticyclones
  - D. Global Wind and Pressure Patterns
  - E. Winds Aloft
  - F. Ocean Currents

6. Weather Systems
  - A. Air Masses
  - B. Traveling Cyclones and Anticyclones
  - C. Tropical and Equatorial Weather Systems
  - D. Cloud Cover, Precipitation and Global Warming
  
7. Global Climates
  - A. Climate controls
  - B. Climate classification
  - C. Low-latitude climates
  - D. Midlatitude climates
  - E. High-latitude climates
  
8. Earth Materials and Plate Tectonics
  - A. Rocks and Minerals
  - B. Major Relief Features
  - C. Plate Tectonics
  - D. Continents of the Past
  
9. Volcanic and Tectonic Landforms
  - A. Volcanic landforms
  - B. Tectonic Landforms
  - C. Earthquakes
  - D. Landforms and Rock Structure
  
10. Weathering and Mass Wasting
  - A. Weathering
  - B. Mass Wasting
  - C. Tundra processes and landforms
  
11. Freshwater Systems
  - A. Hydrologic Cycle
  - B. Ground Water
  - C. Surface Water
  - D. Stream Flows and Floods
  - E. Lakes
  - F. Water as Natural Resource
  
12. Landforms Made by Running Water
  - A. Slope Erosion
  - B. Stream Gradation
  - C. Fluvial landscapes

13. Landforms Made by Waves and Wind
  - A. Waves and Tides
  - B. Coastlines
  - C. Wind Action
  - D. Eolian landforms
  
14. Glacial Landforms and the Ice Age
  - A. Glaciers
  - B. Alpine Glaciers
  - C. Ice Sheets and Sea Ice
  - D. The Ice Age
  
15. Soils
  - A. Nature of Soils
  - B. Soil Development
  - C. Global Scope of Soils
  
16. Biogeographic Processes
  - A. Energy and Matter Flow in Ecosystems
  - B. Ecological Biogeography
  - C. Ecological Succession
  - D. Historical Biogeography
  - E. Biodiversity
  
17. Global Biogeography
  - A. Natural Vegetation
  - B. Terrestrial Ecosystems
  - C. Forest Biome
  - D. Savanna and Grassland Biomes
  - E. Desert and Tundra Biomes

#### **INSTRUCTIONAL METHODS:**

1. PowerPoint slides
2. Online Discussions threads
3. web-based learning modules
4. online videos
5. supplemental readings
  - (a) articles from professional journals and periodicals
  - (b) newspaper columns/features
  - (c) books

## **INSTRUCTIONAL MATERIALS:**

Text: McKnight's Physical Geography, Tom L. McKnight & Darrel Hess, 2011

Lab Manual: Physical Geography Laboratory Manual, Darrel Hess, 2011

Supplements: maps, PowerPoint slides, professional journals, related websites

## **STUDENT REQUIREMENTS AND METHODS OF EVALUATION:**

1. Textbook reading
2. Participation in online discussion threads
3. Lab exercises and corresponding lab quizzes
4. Four exams covering assigned readings
5. Mapping exercises
6. Optional essays describing real-world applications

Grading scale:

90 - 100%	A
80 - 89%	B
70 - 79%	C
60 - 69%	D
<60%	F

## **VI. REFERENCES:**

1. Texts: The Concise Oxford Dictionary of Earth Sciences
2. Journals: Annals of the American Association of Geographers  
Bulletin of the American Meteorological Society  
Earth Interactions  
Geographical Review  
Glacial Geology and Geomorphology  
International Journal of Climatology  
Journal of Arid Environments  
Journal of Biogeography  
Journal of Coastal Research  
Journal of Environmental Hydrology

Journals continued:

Journal of Geophysical Research  
Journal of Soil and Water Conservation  
National Geographic  
Science  
Scientific American  
Weather, Climate and Society

3. Websites: [www.wiley.com/college/strahler](http://www.wiley.com/college/strahler)  
Companion website for textbook  
[ww2010.atmos.uiuc.edu/\(Gh\)/guides/mtr/home.rxml](http://ww2010.atmos.uiuc.edu/(Gh)/guides/mtr/home.rxml)  
University of Illinois Meteorology department  
[www.earth.columbia.edu](http://www.earth.columbia.edu)  
The Earth Institute at Columbia University  
[websoilsurvey.nrcs.usda.gov](http://websoilsurvey.nrcs.usda.gov)  
Web Soil Survey (USDA Natural Resources Conservation Service)  
[volcano.oregonstate.edu](http://volcano.oregonstate.edu)  
Oregon State University Department of Geosciences  
[www.nationalgeographic.com](http://www.nationalgeographic.com)  
National Geographic Society  
[dsc.discovery.com](http://dsc.discovery.com)  
Discovery Channel  
[www.sciencenews.org](http://www.sciencenews.org)  
Magazine of the Society for Science & The Public  
[www.ucmp.berkeley.edu/geology/tectonics.html](http://www.ucmp.berkeley.edu/geology/tectonics.html)  
University of California Museum of Paleontology

Form Revised: 3/2/05



## Course Competency/Assessment Methods Matrix

Course Prefix, Number and Name	Assessment Options																						
For each competency/outcome place an "X" below the method of assessment to be used.	Assessment of Student Learning	Article Review	Case Studies	Group Projects	Lab Work	Oral Presentations	Pre-Post Tests	Quizzes	Written Exams	Artifact Self Reflection of Growth	Capstone Projects	Comprehensive Written Exit Exam	Course Embedded Questions	Multi-Media Projects	Observation	Writing Samples	Portfolio Evaluation	Real World Projects	Reflective Journals	Applied Application (skills) Test	Oral Exit Interviews	Accreditation Reviews/Reports	
		Direct/Indirect	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	I	I	I
Assessment Measures – Are direct or indirect as indicated. List competencies/outcomes below.																							
Competency 1		X	X		X			X	X				X				X						
Competency 2		X	X		X			X	X				X				X						
Competency 3		X	X		X			X	X				X				X						
Competency 4		X	X		X			X	X				X				X						
Competency 5		X	X		X			X	X				X				X						
Competency 6		X	X		X			X	X				X				X						
Competency 7		X	X		X			X	X				X				X						
Competency 8		X	X		X			X	X				X				X						