SYLLABUS
Physical Systems of the Environment, G107
Fall 2003

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Recommended Textbook:

Christopherson, Robert W. Elemental Geosystems. Fourth Edition. Upper Saddle River, New Jersey: Pearson Education, Inc., 2004.

Recommended Atlas:

Espenshade, Edward B. Jr. Goode's World Atlas. Chicago: Rand McNally & Company.

Course Objectives:

This is an introductory physical geography course that focuses on the earth's natural environment. The main objective of the course is to produce a change in one's perception of the earth and its physical systems of weather, climate, vegetation, and landforms. The IUPUI Principles of Undergraduate Learning that are addressed in this course include: Core Communication and Quantitative Skills; Critical Thinking; Integration and Application of Knowledge; and Intellectual Depth, Breadth, and Adaptiveness. Students will be expected to solve some basic problems that are quantitative in nature; analyze and make informed decisions regarding complex issues; synthesize information; solve challenging problems concerning the earth's physical systems; use knowledge to explore new questions; apply knowledge to enhance their personal lives; and demonstrate substantial knowledge and understanding of the field of physical geography.

Course Outline and Reading Assignments:

I. Introduction to Geography
   - A. Nature of Geography
   - B. Earth Features
   - C. Approaches to Geographic Study
   - D. Earth's Grid

Reading Assignments:

The Science of Geography	Chapter 1, pp. 2-4
Earth's Four Spheres	Chapter 1, pp. 11-12
A Spherical Planet	Chapter 1, pp. 12-13
Location and Time on Earth	Chapter 1, pp. 13-20

II. Earth-Sun Fundamentals
- A. Earth-Sun Relationships
- B. Solar Radiation
- C. Seasons

Reading Assignments:

Electromagnetic Spectrum of Radiant Energy	Chapter 2, pp. 40-41
Energy at the Top of the Atmosphere	Chapter 2, pp. 41-43
The Seasons	Chapter 2, pp. 43-47
Coriolis Force	Chapter 4, pp. 111-112

III. Atmosphere
- A. Introduction to the Atmosphere
- B. Greenhouse Effect
- C. Heat
- D. Layers of the Atmosphere

Reading Assignments:

Atmospheric Profile	Chapter 2, pp. 48-49
Atmospheric Temperature Criterion	Chapter 2, pp. 51-53
Atmospheric Funtion Criterion	Chapter 2, pp. 53-54
Variable Atmospheric Components	Chapter 2, pp. 54-58
Energy Essentials	Chapter 3, pp. 72-78
Heat Properties	Chapter 5, pp 138-140

IV. Air Temperature
- A. Temporal Distribution
- B. Vertical Distribution
- C. Horizontal Distribution

Reading Assignments:

Energy at the Earth's Surface	Chapter 3, pp. 78-80
Temperature Concepts and Controls	Chapter 3, pp. 84-89
Earth's Temperature Patterns	Chapter 3, pp. 90-95

EXAM #1

V. Air Pressure
- A. Introduction to Air Pressure
- B. Horizontal Variations
- C. World Pressure Belts

Reading Assignments:

Air Pressure and Its Measurement	Chapter 4, pp. 107-108
Primary High-Pressure and Low-Pressure Areas	Chapter 4, pp. 114-121

VI. Wind
- A. Cyclonic and Anticyclonic Circulations
- B. World Wind Belts
- C. Regional and Local Winds
- D. Air Masses

Reading Assignments:

Wind: Description and Measurement	Chapter 4, pp. 108-109
Driving Forces Within the Atmosphere	Chapter 4, pp. 110-113
Local Winds	Chapter 4, pp. 121-126
Air Masses	Chapter 5, pp. 149-154

VII. Atmospheric Moisture
- A. Humidity
- B. Precipitation

Reading Assignments:

Humidity	Chapter 5, pp. 140-144
Atmospheric Stability	Chapter 5, pp. 144-147
Clouds and Fog	Chapter 5, pp. 147-149
Atmospheric Lifting Mechanisms	Chapter 5, pp. 154-158
Midlatitude Cyclonic Systems	Chapter 5, pp. 158-162
Violent Weather	Chapter 5, pp. 162-173

EXAM #2

VIII. Hydrosphere
- A. Global Water Storage
- B. Hydrologic Cycle
- C. Ocean Currents

Reading Assignments:

Distribution of Earth's Water	Chapter 5, pp. 136-137
Oceanic Currents	Chapter 4, pp. 127-128

IX. Climate and Vegetation
- A. Introduction to Climate
- B. World Climate Regions

Reading Assignments:

Earth's Climate System and Its Classification	Chapter 6, pp. 180-208
Earth's Major Terrestrial Biomes	Chapter 16, pp. 505-521

EXAM #3

X. Interior Structure of the Earth
- A. Compositional Structure
- B. Physical State Structure

Reading Assignments:

Earth's Structure and Internal Energy	Chapter 8, pp. 252-255

XI. Tectonic Processes
- A. Plate Tectonics
- B. Volcanism
- C. Folding
- D. Faulting

Reading Assignments:

Plate Tectonics	Chapter 8, pp. 262-270
Earthquakes and Volcanoes	Chapter 8, pp. 269-271
Volcanism	Chapter 9, pp. 301-308
Igneous Processes	Chapter 8, pp. 257-258
Crustal Formation Processes	Chapter 9, pp. 283-290
Orogenesis (Mountain Building)	Chapter 9, pp. 290-296

XII. Landmass Degradation Processes
- A. Weathering
- B. Erosion
- C. Mass Wasting Processes

Reading Assignments:

Weathering Processes	Chapter 10, pp. 319-325
Karst Topography and Landscaptes	Chapter 10, pp. 325-330
Mass Movement Processes	Chapter 10, pp. 330-335

XIII. Streams
- A. Introduction to Streams
- B. Organization of Streams
- C. Stream Erosion

Reading Assignments:

Fluvial Processes and Landscapes	Chapter 11, pp. 344-350
Streamflow Characteristics	Chapter 11, pp. 350-360

EXAM #4

Exams: There will be four exams in this course. The exams will consist of multiple choice questions and matching questions. If you miss an exam the instructor reserves the right to create a new exam that might include essay questions. You will be graded on all of the exams. Each exam is worth 150 points and will only cover the material assigned or discussed in each part of the course.

Missed Exams: Each student is allowed to miss **one** exam and take it at a later date. Only under the rarest of circumstances will the instructor allow more than one missed exam to be taken.

Course Point Summary:

Exam #1 . . . . . 150 points
Exam #2 . . . . . 150 points
Exam #3 . . . . . 150 points
Exam #4 . . . . . 150 points
TOTAL . . . . . 600 points

Course Grading Scale: The grade you will receive in this course is based on the number of points you accumulate during the semester. The following scale lists the letter grades, the point range each letter grade represents, and the approximate percentage of the course each point range represents.

Grade	Point Range	Percent of Course
A+	600 or more	100
A	558-599	93-99
A-	540-557	90-92
B+	522-539	87-89
B	498-521	83-86
B-	480-497	80-82
C+	462-479	77-79
C	336-461	56-76
C-	318-335	53-55
D+	313-317	52-53
D	307-312	51-52
D-	300-306	50-51
F	0-299	0-49

Incompletes: To receive an incomplete at least 75 percent of the course must be completed, with a passing grade, by the date of the final exam. The instructor will **not** approve an incomplete if less than 75 percent of the course has been completed.

Attendance: If you miss **more than two** consecutive classes you must notify me and provide an explanation. If you do not notify me you might be contacted by the University and if so will be required to document that you have not unofficially withdrawn from the class.

Service Learning: You can earn 30 extra-credit points in this course by working one day at an Indiana nature preserve. The work might include, for example, removing invasive weeds or shrubs, clearing walking trails, assisting in burn preparation, or cleaning seeds. You will have to answer some written questions concerning your work experience to receive these points. Please see me is you want to participate in this service learning activity.