

Eastern Illinois University  
New Course Proposal

ESC 1500G, Introduction to Physical Geography and Earth Systems Science

Please check one:  New course  Revised course

**PART I: CATALOG DESCRIPTION**

1. **Course prefix and number, such as ART 1000:** ESC 1500G
2. **Title (may not exceed 30 characters, including spaces):** Intro to Physical Geography
3. **Long title, if any (may not exceed 100 characters, including spaces):** Introduction to Physical Geography and Earth Systems Science
4. **Class hours per week, lab hours per week, and credit [e.g., (3-0-3)]:** 3-2-4
5. **Term(s) to be offered:**  Fall  Spring  Summer  On demand
6. **Initial term of offering:**  Fall  Spring  Summer **Year:** 2011
7. **Course description (not to exceed four lines):**

An introduction to the Earth's physical geography - the atmosphere (air), hydrosphere (water), lithosphere (solid Earth), and biosphere (life) - and how these integrated systems influence one another and provide ecosystem services for all life on Earth.

8. **Registration restrictions:**

a. **Identify any equivalent courses** (e.g., cross-listed course, non-honors version of an honors course).  
None

b. **Prerequisite(s)**, including required test scores, courses, grades in courses, and technical skills. Indicate whether any prerequisite course(s) MAY be taken concurrently with the proposed/revised course.  
None

c. **Who can waive the prerequisite(s)?**

No one  Chair  Instructor  Advisor  Other (Please specify)

d. **Co-requisites** (course(s) which MUST be taken concurrently with this one): None

e. **Repeat status:**  Course may not be repeated.

Course may be repeated to a maximum of \_\_\_\_\_ hours or \_\_\_\_\_ times.

f. **Degree, college, major(s), level, or class** to which registration in the course is restricted, if any: None

g. **Degree, college, major(s), level, or class** to be excluded from the course, if any: None

9. **Special course attributes** [cultural diversity, general education (indicate component), honors, remedial, writing centered or writing intensive] General Education: Scientific Awareness, Physical Sciences, Earth Science
10. **Grading methods** (check all that apply):  Standard letter  C/NC  Audit  ABC/NC ("Standard letter"—i.e., ABCDF—is assumed to be the default grading method unless the course description indicates otherwise.)

**11. Instructional delivery method:**  lecture  lab  lecture/lab combined  independent study/research  
 internship  performance  practicum or clinical  study abroad  other

**PART II: ASSURANCE OF STUDENT LEARNING**

**1. List the student learning objectives of this course:**

- a. Evaluate the concept of Earth Systems and how they apply to the world around us
  - b. Discuss the inherent integrated nature of the various sub-disciplines of Physical Geography and Earth Systems Science
  - c. Apply geographic reasoning skills when interpreting maps, datasets, air photos, and satellite images related to Earth Systems Science topics
  - d. Analyze the connections between Earth Systems (atmosphere, hydrosphere, lithosphere, and biosphere) to better understand how our physical planet functions
  - e. Evaluate the role of humans as part of Earth systems, how we are affected, and how we may be responsible for causing changes
- a. If this is a general education course, indicate which objectives are designed to help students achieve one or more of the following goals of general education and university-wide assessment:**
- **EIU graduates will write and speak effectively.**
  - **EIU graduates will think critically.**
  - **EIU graduates will function as responsible citizens.**

Learning Objectives	Write/Speak Effectively	Think Critically	Be Responsible Citizens
a		X	
b	X	X	X
c	X	X	X
d	X	X	X
e	X	X	X

- b. If this is a graduate-level course, indicate which objectives are designed to help students achieve established goals for learning at the graduate level:**
- **Depth of content knowledge**
  - **Effective critical thinking and problem solving**
  - **Effective oral and written communication**
  - **Advanced scholarship through research or creative activity**

**2. Identify the assignments/activities the instructor will use to determine how well students attained the learning objectives:**

Learning Objectives	4 Exams	10 Quizzes	14 Labs
a	X	X	X
b	X	X	X
c	X	X	X
d	X	X	X
e	X	X	X

**3. Explain how the instructor will determine students’ grades for the course:**

There will be 400 points allocated for the semester  
 4 exams @ 50 points each                      200 points (50%)  
 10 quizzes @ 6 points each                      60 points (15%)  
 14 labs @ 10 points each                      140 points (35%)

**4. For technology-delivered and other nontraditional-delivered courses/sections, address the following:**

- a. Describe how the format/technology will be used to support and assess students’ achievement of the specified learning objectives:
- b. Describe how the integrity of student work will be assured:
- c. Describe provisions for and requirements of instructor-student and student-student interaction, including the kinds of technologies that will be used to support the interaction (e.g., e-mail, web-based discussions, computer conferences, etc.):

**5. For courses numbered 4750-4999, specify additional or more stringent requirements for students enrolling for graduate credit. These include:**

- a. course objectives;
- b. projects that require application and analysis of the course content; and
- c. separate methods of evaluation for undergraduate and graduate students.

**6. If applicable, indicate whether this course is writing-active, writing-intensive, or writing-centered, and describe how the course satisfies the criteria for the type of writing course identified. (See Appendix \*.)**

This course will be **Writing Active** – portions of labs and quizzes will require brief writing exercises.

**PART III: OUTLINE OF THE COURSE**

**Provide a week-by-week outline of the course’s content. Specify units of time (e.g., for a 3-0-3 course, 45 fifty-minute class periods over 15 weeks) for each major topic in the outline. Provide clear and sufficient details about content and procedures so that possible questions of overlap with other courses can be addressed. For technology-delivered or other nontraditional-delivered courses/sections, explain how the course content “units” are sufficiently equivalent to the traditional on-campus semester hour units of time described above.**

**Week 1: Introduction to Geography & Earth Systems**

- Geography & its subdisciplines, geographic analysis, systems theory, the 4 spheres

**Week 2: Map reading & geographic tools**

- Lat/Long, scale, projections, GIS, remote sensing
  - **Lab 1: Map comprehension (scale, projections, latitude/longitude)**

**PART 1: THE ATMOSPHERE**

**Week 3: Sun & Earth Systems: Solar Energy & the Seasons**

- Solar energy, electromagnetic spectrum, seasons
  - **Lab 2: Earth/Sun relationships, seasons**

**Week 4: The Earth's Surface & Energy Balances**

- Atmospheric profile & composition, natural & anthropogenic forces, greenhouse effect, energy balances
  - **Lab 3: Temperature & pressure profiles/patterns, regional variations**

**Week 5: Energy Circulations & Global Climate**

- Measuring, temperature controls, regional temperature patterns, historic & contemporary changes
  - **Lab 4: Climate and its products**

**PART 2: THE HYDROSPHERE**

**Week 6: Hydrologic Systems**

- Earth's water budget, humidity, clouds
  - **Lab 5: Water balance & water resources**

**Week 7: Water Resources**

- The hydrologic cycle, soil-water budget, groundwater, supply
  - **Lab 6: Water conservation, wetland restoration**

**Week 8: River Systems, Oceans, Coastal Processes, and Landforms**

- Fluvial processes & landscapes, floods & river management, oceans to wetlands
  - **Lab 7: drainage patterns, fluvial and coastal geomorphology**

**PART 3: THE LITHOSPHERE**

**Week 9: Geospheric Systems: Tectonics, earthquakes, volcanism**

- Topographic regions, crustal form/deformation, orogenesis, earthquakes, volcanism
  - **Lab 8: Plate tectonics, faulting, hotspots**

**Week 10: Weathering, landslides, and mass movements**

- Physical & chemical weathering, natural & human-induced mass movements
  - **Lab 9: Weathering, erosion, flooding**

**Week 11: Glacial Systems & Landforms**

- Pleistocene glaciation, glacial landscapes, landforms, how glaciation affects us today
  - **Lab 10: glacial geomorphology**

**PART 4: THE BIOSPHERE**

**Week 12: The Geography of Soils**

- Soil properties, human & natural factors, classification
  - **Lab 11: Soil classification and horizon identification**

**Week 13: Ecosystems & Biogeography**

- Communities, plants, ecosystems/regions, evolution, succession
  - **Lab 12: Ecoregion mapping (USGS Trends Project Case Study)**

**Week 14: Terrestrial Biomes**

- Biogeographic regions, biomes, environmental impact on humans
  - **Lab 13: Ecosystem structure, altitudinal zonation**

**Week 15: Earth & the Role of Humans**

- Humans & the future, need for cooperation, conservation
  - **Lab 14: Introduction to GIS & Remote Sensing / Coupled Human & Natural Systems**

## **PART IV: PURPOSE AND NEED**

### **1. Explain the department's rationale for developing and proposing the course.**

- Nationwide, the vast majority of geography programs, as well as joint geology/geography programs, offer an Introduction to Physical Geography course that introduces students to the basic fundamentals of the interconnected components of planet Earth. Within the state of Illinois, all geography programs, including those similar to our-joint geology/geography program, offer an Introduction to Physical Geography course.
- Integrative learning opportunities in this course will be commonplace, as the discipline of geography, in and of itself, is an integrative science where the dynamic relationships between humans and the Earth's physical processes are a central theme.
- Worldwide the discipline of geography has grown and evolved over the past two decades, as has our own Geography Program. Physical geographers now need to have an understanding of not just the physical Earth, but also the connections between the various systems on our planet (known as Earth Systems Science), as well as knowledge of the tools that our discipline uses to study these systems such as Geographic Information Systems (GIS) and Remote Sensing.
- The recent growth of our geography program (new faculty, new courses, and new majors) mimics the nationwide growth of our entire discipline over the past two decades. Establishing an introductory-level Physical Geography and Earth Systems Science course is essential to prepare incoming undergraduate students and future teachers of all majors, as well as geography majors.
  - a. **If this is a general education course, you also must indicate the segment of the general education program into which it will be placed, and describe how the course meets the requirements of that segment.**

Offering this course as a general education course will benefit EIU students, regardless of their major. Frequently, topics concerned with physical changes to our planet and our impact on the environment can be seen in the news. This course would go beyond simply discussing natural hazards, plate tectonics, global climates, or various landscape features. The Earth Systems Science approach will allow students to see and better understand the complex linkages between seemingly disparate topics.

- b. **If the course or some sections of the course may be technology delivered, explain why.**

### **2. Justify the level of the course and any course prerequisites, co-requisites, or registration restrictions.**

Across the nation, Physical Geography is a standard general education course and a core course for Geography Majors.

### **3. If the course is similar to an existing course or courses, justify its development and offering.**

- a. **If the contents substantially duplicate those of an existing course, the new proposal should be discussed with the appropriate chairpersons, deans, or curriculum committees and their responses noted in the proposal.**

Similar courses: ESC/GEL 1300G (Introduction to Earth Science), ESC 1400G (Weather & Climate)

This course will be different from the above courses in that it will use a systems framework to show how the Earth's 4 spheres (atmosphere, hydrosphere, lithosphere, and biosphere) are connected, and that to fully understand any one sphere requires knowledge of the other three. ESC/GEL 1300G focuses mostly on the lithosphere and ESC 1400G focuses mostly on the atmosphere. Along with those topics, this course will introduce students to the hydrosphere and the biosphere, how they relate to one another, and also how they fit within the entire Earth System. This approach will give students the background they need to excel in upper division GEG courses such as Geomorphology, Water Resources, Biogeography, and Natural Resource Conservation. It will also introduce students to the tools that physical geographers use such as GIS and remote sensing through materials discussed in lectures and in lab activities.

- b. Cite course(s) to be deleted if the new course is approved. If no deletions are planned, note the exceptional need to be met or the curricular gap to be filled.**

No course(s) will be deleted. The vast majority of geography programs and joint geography/geology programs (as we have here at EIU) across the nation and within Illinois offer an introductory level course that focuses on Physical Geography.

**4. Impact on Program(s):**

- a. For undergraduate programs, specify whether this course will be required for a major or minor or used as an approved elective.**

Students may take either this course or the existing ESC/GEL 1300G (Introduction to Earth Sciences) to satisfy their major or minor requirement.

- b. For graduate programs, specify whether this course will be a core requirement for all candidates in a degree or certificate program or an approved elective.**

**If the proposed course changes a major, minor, or certificate program in or outside of the department, you must submit a separate proposal requesting that change along with the course proposal. Provide a copy of the existing program in the current catalog with the requested changes noted.**

**PART V: IMPLEMENTATION**

- 1. Faculty member(s) to whom the course may be assigned:** Any qualified member of the Geography Program.

**If this is a graduate course and the department does not currently offer a graduate program, it must document that it employs faculty qualified to teach graduate courses.**

- 2. Additional costs to students:** \$10 per student for purchase of lab manual

**Include those for supplemental packets, hardware/software, or any other additional instructional, technical, or technological requirements. (Course fees must be approved by the President's Council.)**

**3. Text and supplementary materials to be used (Include publication dates):**

Christopherson, R.W. 2009. *Geosystems: An Introduction to Physical Geography*, 7<sup>th</sup> Edition. Prentice Hall.

**PART VI: COMMUNITY COLLEGE TRANSFER**

**If the proposed course is a 1000- or 2000-level course, state either, "A community college course may be judged equivalent to this course" OR "A community college course will not be judged equivalent to this course." A community college course will not be judged equivalent to a 3000- or 4000-level course but may be accepted as a substitute; however, upper-division credit will not be awarded.**

A community college course in Physical Geography may be judged equivalent to this course.

**PART VII: APPROVALS**

**Date approved by the department or school: March 29, 2010**

**Date approved by the college curriculum committee: April 9, 2010**

**Date approved by CAA: April 22, 2010**

\*In **writing-active courses**, frequent, brief writing activities and assignments are required. Such activities -- some of which are to be graded -- might include five-minute in-class writing assignments, journal keeping, lab reports, essay examinations, short papers, longer papers, or a variety of other writing-to-learn activities of the instructor's invention. Writing assignments and activities in writing-active courses are designed primarily to assist students in mastering course content, secondarily to strengthen students' writing skills. In **writing-intensive courses**, several writing assignments and writing activities are required. These assignments and activities, which are to be spread over the course of the semester, serve the dual purpose of strengthening writing skills and deepening understanding of course content. At least one writing assignment is to be revised by the student after it has been read and commented on by the instructor. In writing-intensive courses, students' writing should constitute no less than 35% of the final course grade. In **writing-centered courses** (English 1001G, English 1002G, and their honors equivalents), students learn the principles and the process of writing in all of its stages, from inception to completion. The quality of students' writing is the principal determinant of the course grade. The minimum writing requirement is 20 pages (5,000 words).

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