

Course Change Information

What change is being proposed? (If more than one, what changes are being proposed?)

We are proposing to add GE status in the area of Natural Science: Physical Science

What is the rationale for the proposed change(s)?

This course is a 2000-level course that addresses the ELOs for this GE topic.

What are the programmatic implications of the proposed change(s)?

(e.g. program requirements to be added or removed, changes to be made in available resources, effect on other programs that use the course)?

None of which we are aware.

Is approval of the request contingent upon the approval of other course or curricular program request? No

General Information

Course Bulletin Listing/Subject Area	Geography
Fiscal Unit/Academic Org	Geography - D0733
College/Academic Group	Social And Behavioral Sciences
Level/Career	Undergraduate
Course Number/Catalog	2960
Course Title	Introduction to Physical Geography
Transcript Abbreviation	Physical Geography
Course Description	The elements and processes of the natural environment, their characteristics, distribution, and implications in the human habitat.
Semester Credit Hours/Units	Fixed: 4

Offering Information

Length Of Course	14 Week, 7 Week
Flexibly Scheduled Course	Never
Does any section of this course have a distance education component?	No
Grading Basis	Letter Grade
Repeatable	No
Course Components	Laboratory, Lecture
Grade Roster Component	Laboratory
Credit Available by Exam	No
Admission Condition Course	Yes
Admission Condition	Natural Science
Off Campus	Never
Campus of Offering	Columbus, Lima, Mansfield, Marion, Newark

Prerequisites and Exclusions

Prerequisites/Corequisites	
Exclusions	Not open to students with credit for 1900 (120), 120H, 2800 (210), 220 or 220H.

Cross-Listings

Cross-Listings

Subject/CIP Code

Subject/CIP Code 45.0701
Subsidy Level Baccalaureate Course
Intended Rank Freshman, Sophomore, Junior, Senior

Quarters to Semesters

Quarters to Semesters Semester equivalent of a quarter course (e.g., a 5 credit hour course under quarters which becomes a 3 credit hour course under semesters)
List the number and title of current course being converted 220 Introduction to Physical Geography

Requirement/Elective Designation

General Education course:
Physical Science
The course is an elective (for this or other units) or is a service course for other units

Previous Value

The course is an elective (for this or other units) or is a service course for other units

Course Details

Course goals or learning objectives/outcomes

Content Topic List

- Introduction to physical geography
- Flow of energy and matter through the hydrosphere, lithosphere, atmosphere, and biosphere
- Local and global patterns of climate, vegetation, soils, rivers, and landforms
- Dynamic nature of earth processes
- Implications for society
- Methods in physical geography
- Mapping physical geography

Attachments

- 2960-syll.docx
(Syllabus. Owner: Mansfield, Becky Kate)
- 2960-GE.docx
(GEC Model Curriculum Compliance Stmt. Owner: Mansfield, Becky Kate)
- 2960-Assessment.docx
(GEC Course Assessment Plan. Owner: Mansfield, Becky Kate)

Comments

COURSE CHANGE REQUEST
2960 - Status: PENDING

Last Updated: Haddad,Deborah Moore
02/08/2012

Workflow Information

Status	User(s)	Date/Time	Step
Submitted	Mansfield,Becky Kate	02/08/2012 12:25 PM	Submitted for Approval
Approved	Mansfield,Becky Kate	02/08/2012 12:27 PM	Unit Approval
Approved	Haddad,Deborah Moore	02/08/2012 01:51 PM	College Approval
Pending Approval	Nolen,Dawn Jenkins,Mary Ellen Bigler Meyers,Catherine Anne Vankeerbergen,Bernadette Chantal Hogle,Danielle Nicole Hanlin,Deborah Kay	02/08/2012 01:51 PM	ASCCAO Approval

Syllabus
GEOG 2960
Introduction to Physical Geography

Instructor: Bryan Mark

Contact information: 1136 Derby Hall, Tel: 247-6180, email: mark.9@osu.edu

Office hours:

TA: Graduate Student

Contact information:

Office hours:

Course Rationale

This course is an introduction to physical geography, is the study of natural environmental elements and processes. The course presents an earth systems approach that describes how the flow of energy and matter through the hydrosphere (water), lithosphere (solid earth), atmosphere, and biosphere produce local and global patterns of weather and climate, vegetation, soils, rivers, and landforms. A primary objective is to provide students with a basic understanding of the processes shaping the environment in which we live. Secondly, students will be instructed about the dynamic nature of our Earth environment and challenged to consider the implications for society. How much has it changed in the past, to what extent is it changing at present, and what aspects of these changes relate to human activity?

The course has separate lecture and lab components that are coordinated so the labs provide students with a more in-depth understanding of many of the same basic concepts discussed in lecture, along with new material. There are two midterm exams and a comprehensive final exam that are based on topics covered in lecture and lab. The labs include indoor and field exercises involving direct observations of the physical environment.

Disability Services

Students with disabilities that have been certified by the Office for Disability Services will be appropriately accommodated, and should inform the instructor as soon as possible of their needs. The Office for Disability Services is located in 150 Pomerene Hall, 1760 Neil Avenue; telephone 292-3307, TDD 292-0901; <http://www.ods.ohio-state.edu/>.

Academic Misconduct

It is the responsibility of the Committee on Academic Misconduct to investigate or establish procedures for the investigation of all reported cases of student academic misconduct. The term “academic misconduct” includes all forms of student academic misconduct wherever committed; illustrated by, but not limited to, cases of plagiarism and dishonest practices in connection with examinations. Instructors shall report all instances of alleged academic misconduct to the committee (Faculty Rule 3335-5-487). For additional information, see the Code of Student Conduct (http://studentaffairs.osu.edu/info_for_students/csc.asp).

GEC for Natural Science

This course meets the requirements of the GEC for Natural Science. Natural Science coursework fosters students' understanding of the principles, theories, and methods of modern science, the relationship between science and technology, the implications of scientific discoveries and the potential of science and technology to address problems of the contemporary world.

1. Students understand the basic facts, principles, theories, and methods of modern science.
2. Students learn key events in the history of science.
3. Students provide examples of the inter-dependence of scientific and technological developments.
4. Students discuss social and philosophical implications of scientific discoveries and understand the potential of science and technology to address problems of the contemporary world.

This course meets these goals and objectives by introducing students to a variety of elements and processes in the natural environment, and how scientists analyse them. The course focuses on specific insights and tools (theories and methods) that Geography brings to bear on these topics. Students will apply what they learn during lecture in the lab section, in which they will learn and practice many of the key methods used by physical geographers. Throughout, the course applies concepts from Physical Geography to issues and problems of contemporary relevance, and hence helps students develop knowledge that will be useful for problem solving.

The course provides fundamental physical background for understanding integrated environmental issues relevant to society. Important sub-themes include landscape evolution, earth history, surface processes, global climate and environmental change. Lectures will introduce general concepts, and these will be supplemented with lab exercises with individual and group activities that allow students to explore these concepts in case studies.

Course Organization

The course is structured around two weekly lectures and one weekly lab. Chapters from the textbook are assigned weekly (be aware that we will not be reading the chapters in order) and should be completed in preparation for the lectures and/or labs. The text will be supplemented with additional readings that will be supplied to the class website (Carmen). Please bring your texts to lab with you.

Weekly labs allow students to review, apply, and explore in detail material presented in lectures. Students are responsible for any new material presented in labs. Teamwork is encouraged during labs, but grading is based on the quality of individual work and individual participation.

Class and lab attendance is critical to success in this course. Students may only attend the lab in which they are registered, unless arranged with prior permission from instructor in extenuating

circumstances. Students are expected to prepare for, and attend, *all* weekly labs. Students will be advised in advance when labs involve trips outside of the classroom. Most labs will require calculator, ruler, and textbook. The lowest lab score will not be used in calculating the final grade.

Required Text

Physical Geography: A Landscape Appreciation, McKnight and Hess, Prentice-Hall, 2011, ISBN: 032167734X

Either loose leaf edition or regular hardback 10th edition acceptable.

The text is also on 3-hour reserve in the Geology Library.

Evaluation

1.	Mid-semester exams (3, drop lowest score)	20%	
2.	Final exam (cumulative)	30%	
3.	Weekly lab assignments (10 at 4% each)	40%	due <u>in lab</u> weekly
4.	Overall attendance/participation	10%	

Letter Grade Conversion

A: 95% and above; A-: 90-94.9%; B+: 85-89.9%; B: 80-84.9%; B-: 75-79.9%; C+: 70-74.9%; C: 65-69.9%; C-: 60-64.9%; D+: 55-59.9%; D: 50-54.9%; E: below 50%.

Policies

Students who anticipate missing an exam must see the Instructor *at least one week prior* to make alternative arrangements. In-class evaluation cannot be made up without special advance notice and is done at the discretion of the instructor.

Exam absences due to illness must be substantiated by a written note from a health care provider. Students who miss lectures or discussion groups due to illness are encouraged to borrow class notes from others, to attend all review sessions, and to meet with the TA or instructor to review missed topics. Missed discussion groups cannot be made up.

All assignments must be completed, and submitted, during the lab period. Assignments may not be completed prior to, or subsequent to, the assigned lab time. Assignments not handed in on time will lose 2 (two) percentage points per day.

Under exceptional circumstances, and at the discretion of the instructor, extra credit opportunities are available.

SCHEDULE

Class Topics, Required Readings, and Labs

Week 1: Introduction to the physical environment

Lecture 1: The Physical Geography of Earth

Lecture 2: Mapping Earth

Lab: Mapping our Physical Environment

Required reading: Chps 1, 2

Week 2: Earth energy balance and atmosphere

Lecture 3: The Earth-Sun system

Lecture 4: Radiation, temperature & balance

Lab: Ice Albedo

Required reading: Chps 3-5a

Week 3: Weather

Lecture 5: Atmospheric moisture

Lecture 6: Weather patterns

Lab: Observing weather

Required reading: Chps 5b-7

Week 4: Climate

Lecture 7: Climate and climate change

Lecture 8: Midterm EXAM 1

Lab: FIELD TRIP: Byrd Polar Research Center

Required reading: Chp 8

Week 5: Biogeography

Lecture 9: Cycles and patterns of life on Earth

Lecture 10: Flora and fauna

Lab: Ohio forests

Required reading: Chps 10, 11

Week 6: Terrestrial water system

Lecture 7: Water on Earth

Lecture 8: Water resources

Lab: FIELD TRIP: Olentangy River & Wetland

Required reading: Chps 9

Week 7: Lithosphere to soils

Lecture 13: Tectonics
Lecture 14: Rocks, minerals, weathering, soils
Lab: A story of Ohio dirt
Required reading: Chps 15, 12

Week 8: Geomorphology

Lecture 11: Introduction to landforms
Lecture 12: Mid-term EXAM 2
Lab: Landform analysis with Google Earth
Required reading: Chp 13

Week 9: Glaciation and landforms

Lecture 11: The Ice Age
Lecture 12: Glacial landscape modification
Lab: Living in the wake of glaciers
Required reading: Chp 19; Imbrie and Imbrie Chps 1-3

Week 10: Hazards

Lecture 15: Volcanoes and earthquakes
Lecture 16: Landslides and floods
Lab: Diagnosing Haiti vs Concepcion
Required reading: Chp 14,15 supplemental articles

Week 11: Deserts and caves

Lecture 17: The arid lands
Lecture 18: Karst and solution processes
Lab: Stream channels, dunes, sink holes
Required reading: Chps 17, 18

Week 12: Rivers

Lecture 19: Fluvial processes
Lecture 20: Mid-term EXAM 3
Lab: Olentangy river survey
Required reading: Chp 16

Week 13: Coasts

Lecture 19: Ocean processes

Lecture 20: Coastal landforms

Lab: Lake Erie erosion

Required reading: Chp 20

Week 14: Review

Lecture 19: Earth's Final frontiers

Lecture 20: Putting it all together: key lessons

Lab: Review for final exam

Required reading: none

Final exam: Date, time, place

GEOGRAPHY 2960: PHYSICAL GEOGRAPHY

Adherence to Natural Science General Education Curriculum General Learning Outcomes

According to the GEC Program Learning Goals and Objectives, last updated 05/30/2008, the expected outcomes for the “Natural Science” GEC component are that:

1. Students understand the basic facts, principles, theories, and methods of modern science.
2. Students learn key events in the history of science.
3. Students provide examples of the inter-dependence of scientific and technological developments.
4. Students discuss social and philosophical implications of scientific discoveries and understand the potential of science and technology to address problems of the contemporary world.

Geography 2960 will fulfill the above GEC expected learning outcomes for the Natural Science GEC categorization.

1. How does Geography 2960 address the GEC category expected learning outcomes above?

This course will focus on the basic elements and processes of the physical environment. It will provide students with fundamental theories, facts, principles and methods of investigation from a geographic perspective. It will focus on historical case studies to show how specific ideas and scientific concepts developed (e.g. solving mystery of the ice ages, and related understanding of global climate change). In this context, the important interplay of technological and scientific developments will also be highlighted (e.g. how mass spectrometry yields insights to past climate; radiogenic dating elucidating landscape development).

This course introduces students to the ways in which the above concepts are used differently by various fields within the discipline, such as glaciology, hydrology, paleoclimatology, geomorphology, and biogeography. Furthermore, the class provides students with plenty of hands-on opportunities to put these insights to use (see section 4 below). Technological advances will be demonstrated, and examples shown (e.g. mapping landscapes from using celestial observations to satellite-based global positioning system).

Throughout, the course applies concepts from Physical Geography to issues and problems of contemporary relevance at various scales, from global to local Ohio context. First, students will apply geographic insights to environmental issues such as global climate change, geo-hazards, and water resources. Second, the students will apply general concepts over different scales, from global to locally-oriented Ohio-based case studies on issues like forest history, soil development, hydrogeology, and landscape evolution. Examples and lab exercises will emphasize that the elements and features of the physical environment, along with related socially-relevant issues, are always developed as a result of the intersection of global and local forces. This will challenge students to address the philosophical implications and limitations of science as a way of knowing about and addressing global environmental challenges. By emphasizing the multifaceted nature of physical concepts, the course explicitly raises questions about the context-dependence of environmental issues and the role they play in problem solving.

2. How do the readings assigned in Geography 2960 address the GEC category expected learning outcomes above?

The text book for this course – *Physical Geography: A Landscape Appreciation*, 9th edit., by McKnight and Hess – is recognized internationally as a strong introductory text in Physical Geography. It covers all the major subfields of the discipline. It provides up-to-date coverage of theory and method in Physical Geography. It illustrates and applies these concepts with a suite of contemporary real-world issues.

3. How do the topics covered in Geography 2960 address the GEC category expected learning outcomes above?

The topics covered by Geography 220 span the breadth of science in Physical Geography while following a sequential progression from the basics of energy flow to descriptions of fundamental physical features and processes of the Earth System to more socially relevant themes. The course opens with a general orientation to the physical features of Earth, the tectonic cycle, and the planetary-scale radiation balance that establish the basis for understanding the cycling of mass and energy throughout the “spheres” of the Earth System (hydro, litho, bio, and atmo spheres). These dynamics are responsible for the form and functioning of our environment. The subsequent subtopics covered include the basis for many subdisciplines in the science. In the first half of class we will cover the Climate System, the Terrestrial Water System, and the patterns and processes of life (Biogeography). By the middle of the class we will cover Glacier Landforms and Processes. This is a good transition to more socially relevant themes since the Ohio landscape is shaped by past glaciations. The themes afterwards cover Hazards (defined as natural processes that by definition pose a threat to humans), and Global Climate Change. The last topic covered gets into Oceans, a large part of the planet, but also 90% unexplored.

The sequence of topics will therefore highlight a progression of historical thought, and technological innovation, and broaden to consider problems of the world (hazards, climate change) and frontiers of investigations (oceans). The overall Earth Systems framework is designed to foster an appreciation for the integration of understanding from various subfields. Understanding the Earth as an integrated system is a relatively modern perspective that is both facilitated and motivated by socio-economic developments in technology. For example, many measurements of land-atmosphere-ocean-ice processes on a global scale rely on satellites. Yet the formulation (testing) of scientific theories that explain features and processes is a long history of basic observations, wherein technological advances have played key roles. Ultimately, the students will be encouraged to synthesize and apply central concepts, and will be given specific case studies in the lab (see below).

4. How do the lab assignments completed in Geography 2960 address the GEC category expected learning outcomes above?

Each week, students will take topics covered in class and apply them in hands-on lab exercises. These will be contained within class, but will involve some on-campus field trips. There will be nine exercises during the ten labs (final lab is a review session for final exam); students will be graded on their best eight of nine written exercises.

These lab assignments are explicitly designed to address the expected learning outcomes of the GEC. First, students *learn methods of modern science*, including: hands-on weather observations; GPS mapping; landform observation and map analyses; writing field notes; evaluating global digital datasets; river flow monitoring; and hydrochemical measurements. These are all essential tools for doing physical geography research which are currently not taught in the department in an introductory manner in one stand alone course. Second, students will *research local and international case studies using these methodologies*. The objective is to encourage students to ground the general concepts they have learned regarding elements and processes of the physical environment with experiential learning in a local setting, and using real-world data to assess international examples of physical processes. The locally relevant (OSU campus, Columbus, Ohio) and international (e.g. Haiti and Chile earthquakes) case studies involve different themes and geographical methods. By getting out of the classroom physically (or virtually) and putting their research skills to use, students will be able to explore and expand on the material encountered in class in terms of first-hand experience. Third, students will *discuss the philosophical implications of scientific discoveries in the context of their lab case studies with their peers*. The goal here is to get students to articulate to their colleagues and the professor how fundamental principles are applied to real world problems. Moreover, it is hoped that students will be able to use their shared research to challenge their peers to consider the broader impacts and limitations of applying science to real problems. This iterative engagement with the conceptual material learned in class reflects the essential peer-review process of science.

GEOG 2960 Physical Geography: Course Assessment Plan

As developed in consultation with the Undergraduate Studies Committee in the Department of Geography, Geography 2960 will be reviewed and assessed through the following mechanisms:

1. Quantitative student SEI evaluation
2. Embedded testing in both the midterm and final exams

Item 2 will consist of standardized questions on the midterm and final exams which will allow for comparisons in GEC learning outcomes listed above.

Items 1 and 2 will be maintained on file in the department so that the progress of the course can be monitored and evaluated across time as the course evolves and to enable the department to address any major concerns or drift from the established goals and standards. The embedded questions will be critically reviewed by the Undergraduate Studies Committee every third time the course is taught.

This review will provide an assessment of how well the GEC goals of the course are being met through time, and if the results are consistent independent of specific instructors. If the results suggest that the GEC learning objectives are not being clearly communicated through course content, the instructor will undertake substantial revision of readings, lecture content, and discussion in class. If the data primarily indicate neutrality or that GEC material is being adequately covered in class, the instructor will still make minor adjustments to readings and lecture content.