Term Information

Effective Term	Summer 2012

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

Is this a request to withdraw the course? No

General Information

Course Bulletin Listing/Subject Area	Geography
Fiscal Unit/Academic Org	Geography - D0733
College/Academic Group	Arts and 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-Assessment.docx

  (GEC Course Assessment Plan. Owner: Mansfield,Becky Kate)

- Geog-2960-syllabus-REV-12may3.docx

  (Syllabus. Owner: Mansfield,Becky Kate)

- reply to ASCC geog 2960.docx

  (Other Supporting Documentation. Owner: Mansfield,Becky Kate)

- Geog-2960-GE-rationale-REV-12may3.docx

  (GEC Model Curriculum Compliance Stmt. Owner: Mansfield,Becky Kate)

Comments

- On GE Rationale statement, 1st page just before #1, replace "Geography 220" with semester course number. *(by Haddad,Deborah Moore on 05/03/2012 01:09 PM)*
- Attached are a revised syllabus, model curriculum compliance statement, and a response to each of the questions in the email of 2-22-2012. *(by Mansfield,Becky Kate on 05/03/2012 12:34 PM)*
- See 2-22-12 e-mail to B. Mansfield. *(by Vankeerbergen,Bernadette Chantal on 02/22/2012 04:11 PM)*

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
Revision Requested	Vankeerbergen,Bernadette Chantal	02/22/2012 04:11 PM	ASCCAO Approval
Submitted	Mansfield,Becky Kate	05/03/2012 12:34 PM	Submitted for Approval
Approved	Mansfield,Becky Kate	05/03/2012 12:35 PM	Unit Approval
Revision Requested	Haddad,Deborah Moore	05/03/2012 01:09 PM	College Approval
Submitted	Mansfield,Becky Kate	05/03/2012 01:20 PM	Submitted for Approval
Approved	Mansfield,Becky Kate	05/03/2012 01:20 PM	Unit Approval
Approved	Haddad,Deborah Moore	05/03/2012 01:30 PM	College Approval
Pending Approval	Nolen,Dawn Jenkins,Mary Ellen Bigler Meyers,Catherine Anne Vankeerbergen,Bernadette Chantal Hogle,Danielle Nicole Hanlin,Deborah Kay	05/03/2012 01:30 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, the study of Earth's natural environmental elements and processes. Any student interested in our planet will find such study important, since these natural processes explain the distribution of resources, the settlement of human civilization, and the myriad environmental impacts to society throughout history. Earth is the only planet to support humans; this course provides valuable information for all residents taking care of our home.

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, using tools and methods practiced by scientists.

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).

GE for Natural Science

This course meets the requirements of the GE 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 seciton, 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 of 80 minutes, and one weekly lab session of 110 minutes. Class and lab attendance is critical to success in this course.

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). Students are asked to please bring their texts to lab.

Weekly lab sessions allow students to review, apply, and explore in detail material presented in lectures. Students are responsible for any new material presented in lab sessions. There will be two

campus field trips during the lab sessions, during which students will interact with scientists and experience internationally-renowned research ongoing within the OSU community on topics related to the course. The final lab session will comprise a final exam review. The remaining eleven lab sessions will feature interactive lab exercises requiring students to complete in-class activities with written responses. Teamwork is encouraged during labs, but grading is based on the quality of individual work and individual participation.

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 of the eleven lab assignment scores will not be used in calculating the final grade.

Required Text

Physical Geography: A Landscape Appreciation (10 ed), McKnight and Hess, Prentice-Hall, 2011, ISBN: 032167734X

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

Evaluation

1.	Mid-quarter exams (3, drop lowest score)	20%	
2.	Final exam (cumulative)	30%	
3.	Lab assignments (10 at 4% each)	40%	due in lab 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.

There are no make-ups for labs. However, students scores will be based upon their best 10 of 11 lab assignments.

At the discretion of the instructor, extra credit opportunities will be made available to all students equally.

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: OIentangy 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: Earthquakes - Diagnosing Haiti vs Concepcion, Chile
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 TBA

GEOGRAPHY 2960: PHYSICAL GEOGRAPHY

Adherence to Natural Science General Education Curriculum General Learning Outcomes

According to the GE Program Learning Goals and Objectives, last updated 05/30/2008, the expected outcomes for the "Natural Science" GE 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 GE expected learning outcomes for the Natural Science GE categorization.

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

The topics covered by Geography 2960 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 defninition 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 GE category expected learning outcomes above?

Each week, students will deepen understanding of topics and themes covered in lecture and text readings by applying methods and working with actual data in hands-on lab exercises. Physical geographers employ a number of methods to acquire and analyze data about the physical environment. The labs are designed to expose students to the scientific process by learning about some of these methods and data, practicing by applying them in context of a specific experimental or

case-study exercise, and then reflecting on the process and results in written form. The lab exercises will be contained within the 110 minute weekly lab class that will also involve at two on-campus field trips. There will be eleven exercises during the 14 lab classes (this will allow two field trips, and the final lab is a review session for final exam); students will be graded on their best 10 of 11 lab exercises.

As an example, consider the lab on observing weather:
Students will be shown a number of actual weather observation instruments, and allowed to see how they work. They will test the range and sensitivity of temperature and humidity sensors. They will then be deployed in groups to measure these variables with hand-held digital sensors in different campus settings/environments. Data will be recorded, downloaded, and graphed. Results will be disussed and inter-compared. Students will learn to apply their understanding of these variables gained in lecture (e.g. temperature = average kinetic energy of molecules) to specific context, and appreciate the range of variability in measurement, as well as the relationship between different variables, and the controls on micro-climate (i.e. different exposures to solar radiation, elevation, wind, etc). They will aslo gain valuable experience in scientific analytical procedures by comparing results, summarizing statistically, and presenting in graphical output. Finally, to reflect upon the social and philosophical dimensions, students will be asked to consider how we know what we know about global averaged temperature changes.

These lab assignments are explicitly designed to address the expected learning outcomes of the GE. First, students *learn methods and data involved in 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 and data for conducting physical geography research, and they are currently not taught in the department in an introductory manner in one stand alone course. Second, students will *learn the key events in the history of science* during the exercises. For example, when did we start measuring temperature and carbon dioxide, and how did ideas about global glacial cycles become known. It will then be described in specific case examples how certain technological developments have been informed by and likewise informed scientific ideas, thus reinforcing *the inter-dependence of scientific and technological developments*. Third, 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. Finally, 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.

ANSWERS TO ASCC re GEOG 2960

On Monday, February 20, the ASCC Natural and Mathematical Sciences Panel reviewed Geography 2960 for Physical Science GE addition. The Panel did not take a vote on the course but would like the following points to be addressed first:

Since committee is charged with BA/BS-BA differentiation, the Panel needs additional information about the labs. Without knowing details about the labs, it is difficult to gauge if the course is should count for BA students only or both BA and BS students.

Additional details on the labs, and how they meet the GEC outcomes, are now documented in the rationale and syllabus. A specific example is shown to illustrate how the lab meets each outcome.

Clarify number of lab assignments: (1) the Evaluations section of the syllabus: mentions 10 lab assignments at 4% each; (2) the Schedule section of the syllabus: lists 11 labs (plus 2 field trips and 1 review for final exam); (3) the GE rationale, under point 4: mentions 10 labs but 9 assignments.

We have fixed this unfortunate ambiguity. The total number of lab sections will be 14. However, we have clarified that there are 2 field trips and a final exam review that will take place, leaving 11 lab exercises. Of these, only 10 will count toward final grade. We have made the adjustments in all sections of the syllabus and rationale.

Schedule: Class meets twice a week. Are these 1hr 20 min meetings? NMS Panel would also need to know the duration of the labs.

Lectures are 1 hours 20 minutes, twice a week. Weekly labs are 110 minutes, and this is clarified in the syllabus.

Attendance policy: How does a student make up a lab/field trip?

As revised on the syllabus, there are no make-ups for labs. However, students' lab grades will be based upon their best 10 of 11 lab assignments. This strongly incentivizes attendance, but also effectively allows non-attendance at one lab not to impact final grade.

Extra credit policy should only be available to all students. The current phrasing leads one to believe that might not be the case: "Under exceptional circumstances, and at the discretion of the instructor, extra credit opportunities are available."

Yes; we have adjusted the syllabus accordingly, specifying that: "At the discretion of the instructor, extra credit opportunities will be made available to all students equally."

In proposal, replace references to "GEC" with "GE."

Done.

GE rationale, 2nd page, under point 3, replace “Geography 220” with semester course number.

Done.