

Colonnade Program Course Proposal: Explorations Category

In compliance with the Colonnade Implementation Committee's request, the Department of Geography and Geology submits the following materials for the Exploration course GEOG 103 (equivalent to GEOL 103).

1. What course does the department plan to offer in Explorations? Which subcategory are you proposing for this course? (Arts and Humanities; Social and Behavioral Sciences; Natural and Physical Sciences)

The Department of Geography and Geology plans to offer the newly created GEOG 103 (GEOL 103): Our Dynamic Planet in the Natural and Physical Sciences subcategory within the Explorations Category. GEOG 103 is equivalent to GEOL 103.

NOTE: GEOG 103: Our Dynamic Planet represents a merging of two separate courses that are currently Category D general education courses, GEOG 100: Introduction to the Physical Environment and GEOL 102: Introduction to Geology. The new course, which will be equivalent to GEOL 103: Our Dynamic Planet, provides a more efficient and streamlined presentation of the introductory concepts relating to the various aspects of Earth Science. While GEOG 100 and GEOL 102 had some overlap, there were enough differences in the two curricula to make GEOG 103 (GEOL 103) a better introductory course for the Colonnade Program. GEOG 103 (GEOL 103) is currently in the new course approval process and will be submitted to the University Curriculum Committee later this semester.

2. How will this course meet the specific learning objectives of the appropriate subcategory. Please address **all** of the learning outcomes listed for the appropriate subcategory.

The course objective of GEOG 103 (GEOL 103): Our Dynamic Planet is to introduce the spatial dimension of Earth's dynamic systems with a special emphasis on how their many interrelationships affect humans and their environment. These systems include air, water, weather, climate, tectonics, landforms, and ecosystems.

GEOG 103 (GEOL 103) is a required introductory course for certain majors in the Department of Geography and Geology but historically, over 95% of students have been non-majors. GEOG 103 (GEOL 103) is a non-lab science course.

Course objectives for GEOG 103 (GEOL 103): Our Dynamic Planet:

Students who complete GEOG 103 (GEOL 103) will be able to:

- Show an understanding of the scientific method and knowledge of natural science and its relevance in our lives.

- Discuss the mechanisms of heat transfer and how they relate to the Earth's energy balance.
- Describe how Earth-sun relationships affect the receipt and distribution of solar energy during the year and how these changes produce the seasons.
- Outline the major latitudinal pressure systems and wind belts and their influence on the circulation of global winds and ocean currents.
- Describe how the role of water vapor and carbon dioxide produce the greenhouse effect and discuss the key scientific issues associated with climate change.
- Describe all four types of fronts and the types of weather that occur with their passage.
- Explain the differences between weather and climate, and be aware of the factors that make weather forecasting a complex process.
- Classify the major categories of rocks (igneous, sedimentary, and metamorphic) and describe the rock cycle.
- Discuss the theory of plate tectonics and provide supporting evidence.
- Explain the development of ocean basins and describe major features of continental margins and the ocean floor.
- Discuss the importance of the oceans in the Earth system (i.e., aspects of carbon cycling, productivity, and ocean circulation).
- Associate the different types of faults with the type of tectonic force responsible for them.
- Describe the spatial and temporal risk associated with various natural hazards such as hurricanes, tornadoes, earthquakes, and volcanoes.
- Explain the principal differences among the various physical and chemical weathering processes.
- Recognize some of the landforms and landscape features created by mass wasting.
- Distinguish between fluvial, eolian, and glacial processes and recognize some of the landforms and landscape features created by each.
- Describe basic groundwater movement and recognize various karst features.

How these course objectives fulfill the Colonnade Program's four objectives for the Natural and Physical Sciences subcategory of the Explorations Category:

Colonnade Learning Objective 1: Demonstrate an understanding of the methods of science inquiry.

Objective 1 is met by the following course objectives:

- Show an understanding of the scientific method and knowledge of natural science and its relevance in our lives.

- Describe how the role of water vapor and carbon dioxide produce the greenhouse effect and discuss the key scientific issues associated with climate change.
- Discuss the theory of plate tectonics and provide supporting evidence.

Colonnade Learning Objective 2: Explain basic concepts and principles in one or more of the sciences.

Objective 2 is met by the following course objectives:

- Discuss the mechanisms of heat transfer and how they relate to the Earth's energy balance.
- Describe how Earth-sun relationships affect the receipt and distribution of solar energy during the year and how these changes produce the seasons.
- Outline the major latitudinal pressure systems and wind belts and their influence on the circulation of global winds and ocean currents.
- Describe all four types of fronts and the types of weather that occur with their passage.
- Classify the major categories of rocks (igneous, sedimentary, and metamorphic) and describe the rock cycle.
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- Distinguish between fluvial, eolian, and glacial processes and recognize some of the landforms and landscape features created by each.
- Describe basic groundwater movement and recognize various karst features.

Colonnade Learning Objective 3: Apply scientific principles to interpret and make predictions in one or more of the sciences.

Objective 3 is met by the following course objectives:

- Explain the differences between weather and climate, and be aware of the factors that make weather forecasting a complex process.
- Describe the spatial and temporal risk associated with various natural hazards such as hurricanes, tornadoes, earthquakes, and volcanoes.

Colonnade Learning Objective 4: Explain how scientific principles relate to issues of personal and/or public importance

Objective 4 is met by the following course objectives:

- Describe the spatial and temporal risk associated with various natural hazards such as hurricanes, tornadoes, earthquakes, and volcanoes.
- Describe how the role of water vapor and carbon dioxide produce the greenhouse effect and discuss the key scientific issues associated with climate change.
- Discuss the importance of the oceans in the Earth system (i.e., aspects of carbon cycling, productivity, and ocean circulation).

3. Syllabus statement of learning outcomes for course. NOTE: In multi-section courses, the same statement of learning outcomes must appear on every section's syllabus.

The following items will appear in all GEOG 103 (GEOL 103) syllabi

Course description: GEOG 103 (GEOL 103): Our Dynamic Planet will introduce the spatial dimension of Earth's dynamic systems with a special emphasis on how their many interrelationships affect humans and their environment. These systems include air, water, weather, climate, tectonics, landforms, and ecosystems.

Learning Objectives for Colonnade Program: This course fulfills the Colonnade Program's requirements for the Natural and Physical Sciences subcategory of the Explorations Category. As part of that program, GEOG 103 (GEOL 103) has the following learning objectives:

Students will demonstrate the ability to:

1. Demonstrate an understanding of the methods of science inquiry.
2. Explain basic concepts and principles in one or more of the sciences.
3. Apply scientific principles to interpret and make predictions in one or more of the sciences.
4. Explain how scientific principles relate to issues of personal and/or public importance

Learning Objectives for GEOG 103 (GEOL 103): The course objectives for GEOG 103 (GEOL 103) are designed to integrate fully with the Colonnade Program. Upon successfully completing GEOG 103 (GEOL 103), you will be able to:

- Show an understanding of the scientific method and knowledge of natural science and its relevance in our lives.
- Discuss the mechanisms of heat transfer and how they relate to the Earth's energy balance.
- Describe how Earth-sun relationships affect the receipt and distribution of solar energy during the year and how these changes produce the seasons.
- Outline the major latitudinal pressure systems and wind belts and their influence on the circulation of global winds and ocean currents.

- Describe how the role of water vapor and carbon dioxide produce the greenhouse effect and discuss the key scientific issues associated with climate change.
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- Explain the principal differences among the various physical and chemical weathering processes.
- Recognize some of the landforms and landscape features created by mass wasting.
- Distinguish between fluvial, eolian, and glacial processes and recognize some of the landforms and landscape features created by each.
- Describe basic groundwater movement and recognize various karst features.

4. Brief description of how the department will assess the course for these learning objectives.

The Department of Geography and Geology will assess GEOG 103 (GEOL 103) with pre- and post-test assessment tools that quantify student improvement in understanding concepts related to learning objectives. Students will be given the pre-test survey during the first two weeks of the semester prior to any appreciable content learning. The post-test survey will be given in the final two weeks of the semester prior to finals week. The pre- and post-test assessment tools consist of a number of questions related to learning objectives gathered from a Geoscience Concept Inventory (Libarkin and Anderson 2005) relating to the atmosphere, hydrosphere, and lithosphere. The questions in the GCI have been validated using item analysis techniques from both classical test theory and item response theory (Libarkin and Anderson 2005).

Results from the GCI assessments will be used to evaluate whether or not student learning objectives are being achieved. Results will be used to improve content and application teaching in the class.

Libarkin, J.C., and S. W. Anderson, 2005: Assessment of learning in entry-level

geoscience courses: Results from the Geoscience Concept Inventory. *Journal of Geoscience Education*, **53**:394–401.

5. How many sections of this course will your department offer each semester?

The Department of Geography and Geology will offer 3-5 sections of GEOG 103 and 2-4 sections of GEOL 103 each semester with a goal of enrolling 300-400 students per semester.

6. Please attach sample syllabus for the course.

See attached.

Please send your proposal to: robert.dietle@wku.edu

GEOG 103: Our Dynamic Planet
(3 credit hours)

Time: Tuesday/Thursday, 9:35 am – 10:55 am, EST 328

Instructor: Dr. Greg Goodrich, Associate Professor Office: EST 431
Department of Geography & Geology
Phone: 270 745 5986
Geography Office: 270 745 4555
Email: gregory.goodrich@wku.edu

Office Hours: Tuesday/Thursday 11:00 am - 12:00 pm or by appointment

Required Text: *Essentials of Physical Geography* by Gabler, et al., 7th, 8th, 9th, or 10th edition. Each chapter should be read prior to the discussion of that chapter in class.

Course description: GEOG 103: Our Dynamic Planet will introduce the spatial dimension of Earth's dynamic systems with a special emphasis on how their many interrelationships affect humans and their environment. These systems include air, water, weather, climate, tectonics, landforms, and ecosystems.

Learning Objectives for Colonnade Program: This course fulfills the Colonnade Program's requirements for the Natural and Physical Sciences subcategory of the Explorations Category. As part of that program, GEOG 103 has the following learning objectives:

Students will demonstrate the ability to:

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3. Apply scientific principles to interpret and make predictions in one or more of the sciences.
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Learning Objectives for GEOG 103: The course objectives for GEOG 103 are designed to integrate fully with the Colonnade Program. Upon successfully completing GEOG 103, you will be able to:

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Course Format: Two eighty minute lectures per week with small group discussion.

Class Attendance: Attendance in lecture is **highly** recommended. Out of fairness to the entire class, I will not loan or make available my lecture notes. If it is necessary that you miss a lecture, please borrow the notes of a fellow student. Afterward, I will be happy to answer additional questions during office hours.

If a student will miss a class period due to a university-sanctioned activity, Western Kentucky University requires that the student: (1) identify himself/herself prior to missing the class, (2) provide the instructor with a copy of their travel schedule, and (3) discuss with the instructor the procedure to make up missed work.

Please turn off cell phones during class!!

Academic Honesty: Cheating absolutely will not be tolerated. Students are expected to adhere to the Western Kentucky University Code of Student Conduct.

Student Evaluation: There are four bases for evaluation in GEOG 100.

Exams- Two mid-term exams and one final exam will comprise 60% of the grade for this course. The exams will consist of multiple choice and true/false questions and will be computer graded. By the nature of this course, all exams will be cumulative although each exam will focus on the specific chapters outlined in the syllabus.

Make-up exam policy: You must inform me or the departmental secretary within 36 hours of the scheduled exam that will be/was missed. If you fail to receive approval for a make-up exam within this time frame you will not be allowed a make-up for any reason. A grade of “0” will be given in these instances.

Exercises - Students are required to work in small groups for problem solving. Small group work will be done in class and will require that students hand in a solution to the problems at the end of the class. Each member of the group present will receive the same grade (up to 10 pts each).

Small group work may not be made up!

Movie review- Students will be required to write a movie review that has some aspect of Earth science as one of its central themes. Reviews should be 2-3 pages in length (double spaced). The film review is worth 80 points.

NY Times discussion board- Each Thursday I will hand out the Tuesday NY Times to each student. I will post a discussion question based on an article in the Science Times. Students will respond to the discussion question via discussion board in Blackboard.

Grades:	Three exams	300 points	(60%)
	Exercises	100 points	(20%)
	Movie review	80 points	(16%)
	NY Times discussion board	<u>20 points</u>	<u>(4%)</u>
		500 points possible	

Grades:	A	90-100%	
	B	80-90%	
	C	70-80%	All grades subject to curve at end of semester
	D	60-70%	
	F	<60%	

There will be no extra credit of any kind given on an individual basis in this course.

Required Materials: Bring a #2 pencil, ruler, and calculator.

Departmental Drop Policy: The Department of Geography and Geology strictly adheres to the course drop policy found in the Undergraduate and Graduate Catalogs. It is the sole responsibility of individual students to meet the cited deadlines for dropping a course. In exceptional cases, the deadline for schedule changes (dropping a course) may be waived. The successful waiver will require written description of extenuating circumstances and relevant documentation. Poor academic performance, general malaise, or undocumented general malaise, or undocumented general stress factors are not considered as legitimate extenuating circumstances. Since granting of waivers are rare, we urge you to follow the established guidelines.

Disability Services: In compliance with university policy, students with disabilities who require accommodations (academic adjustments and/or auxiliary aids or services) for this course must contact the Office for Student Disability Services in DUC A-200 of the Student Success Center in Downing University Center. The OFSDS telephone number is 270 745-5004 (TTY 270 745-3030). Per University policy, please DO NOT request accommodations directly from me without a letter of accommodation from the OFSDS.

1/29: Last day to drop a course w/out grade. **3/18:** Last day to drop a course with a W.

Any updates to this syllabus, including the course outline, will be given in class

Tentative course outline

Date	Topic	Tuesday	Thursday
1/21-1/25	Introduction	Syllabus/1	2/HW1
1/28-2/1	Solar Energy	3	3/HW2
2/4-2/8	Radiation Balance	4	4/HW3
2/11-2/15	Energy Budget	4/review	Exam 1
2/18-2/22	Atmospheric Circulation	5	5/HW4
2/25-3/1	Moisture/Precipitation	6	6/HW5
3/4-3/8	Weather Systems	7	7/HW6
3/11-3/15	Spring Break	No class	No class
3/18-3/22	Global climate change	8	8/HW 7
3/25-3/29	Global warming	GW talk/Review	Exam 2
4/1-4/5	Rocks/Volcanoes/Quakes	13	13/14/HW 8
4/8-4/12	Mass Wasting	14/15	15HW 9
4/15-4/19	Ground Water/Karst	16	16
4/22-4/26	Fluvial/Eolian	17	17
4/29-5/3	Glacial	HW 10	Review
5/6-5/10	Final Exam	1:00 – 3:00 pm	Tuesday, May 7th