Term Information

Effective Term	Spring 2021
Previous Value	*Spring 2017*

Course Change Information

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

To add the option to offer the course as DL

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

To broaden access to the course

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

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	Earth Sciences
Fiscal Unit/Academic Org	School of Earth Sciences - D0656
College/Academic Group	Arts and Sciences
Level/Career	Undergraduate
Course Number/Catalog	1105
Course Title	Geology of the National Parks
Transcript Abbreviation	Geol Natl Parks
Course Description	Geologic processes, materials, and history revealed in geologic settings of the National Parks.
Semester Credit Hours/Units	Fixed: 3

Offering Information

Length Of Course	14 Week, 12 Week, 8 Week, 7 Week, 6 Week
Flexibly Scheduled Course	Sometimes
Does any section of this course have a distance education component?	Yes
Is any section of the course offered	100% at a distance
Previous Value	*No, Greater or equal to 50% at a distance*
Grading Basis	Letter Grade
Repeatable	No
Course Components	Lecture
Grade Roster Component	Lecture
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 1100, EarthSci 100, 105, GeolSci 100, or 105.
Electronically Enforced	No

Cross-Listings

Cross-Listings

Subject/CIP Code

Subject/CIP Code	40.0601
Subsidy Level	General Studies Course
Intended Rank	Freshman, Sophomore, Junior, Senior

Requirement/Elective Designation

General Education course:
Physical Science

Course Details

Course goals or learning objectives/outcomes

- Students learn basic Earth Science content as illustrated by examples from the U.S. National Parks.

Content Topic List

- Parks and the U.S. National Parks system
- Parks, faulting, and sedimentary rock processes
- Parks and geologic time
- Yellowstone Park and geothermal activity
- Plate tectonics and Yellowstone Park
- Parks and glaciation
- Parks, groundwater, and shoreline processes
- Parks, erosion, and sedimentary processes
- Volcanism and Cascade Parks
- Volcanism and Alaskan National Parks
- National Parks of the Pacific

Sought Concurrence No

Attachments

- ES 1105 online syllabus version 2.docx: DL syllabus

  (Syllabus. Owner: Panero,Wendy R)

- Assessment Plan ES 1105.docx: GE Assessment plan

  (GEC Course Assessment Plan. Owner: Panero,Wendy R)

- leonard-pingel ES 1105 syllabus Au2019.docx: syllabus: in person delivery

  (Syllabus. Owner: Panero,Wendy R)

- ASCTech approval EARTHSCI 1105.docx: ASCTech approval

  (Other Supporting Documentation. Owner: Panero,Wendy R)

Comments

Workflow Information

Status	User(s)	Date/Time	Step
Submitted	Panero,Wendy R	06/03/2020 03:57 PM	Submitted for Approval
Approved	Panero,Wendy R	06/03/2020 03:58 PM	Unit Approval
Approved	Haddad,Deborah Moore	06/03/2020 05:15 PM	College Approval
Pending Approval	Jenkins,Mary Ellen Bigler Hanlin,Deborah Kay Oldroyd,Shelby Quinn Vankeerbergen,Bernadette Chantal	06/03/2020 05:15 PM	ASCCAO Approval

Earth Sciences 1105: Geology of the National Parks
Autumn 2019
School of Earth Sciences, OSU Newark

Professor: Dr. Jill Leonard-Pingel
Office: Founders 2045
Phone: 740-755-7178
Email: leonard-pingel.1@osu.edu
Office Hours: M,W 2:30-3:30 or by appointment
Class Schedule: M, W 11:10-12:30, Founders Hall 2156
Course Textbook: *Geology of the National Parks* by Harris, Tuttle, and Tuttle
A copy of the textbook is available on reserve in the library

Goals and Learning Objectives

Earth Science 1105 is a **physical science course** in the natural science category of the GE, which has the following goals and learning outcomes:

1. Students understand the basic facts, principles, theories, and methods of modern science.
2. Students understand key events in the development of science and recognize that science is an evolving body of knowledge.
3. Students recognize the inter-dependence of scientific and technological developments.
4. Students recognize social and philosophical implications of scientific discoveries and understand the potential of science and technology to address problems of the contemporary world.

ES 1105 is designed to meet these requirements by introducing you to the fundamentals of geology, the scientific method, and critical thinking about the complexities of the natural world in the context of the national parks. More specifically, in this class you will

- Learn how to identify and classify common rocks and minerals
- Explain how plate tectonics relate to other geologic processes
- Learn how to use proxies to interpret ancient environments
- Develop hypotheses and evaluate those hypotheses based on collected data
- Gain skills in scientific research
- Be able to make inferences about the geologic history of a landscape
- Gain critical thinking skills and practice applying knowledge to new situations

Student Responsibility: Each student receives this information in the first lecture section. It is your responsibility to read this material and be familiar with the course content, procedures, and grading. You are also responsible for any announcements concerning course procedures that are made in class. **If you are absent, you are expected to get notes, announcements, etc. from another student in the class.**

Course Format: Course meetings comprise discussions, group activities, and lab exercises, so please always be prepared to participate (which means doing the reading and watching the online videos)! Video Lectures will be available online through Carmen beginning the first week of class. **It is your responsibility to keep up with watching the videos**. Part of the Monday class meeting will be used to review these video lectures and the weekend quiz and answer questions that you may have.

Electronic devices, including laptops and iPads, are permitted during class, however, I expect you to be on task. If you are not, I will ask you to put away your device, after a first warning I will ask you to leave class. ***Headphones are not permitted in class***. (Unless we are working individually on an online assignment).

Quizzes: Weekly quizzes will be administered every weekend beginning the first week of class. Quizzes will be available on Carmen beginning Friday afternoon and you will have until **Monday at 11am** to take the quizzes. These quizzes are open note/book, but not open friend (e.g. you can use your notes and textbook, but can't work together). You may choose to take the quiz twice. The lowest quiz grade will be dropped.

Group Work: Beginning the first week of class, you will be assigned to a group. You will be expected to work in this group throughout the semester on in-class assignments and activities. Although you are working in groups, I expect you to all to turn in our own assignments and to be active participants in the group work. Part of your participation grade will be an average grade that you receive from your group members, based on your participation in the group assignments. While I expect you to act like adults in your groups, and to work out minor personality differences, if you get to a point where you believe your ability to perform well in the class is impacted by your group members, please come discuss this with me.

Academic Misconduct: *Any material submitted in Earth Science 1105 must represent your own work. Violations of this standard will be referred to the University Committee of Academic Misconduct (COAM) as required by Faculty Rules.*

Any student suspected of engaging in academic misconduct as set forth in section 3335-23-02 of the Code of Student Conduct will be reported to the Committee on Academic Misconduct. Academic misconduct is defined in the code as "any activity that tends to compromise the academic integrity of the University, or subvert the educational process." Examples include but are not limited to violation of course rules, submitting plagiarized work, knowingly providing or receiving information during exams or quizzes, and other such acts of academic dishonesty. For additional information, see the Code of Student Conduct at http://studentconduct.osu.edu.

***If you have any questions about whether you are acting in accordance with the Code of Student Conduct, please ask me BEFORE an assignment is turned in*.**

Statement on University Expectations regarding 2:1 ratio of student effort: In an effort to establish educational standards and expectations for all institutions of higher education in the

state, the Ohio Board of Regents has established formal guidelines to standardize the length of semesters, academic years, and define the practical meaning of each semester hour of credit. As part of these guidelines, the Board of Regents' guidelines state that one semester credit hour will be awarded for a minimum of 750 minutes of formalized instruction, and that **"students will be expected to work at out-of-class assignments on a regular basis, which, over the length of the course, would normally average two hours of out-of-class study for each hour of formal class activity."** Our class meets for approximately 3 hours per week, therefore, you should expect to spend **6 hours/week on out of class work**.

Student Accommodations: The University strives to make all learning experiences as accessible as possible. If you anticipate or experience academic barriers based on a disability (including mental health, chronic or temporary medical conditions), you should register with the Office for Disability Services (ODS) at 226 Warner Center, (740) 366-9441. After you receive your authorized accommodation from ODS, you should show me your access plan and discuss your needs with me. **Ideally, we should meet within the first two weeks of class**. Accommodations are not retroactive.

Statement on Diversity: The Ohio State University affirms the importance and value of diversity in the student body. Our programs and curricula reflect our multicultural society and global economy and seek to provide opportunities for students to learn more about persons who are different from them. We are committed to maintaining a community that recognizes and values the inherent worth and dignity of every person; fosters sensitivity, understanding, and mutual respect among each member of our community; and encourages each individual to strive to reach his or her own potential.

Statement on Sexual Misconduct/Relationship Violence: Title IX makes it clear that violence and harassment based on sex and gender are Civil Rights offenses subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories (e.g., race). If you or someone you know has been sexually harassed or assaulted, you may find the appropriate resources at http://titleix.osu.edu or by contacting the Ohio State Title IX Coordinator, Kellie Brennan, at titleix@osu.edu.

Statement on Counseling Services: Should you find yourself experiencing personal difficulties, whether related to class or not, please know that you have access to confidential services provided by the OSU Newark Counseling Services. All current OSU Newark students are eligible for services at no charge. You may contact Counseling Services at 740-364-9578.

Statement regarding Tobacco Free Campus policy: Ohio State has adopted a tobacco free policy that supports a healthy environment for all members of the campus community. The use of all types of tobacco products is prohibited in all university buildings and on all university-owned properties, including parking lots and all outside areas. The full policy can be found at http://hr.osu.edu/public/documents/policy/resources/720faq.pdf?t=2014724155314.

Land Acknowledgement: The Ohio State University acknowledges that its campuses have long served as sites of meeting and exchange for Indigenous peoples, including those in historical times known as the Shawnee, Miami, Wyandotte, Delaware, and the People of Fort Ancient, Hopewell, and Adena cultures, also known as the earthworks builders, as well as other tribal nations of the region. The Ohio State University honors and respects the diverse Indigenous peoples connected to this land in which we gather.

OSU Newark Weather Delays and Cancellations Policy: The policy at Ohio State Newark is to remain open and operational for classes during times of difficult weather, even as local and regional schools delay or close, unless conditions are severe enough to endanger personal safety. Individual safety for both students and faculty/staff is the highest priority, and every individual is free to make whatever decisions necessary to ensure personal safety. When weather conditions warrant closing the campus, we will try to get that information to the media by 6:00 a.m.

The following guideline will be in operation unless the decision has been made to close the campus:

If campus is open, all students are expected to make a reasonable effort to attend classes. Any student feeling that travel would unduly endanger their safety may elect to not attend class, and should be allowed to make up the necessary work without penalty. **Students are accountable for any material and assignments missed during an absence without an official delay or announced cancellation.**

Course Grade:

Exams	40%
Final Project	20%
Weekly Quizzes	15%
Assignments	15%
Engagement	10%

Grading Scale: When all of the points are totaled, the following scale will be used to assign a final letter grade--- 93-100 A; 91-92.99 A-; 89-90.99 B+; 80-88.99 B; 78-79.99 B-; 76-77.99 C+; 65-75.99 C; 63-64.99 C-; 61-62.99 D+; 50-60.99 D; <50 E

Exams: Your exam grade for the course will be based on the three highest exam grades (I will drop the lowest exam grade). This means that the final exam may be optional, if you are happy with your first 3 exam grades.

Assignment Due Dates: In general, assignments will be due the class period following the class that they are assigned. ***Late work will be penalized***. **I will not accept work more than a week late.** If you need accommodation for turning in an assignment late, please make arrangements with me BEFORE the due date. **In the case of a missed class, you will still be responsible for turning in the assignment on its due date**. Please be aware, that ***some in-class assignments cannot be made up***. *I will drop the lowest assignment grade.*

Absences: Attendance of class is part of your "engagement" with the class. In addition, in-class labs are not always able to be made up. ***Attendance is therefore mandatory***. In the case where you must be absent from class, please consult with me as soon as you know that a conflict exists. Exams are a scheduled part of this course and attendance is required. If you know you have a conflict with a scheduled exam, please let me know well in advance of the scheduled exam.

Expectations for Classroom Conduct: In the spirit of this institution's values of inclusion, diversity, collaboration, and integrity, and in an effort to ensure that this class remains a place where everyone can feel safe, comfortable, and welcome, I ask that you:

- behave in a safe and responsible manner at all times
- treat students, staff, and faculty with respect at all times
- be mindful of how your actions and language impact others

Schedule for Earth Sciences 1105 Autumn 2019

***Readings indicate the chapters that cover the parks we will be covering that week. You do not necessarily need to read the entire chapter, but can look at the information relevant to the topic that week and related to what we are doing in class at that time. Supplementary reading will be provided in case you need additional background information to go along with the video lectures.

Date	Topic	Reading
8/21	Introduction to class	
	Group Activity - The Rock Cycle	
	The National Parks – Introductory Video Assignment	

Quiz 1: Preview Plate Tectonics (*Plate Tectonics* and *Earth's Interior* Video Lectures)

Plate Tectonics and Earth's Interior		**Supplement (Posted on Carmen)**
8/26	Review weekend quiz and videos	
	Discovering Plate Boundaries	
8/28	Plate Boundaries and the National Parks	

Quiz 2: Review Plate Tectonics, Preview Minerals (*What is a Mineral?*, *Chemical Bonds* and *Mineral Characters* Online Videos)

Minerals- Building Blocks of Nature		**Supplement (Posted on Carmen)**
9/2	No class – Labor Day	
9/4	Review weekend quiz and videos	
	Minerals and Bonds	
	Physical Characters of Minerals	

Quiz 3: Review Mineral bonds and properties

9/9	Review weekend quiz and videos	

Date Topic Reading

Guest Lecture: Mineral Resources and Human Culture

9/11 Identification of major rock-forming minerals

Quiz 4: Review Minerals, Preview Bowen's Reaction Series and Magma Formation (*Bowen's Reaction Series* and *Magma Formation,* Online Videos)

Minerals, Magma, and Volcanoes Supplement, Part IV Intro. Chaps. 37,38, 42, 45

9/16 Review weekend quiz and videos

Bowen's Reaction Series Minerals and Rocks

9/18 Magma Formation in the National Parks

Quiz 5: Review Bowens Reaction Series and Magma Formation

9/23 No class- Prepare for Exam 1

9/25 **Exam 1**

Quiz 6: Preview Volcanoes (*Magma Viscosity and Volcanoes* Online Video)

9/30 Review weekend quiz and videos

Magma Viscosity; comparing *Hawai'i Volcanoes, Mt. St. Helen, and Mt. Rainier National Parks*

10/2 Exam 1 debrief

The Volcano Beneath – *Yellowstone National Park*

Quiz 7: Review Volcanoes and Preview Igneous Rocks (*Identification and Classification of Igneous Rocks* and *Igneous Rocks and Plate Boundaries* Online Videos)

Igneous Rocks ***Supplement, Chap. 25, 26, 30***

10/7 Review weekend quiz and videos

Identification and Classification of Igneous Rocks

Extrusive Rocks from the National Parks

Date Topic Reading

10/9 Identification and Classification of Igneous Rocks

Intrusive Rocks from the National Parks

Quiz 8: Review Igneous Rocks and Preview Sedimentary Rocks (*Sedimentary Rock Identification* and *Depositional Environments* Online Videos)

Sedimentary Rocks, Past Environments, and Fossils Suplement, Chap. 1-6, 20, 23

10/14 Review weekend quiz and videos

Sedimentary Rock identification

10/16 Sedimentary Environments – Parks of the Colorado Plateau

Capitol Reef NP, Zion NP, Arches NP, Bryce Canyon NP

Quiz 9: Review Sedimentary Rocks and Preview Carbonate Rocks (*Carbonate Rocks* Online Video)

10/21 Review weekend quiz and videos

Carbonate Platforms – *Dry Tortugas NP* and *Virgin Islands NP*

10/23 Ancient Carbonates – Ohio and Elsewhere

Quiz 10: Review Carbonate Rocks

10/28 **Exam 2**

10/30 Exam 2 Debrief

Fossil Treasures in the National Parks

Quiz 11: Preview Rock Erosion and Weathering (*Weathering* and *Cave Formation* Online Videos)

Weathering and Erosion of Rocks Supplement, Chap. 16-18, 49, 58

11/4 Review weekend quiz and videos

Weathering and Erosion in the Parks (*Joshua Tree National Park, Pinnacles NP)*

Date	Topic	Reading
11/6	Rock Dissolution and Cave Formation (*Mammoth Cave NP*, *Wind Cave NP*, and *Jewel Cave NM*)	

Quiz 12: Review weathering and erosion and Preview Metamorphic Rocks (*What is Metamorphism?* and *Metamorphic Rock Identification* Online Videos)

Metamorphism and Metamorphic Rocks		***Supplement, Ch. 56-57***
11/11	**No class – Veteran's Day**	
11/13	Rock Deformation and Metamorphism during Mountain-Building Events	
	Shenandoah National Park and Great Smokey Mountains National Parks	

Quiz 13: Review Metamorphic Rocks and Preview Geologic Time and Dating (*Absolute Age Dating* and *Relative Age Dating* Online Videos)

Stratigraphy and Geologic Age		***Supplement, Ch. 1 and 9***
11/18	Review weekend quiz and videos	
	Virtual field trip to Grand Canyon NP – stratigraphic principles	
11/20	How Old is the Grand Canyon?	

Quiz 14: Review Geologic Time and Dating

11/25	**Exam 3**	
11/27	No class – Happy Thanksgiving!	
12/2	Creating a Stratigraphic Column for *Petrified Forest NP*	
12/4	Stratigraphic Column for *Petrified Forest NP*	
12/11	**Exam 4 10:20 am**	

The final project will be structured so that sections/benchmarks of the final project will be due in stages.

Final Project Section	Due Date
Annotated Bibliography	10/6
Video Outline	10/27
Informative Text/Script	11/17
Final Video	12/8

Extra Credit: As the opportunity arises, I will make you aware of geology-related talks/events that you may attend to earn extra credit. We will be having a screening of the final video projects on the evening of **Monday, December 9th from 6-8 pm**. This is not mandatory, but attendance at this will be worth 10 extra credit points (1 letter grade) towards your final project grade.

SYLLABUS
EARTHSCI 1105

Geology of the National Parks
Autumn 2020 – Online

COURSE OVERVIEW

Instructor

Instructor: Jill Leonard-Pingel

Email address: leonard-pingel.1@osu.edu

Phone number: 740-755-7178

Virtual office hours (on Zoom): Mondays and Wednesdays 1pm-3pm and by appointment

Course description

"Geology of the National Parks" is an introduction to the fundamentals of physical geology, including the origin and structure of earth layers, the processes involved in shaping earth's crust, the nature and classification of earth's rocks, and the dynamic interactions of the lithosphere with the hydrosphere and atmosphere. The course is designed to provide students with an overview of geologic processes as recorded in our national parks.

Course learning outcomes

This course provides a basic introduction to the principles and methods of Earth Science, using the National Parks to illustrate geologic processes at work in our planet.

This course provides a basic introduction to the principles and methods of Earth Science, the scientific method, and critical thinking about the complexities of the natural world in the context of the national parks. During this class you will

- Explore the theory of plate tectonics and how this theory relates to other geologic processes
- Learn how to identify and classify common rocks and minerals

- Use proxies to interpret ancient environments make inferences about the geologic history of a landscape
- Develop hypotheses and evaluate those hypotheses based on collected data
- Gain skills in scientific research
- Gain critical thinking skills and practice applying knowledge to new situations

ES 1105 fulfills the learning objectives of the GE Natural Science requirement – Physical Science category. By the end of this course, students should successfully be able to:

- Explain and recall the basic facts, principles, theories and methods of modern earth science, including: the structure of the earth; the principles of plate tectonics; the composition and interrelationship among earth materials; geologic time; natural hazards such as earthquakes and volcanic eruptions; weathering and erosion processes; controls on global climate; and the relationships between the rock cycle, the tectonic cycle, and the hydrologic cycle. This fulfills the first objective of the GE Natural Science/Physical Science requirement: ***Students understand the basic facts, principles, theories and methods of modern science***.
- Describe and explain the significance of key events in the history of earth science, including: how the development of paleomagnetism supported the establishment of the plate tectonic theory; how the understanding of radioactivity provided a powerful tool for geochronology; and how the behavior of seismic waves traveling through different materials allowed geoscientists to understand and describe the different layers inside Earth. This fulfills the second objective of the GE Natural Science/Physical Science requirement: ***Students understand key events in the development of science and recognize that science is an evolving body of knowledge***.
- Discuss the inter-dependence of scientific and technological developments in measuring and modeling physical and chemical aspects of the earth and the natural environment. They will also understand how scientific developments in fields such as physics, chemistry, and biology help explain the development of earth's rocks, its atmosphere, hydrosphere and surface features. This fulfills the third objective of the GE Natural Science/Physical Science requirement: ***Students describe and provide examples of the inter-dependence of scientific and technological developments***.
- Explain the ways in which aspects of earth science impact society. Students should be able to describe the relationship between science and societal decision-making pertaining to natural hazards, natural resources, global climate change and human sustainability. This fulfills the fourth objective of the GE Natural Science/Physical Science requirement: ***Students recognize social and philosophical implications of scientific discoveries and understand the potential of science and technology to address problems of the contemporary world***.

HOW THIS COURSE WORKS

Mode of delivery: This course is 100% online. All course content will be delivered through Carmen (the OSU learning management system – https://carmen.osu.edu/), including lectures, discussions, and most graded assignments. There are no required face-to-face sessions, but students are expected to follow a week-by-week schedule as outlined in the syllabus and on Carmen. Most of the work is typically done in an ***asynchronous*** mode (self-paced) and students can complete the coursework without coming to campus. Weekly ***synchronous*** online meetings (using CarmenZoom – a cloud platform for video and audio conferencing) will be used for review sessions and group activities. Schedules and details of these meetings will be distributed online on Carmen.

Pace of online activities: The course content is divided into **weekly modules** available on Carmen. The modules are organized in a sequential manner and will be unlocked week by week. Students are expected to keep pace with weekly deadlines but may schedule their efforts freely within that time frame. Synchronous online meetings will be scheduled throughout the course, for students to interact with their instructor and classmates. These meetings will take place in a virtual classroom setting using CarmenZoom, which can be accessed from: https://osu.zoom.us/.

Credit hours and work expectations: This is a **3-credit-hour course**. It is IMPORTANT that you set aside some time every week to go over the course materials and work on assignments for that week. According to Ohio State policy, students should expect around **3 hours per week** of time spent on direct instruction (for example, video lectures, synchronous zoom meetings) in addition to 6 hours of homework (readings, assignments, quizzes) to receive a grade of (C) average.

Attendance and participation requirements: Because this is an online course, your attendance is based on your online activity and participation. The following is a summary of everyone's expected participation:

- **Participating in online activities for attendance**: **AT LEAST ONCE PER WEEK**
  You are expected to log in to the course in Carmen every week. (During most weeks you will probably log in many times.) If you have a situation that might cause you to miss an entire week of class, discuss it with me *as soon as possible.*
- **Office hours and live sessions**: **OPTIONAL**
  All live, scheduled events for the course, including my office hours, are optional.
- **Participating in discussion forums**: **2+ TIMES PER WEEK**
  Every week, a discussion forum will be activated on Carmen for you to engage with your classmates about the materials and topics for the week. Each week you are expected to post at least TWO substantive contributions to the discussion forum.
- **Participating in group work on CarmenZoom**: **ONCE PER WEEK**
  Every week, you will work on a group activity with your classmates. These hands-on, collaborative activities will cover a central topic for the week.

COURSE MATERIALS AND TECHNOLOGIES

Textbooks

RECOMMENDED/OPTIONAL:

- **Geology of the National Parks**, by Ann Harris, Esther Tuttle & Sherwood Tuttle. Kendall-Hunt Publishing Co., ISBN 978-0-787-29970-7 (6th ed., 2004), ISBN 978-0-840-34619-0 (4th ed., 1990).
- **Parks and Plates: The Geology of our National Parks, Monuments, and Seashores**, by Robert J. Lillie, 1st ed. (2005), W.W. Norton & Co., 298 pp., ISBN 978-0-393-92407-7. Textbook website: http://books.wwnorton.com/books/978-0-393-92407-7/
- **Earth: An Introduction to Physical Geology** by Tarbuck, Lutgens, and Tasa 12th ed. (2017), Pearson, ISBN 978-0-134-07425-2

Course technology

In addition to the textbook, I have prepared a wealth of additional readings, videos and online resources, which are housed at the course website on Carmen (the OSU Course Management System). These resources can be accessed from: https://carmen.osu.edu/. In order to make the most of these online resources, you will need access to a computer or tablet with a reliable connection to the Internet. Dialup will likely NOT be adequate to meet your needs. If you do not have access to a computer at home, all computer labs on campus meet these requirements.

For help with your password, university email, Carmen, or any other technology issues, questions, or requests, contact the OSU IT Service Desk. Standard support hours are available at https://ocio.osu.edu/help/hours, and support for urgent issues is available 24/7.

- **Self-Service and Chat support:** http://ocio.osu.edu/selfservice
- **Phone:** 614-688-HELP (4357)
- **Email:** 8help@osu.edu
- **TDD:** 614-688-8743

BASELINE TECHNICAL SKILLS FOR ONLINE COURSES

- Basic computer and web-browsing skills
- Navigating Carmen: for questions about specific functionality, see the Canvas Student Guide.

- Able to communicate through email and using a discussion board.
- Use office applications such as Microsoft Office (or similar) to create documents.
- Saving files/documents and uploading assignments to Carmen.

REQUIRED TECHNOLOGY SKILLS SPECIFIC TO THIS COURSE

- **CarmenZoom** text, audio, and video chat. More information at https://osu.zoom.us/.
- On-campus and off-campus access to feature-length videos at the **OSU Secured Media Library** (https://drm.osu.edu/media/) and **Kanopy** (https://osu.kanopy.com/).
- Access to one of the versions (web, mobile, OR desktop) of **Google Earth** (https://www.google.com/earth/versions/).
- Recording a slide presentation with audio narration
- Recording, editing, and uploading video

REQUIRED EQUIPMENT

- Computer: current Mac (OS X) or PC (Windows) with high-speed internet connection
- Webcam: built-in or external webcam, fully installed and tested
- Microphone: built-in laptop or tablet mic or external microphone
- Other: a mobile device (smartphone or tablet) or landline to use for BuckeyePass authentication

REQUIRED SOFTWARE

- **Web browser**: Google Chrome is recommended. For a free download (Mac or PC) go to https://www.google.com/chrome/. Keep your plug-ins up to date to ensure compatibility.
- **Word processing software** to type assignments: Microsoft Office 365 ProPlus is now free to all OSU students and is available at: http://office365.osu.edu/. Full instructions for downloading and installation can be found at http://go.osu.edu/office365help.
- Free **Adobe Acrobat Reader**: http://www.adobe.com/go/EN_US-H-GET-READER
- Free **Adobe Flash Player**: http://www.adobe.com/go/EN_US-H-GET-FLASH
- **Anti-Virus software** - free to OSU faculty, staff, and students for use on personally owned computers via the OSU Software Downloads page: http://osusls.osu.edu/

CARMEN ACCESS

You will need to use BuckeyePass multi-factor authentication to access your courses in Carmen. To ensure that you are able to connect to Carmen at all times, it is recommended that you take the following steps:

- Register multiple devices in case something happens to your primary device. Visit the BuckeyePass - Adding a Device help article for step-by-step instructions.
- Request passcodes to keep as a backup authentication option. When you see the Duo login screen on your computer, click “Enter a Passcode” and then click the “Text me new codes” button that appears. This will text you ten passcodes good for 365 days that can each be used once.
- Download the Duo Mobile application to all of your registered devices for the ability to generate one-time codes in the event that you lose cell, data, or Wi-Fi service.

If none of these options will meet the needs of your situation, you can contact the IT Service Desk at 614-688-4357 (HELP) and the IT support staff will work out a solution with you.

GRADING AND FACULTY RESPONSE

How your grade is calculated

ASSIGNMENT CATEGORY	POINTS
Participation	10
Weekly Quizzes	15
Assignments	20
Final Project	25
Exams	30
Total	**100**

See course schedule at the end of the syllabus for due dates (also available on Carmen).

Late assignments

Participation grade will be assessed based on the student active participation in the discussion forum for each week. There will be NO make-up quizzes or exams unless in exceptional circumstances and ONLY if discussed with the instructor in advance of the date of the quiz or exam. Late submissions may not be accepted, at the discretion of the instructor. If accepted, a penalty grading will be assessed. Due dates of all assignments are available on Carmen.

Grading scale

93–100: A
90–92.9: A-
87–89.9: B+
83–86.9: B
80–82.9: B-
77–79.9: C+
73–76.9: C
70 –72.9: C-
67 –69.9: D+
60 –66.9: D
Below 60: E

Faculty feedback and response time

The following list to give you an idea of my intended availability throughout the course. (Remember that you should call **614-688-HELP** at any time if you have a technical problem.)

- **Grading and feedback:** Participation points will be calculated at the end of the semester. Grade feedback on all quizzes is **immediate** on Carmen. The final grade for the individual course project will be calculated at the end of the semester. Feedback on exams and group activities are usually provided within **7 days**.
- **Email:** I reply to emails within **24 hours on school days (when class is in session)**.
- **Discussion board:** I will check and reply to messages in the discussion boards every **24 hours on school days (when class is in session)**.

OTHER COURSE POLICIES

Discussion and communication guidelines

The following are my expectations for how we should communicate as a class. **Above all, please consider how your words language can impact others**; remember to be respectful and thoughtful.

- **Writing style**: While there is no need to participate in class discussions as if you were writing a research paper, you should remember to write using good grammar, spelling, and punctuation. A more conversational tone is fine for non-academic topics.
- **Tone and civility**: Let's maintain a supportive learning community where everyone feels safe and where people can disagree amicably. Remember that sarcasm doesn't always come across online.
- **Citing your sources**: When we have academic discussions, please cite your sources to back up what you say. (For the textbook or other course materials, list at least the title and page numbers. For online sources, include a link.)
- **Backing up your work**: Consider composing your academic posts in a word processor, where you can save your work, and then copying into the Carmen discussion.

Academic integrity policy

POLICIES FOR THIS ONLINE COURSE

- **Quizzes**: Weekly quizzes are included as way for students to self-check their understanding of the course material for the week. All unit quizzes will be delivered through Carmen. They are open book and it is OK to use your notes. You can take the quizzes anytime (multiple times) before the deadline.
- **Written assignments**: Your written assignments, including discussion posts, should be your own original work. In formal assignments, you should follow a formal citation style to cite the ideas and words of your research sources. You are encouraged to ask a trusted person to proofread your assignments before you turn them in—but no one else should revise or rewrite your work.
- **Reusing past work**: In general, you are prohibited in university courses from turning in work from a past class to your current class, even if you modify it. If you want to build on past research or revisit a topic you've explored in previous courses, please discuss the situation with me.
- **Falsifying research or results**: All research you will conduct in this course is intended to be a learning experience; you should never feel tempted to make your results or your library research look more successful than it was.
- **Collaboration and informal peer-review**: The course includes many opportunities for formal collaboration with your classmates. While study groups and peer-review of major written projects is encouraged, remember that comparing answers on a quiz or exam is not permitted. If you're unsure about a particular situation, please feel free just to ask ahead of time.
- **Group work**: **This course includes group work for certain assignments**. Throughout the semester you will be asked to complete both personal and group assignments. At the beginning of the semester you will be randomly assigned to a 3-4 person “Success Team.” These success teams will serve as default study and work groups. For assignments designated as “group assignments” you are expected to work with your success team. These assignments are usually a bit more complicated and

difficult, and are best accomplished as a group of people work on them together. You may choose to meet in person, or to work together virtually. **I expect each person to contribute to group work. If you do not contribute, I expect the group to give credit to only those that contributed to the assignment.** I realize that group work can be stressful for students when it comes to dividing work, taking credit, and receiving grades and feedback. I have attempted to make the guidelines for group work as clear as possible for each activity and assignment, but please let me know if you have any questions.

OHIO STATE'S ACADEMIC INTEGRITY POLICY

Academic integrity is essential to maintaining an environment that fosters excellence in teaching, research, and other educational and scholarly activities. Thus, The Ohio State University and the Committee on Academic Misconduct (COAM) expect that all students have read and understand the University's *Code of Student Conduct*, and that all students will complete all academic and scholarly assignments with fairness and honesty. Students must recognize that failure to follow the rules and guidelines established in the University's *Code of Student Conduct* and this syllabus may constitute "Academic Misconduct."

The Ohio State University's *Code of Student Conduct* (Section 3335-23-04) defines academic misconduct as: "Any activity that tends to compromise the academic integrity of the University, or subvert the educational process." Examples of academic misconduct include (but are not limited to) plagiarism, collusion (unauthorized collaboration), copying the work of another student, and possession of unauthorized materials during an examination. Ignorance of the University's *Code of Student Conduct* is never considered an excuse for academic misconduct, so I recommend that you review the *Code of Student Conduct* and, specifically, the sections dealing with academic misconduct.

If I suspect that a student has committed academic misconduct in this course, I am obligated by University Rules to report my suspicions to the Committee on Academic Misconduct. If COAM determines that you have violated the University's *Code of Student Conduct* (i.e., committed academic misconduct), the sanctions for the misconduct could include a failing grade in this course and suspension or dismissal from the University.

If you have any questions about the above policy or what constitutes academic misconduct in this course, please contact me.

Other sources of information on academic misconduct (integrity) to which you can refer include:

- The Committee on Academic Misconduct web pages (COAM Home)
- *Ten Suggestions for Preserving Academic Integrity (Ten Suggestions)*
- *Eight Cardinal Rules of Academic Integrity* (www.northwestern.edu/uacc/8cards.htm)

Copyright disclaimer

The materials used in connection with this course may be subject to copyright protection and are only for the use of students officially enrolled in the course for the educational purposes associated with the course. Copyright law must be considered before copying, retaining, or disseminating materials outside of the course.

Statement on Title IX

Title IX makes it clear that violence and harassment based on sex and gender are Civil Rights offenses subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories (e.g., race). If you or someone you know has been sexually harassed or assaulted, you may find the appropriate resources at http://titleix.osu.edu or by contacting the Ohio State Title IX Coordinator, Kellie Brennan, at titleix@osu.edu

Your mental health

A recent American College Health Survey found stress, sleep problems, anxiety, depression, interpersonal concerns, death of a significant other, and alcohol use among the top ten health impediments to academic performance. Should you find yourself experiencing personal difficulties, whether related to class or not, please know that you have access to confidential services provided by the OSU Newark Counseling Services. All current OSU Newark students are eligible for services at no charge. You may contact Counseling Services at 740-364-9578, or www.ccs.osu.edu. For students on the Columbus campus, you may contact Ohio State University Counseling and Consultation Service (614-292-5766).

Academic Support

The Ohio State University provides numerous resources to enhance student learning and success inside and outside the classroom. To find out more about student support services on the Columbus campus, please visit http://ssc.osu.edu. To find out more about student services on the Newark campus, including emergency grants, the tutoring center, and how to make an appointment with a learning specialist please visit https://newark.osu.edu/students/support-services.html. To find out more about advising and student academic support on the Columbus campus, please visit http://advising.osu.edu/welcome.shtml. To make an appointment with an academic advisor on the Newark campus, please visit https://newark.osu.edu/academics/advising-office/.

ACCESSIBILITY ACCOMMODATIONS FOR STUDENTS WITH DISABILITIES

Requesting accommodations

The University strives to make all learning experiences as accessible as possible. If you anticipate or experience academic barriers based on your disability (including mental health, chronic or temporary medical conditions), and you would like to request academic accommodations based on the impact of a disability qualified under the Americans with Disabilities Act and Section 504 of the Rehabilitation Act of 1973, please let me know immediately so that we can privately discuss options. Discussions are confidential. To establish reasonable accommodations, I may request that you register with the Office for Disability Services (ODS) at 226 Warner Center, (740) 366-9441.

For students at the Columbus campus, please contact the Student Life Disability Services at 614-292-3307 or ods@osu.edu to register for services and/or to coordinate any accommodations you might need in your courses at The Ohio State University. Visit http://ods.osu.edu for more information.

Accessibility of course technology

This online course requires use of Carmen (Ohio State's learning management system) and other online communication and multimedia tools. If you need additional services to use these technologies, please request accommodations with your instructor.

- Carmen (Canvas) accessibility
- Streaming audio and video
- Synchronous course tools

COURSE SCHEDULE

Week	Dates	Topics, Readings, Assignments, Deadlines
1	**Aug. 25 - Aug. 31**	**Unit 1: Plate Tectonic and Earth's Interior** • **Video lectures:** *Plate Tectonics* & *Earth's Interior* • **Group Assignment:** Discovering Plate Boundaries • **Assignments:** Parks at Plate Boundaries • **Reading:** Readings: Parks & Plates (pages 1-10); supplemental reading • **Quiz 1**
2	**Aug. 31- Sept. 7**	**Unit 2: Minerals and Mineral Resources** • **Video lectures:** *What is a Mineral?, Chemical Bonds*, *Mineral Characters*, and *Minerals and the Hopewell Culture* • **Assignment:** Physical Characters of Minerals • **Group Assignment:** Identifying Key Minerals • **Reading:** supplemental reading posted on Carmen • **Quiz 2**
3	**Sept. 7 – Sept. 14**	**Unit 3: Magma Formation and Volcanoes** • **Video lectures:** *Bowen's Reaction Series* and *Magma Formation* • **Videos:** Yellowstone's Cataclasmic Origins and Future and Hawaii Volcanoes: Earth's Largest Mountains • **Assignment:** Magma Formation at Plate Boundaries • **Reading**: Part IV Intro. & Chaps. 37,38, 42, 45 (Geology of the National Parks) • **Quiz 3**
4	**Sept. 14 – Sept. 21**	**Unit 3: Magma Formation and Volcanoes** • **Video lectures:** *Magma Viscosity and Volcanoes* • **Video:** Mt. St. Helens, Lassen Volcanic, Mt. Rainier and Crater Lake, Olympic, North Cascades • **Group Assignment:** Comparing Hawai'i Volcanoes, Mt. St. Helen, and Mt. Rainier National Parks

Week	Dates	Topics, Readings, Assignments, Deadlines
		• **Reading:** Part IV Intro. & Chaps. 37,38, 42, 45 (Geology of the National Parks) • **Quiz 4**
5	**Sept. 21- Sept. 28**	**Unit 4: Igneous Rocks** • **Video lectures:** *Identification and Classification of Igneous Rocks* and *Igneous Rocks and Plate Boundaries* • **Videos:** Yosemite: Nature's Cathedral and Acadia's Highlands and Islands • **Assignment:** Identification and Classification of Igneous Rocks • **Reading:** Supplement & Chap. 25, 26, 30 (Geology of the National Parks) • **Quiz 5**
6	**Sept. 28-Oct. 5**	**Unit 4: Igneous Rocks** • **Videos:** Voyageurs, Isle Royale National Park, and the Canadian Shield and Craters of the Moon • **Group Assignment:** Igneous rocks from the National Parks • **Reading:** Supplement & Chap. 25, 26, 30 (Geology of the National Parks) • **Quiz 6**
7	**Oct. 5 – Oct. 12**	**Midterm Exam**
8	**Oct. 12- Oct. 19**	**Unit 5: Sedimentary Rocks, Past Environments, and Fossils** • **Video lectures:** *Sedimentary Rock Identification* and *Depositional Environments* • **Videos:** The Grand Canyon's 2 billion year staircase • **Assignment:** Sedimentary Rock Identification • **Assignment:** Grand Canyon Virtual Fieldtrip • **Reading:** Supplement, Chap. 1-6, 20, 23 (Geology of the National Parks) • **Quiz 7**
9	**Oct. 19 – Oct. 26**	**Unit 5: Sedimentary Rocks, Past Environments, and Fossils** • **Video lectures:** *Carbonate Rocks* • **Videos:** Reefs: Virgin Islands, Florida, Texas

Week	Dates	Topics, Readings, Assignments, Deadlines
		• **Group Assignment:** Interpreting paleoenvironments of the Colorado Plateau • **Reading:** Supplement, Chap. 1-6, 20, 23 (Geology of the National Parks) • **Quiz 8**
10	**Oct. 26- Nov. 2**	**Unit 6: Stratigraphic Principles and Geologic Time** • **Video lectures:** *Absolute age dating* and *Relative age dating* • **Group Assignment:** Stratigraphic Column of Petrified Forest NP • **Reading:** Supplement, Chap. 1 and 9 (Geology of the National Parks) • **Quiz 9**
11	**Nov. 2 – Nov. 9**	**Unit 7: Weathering, Erosion, and Cave Formation** • **Video lectures:** *Weathering* and *Cave Formation* • **Videos:** Bryce Canyon, Canyonlands, and Arches and Mammoth Cave, Wind Cave, Carlsbad Caverns • **Group Assignment:** Mammoth Cave Formation History • **Reading:** Supplement, Chap. 16-18, 49, 58 • **Quiz 10**
12	**Nov. 9 – Nov. 16**	**Unit 8: Metamorphic Rocks** • **Video lectures:** *What is Metamorphism?* and *Metamorphic Rock Identification* • **Videos:** Shenandoah: The Collision of Old Continents • **Assignment:** Metamorphic Rock Identification • **Group Assignment:** Metamorphic rocks of the Blue Ridge • **Reading:** Supplement, Ch. 56-57 (Geology of the National Parks)
13	**Nov. 16 - Nov. 30**	**Unit 9: Climate Change** • **Video lectures:** *Controls on Global Climate* and *Anthropogenic Climate Change* • **Videos:** Climate Change in the National Parks • **Assignment:** Climate Change in your favorite park

Week	Dates	Topics, Readings, Assignments, Deadlines
		• **Reading:** Supplemental reading
14	**Nov. 30 – Dec. 9**	**Unit 9: Climate Changes** • **Video lectures:** *Impact of Anthropogenic Climate Change* • **Group Assignment:** Interpreting media coverage on climate changes • **Final Project Due**

ES 1105 Final Project – Informative Video

The purpose of this project is for you to demonstrate your knowledge of the fundamentals of geology by explaining a geologic formation in one of the national parks to a general audience. You may choose to work on a "geologic wonder" from any national park. (For example, Mt. Rainier, Old Faithful, The Grand Canyon, Mammoth Cave, etc.) Your project is to create a video that explains the "geologic wonder."

Content: Because the purpose of this project is for you to demonstrate your knowledge of the of geology by explaining a geologic feature to a general audience you will want to make sure that you do a very good job **explaining the fundamental geologic principles** underlying the formation of your chose geologic feature. For example, if your chosen feature formed during a volcanic eruption, or is a volcano, you should talk about volcanoes in general and how magma is formed and why some eruptions are explosive and some are not – not just state that there was a volcanic eruption. However, explaining the basics is not enough, you will also need to **show that you have done research into the specific park/location/geologic feature**. Remember that this final project is in place of a term paper, therefore, I expect you to **do the same amount of research**.

Besides being graded on the quality of your information, your final project will also be graded on creativity and professionalism. Therefore, you should also **take the time to make sure that**

your video looks good, has high quality images that enhance your explanations, and is engaging. I will be posting some resources that the University has for producing videos, but there are many free software options out there for editing footage. I suggest that you begin exploring your options early.

In your future careers, you will probably be required to convey information to others in a professional and engaging manner. The secondary purpose of this project is to help you to build those skills. While you are preparing your video, please keep the following in mind:

1) Am I teaching the audience something that they do not already know?
2) Am I explaining things in a way that the audience can understand?
3) Am I keeping the audience engaged? (think about visuals, pace of information, etc.)
4) Is there anything that would distract from my purpose? (Poor audio quality, poor visuals, background noise, etc.)

In order to make the project more manageable, to make sure that you are on track, and to provide you with feedback along the way, you will hand in parts of the project on the schedule in your syllabus. These individual parts of the project are explained below. Each of these will make up a portion of the grade of the final project. Examples of each of these components will be posted on Carmen. Please make use of these examples and ask questions if you are unsure about the assignment.

Annotated Bibliography due TBD – 20 points

The first step in this project is doing research on your chosen "geologic wonder." I expect you to use scholarly and scientific sources (e.g. not Wikipedia). Your annotated bibliography should include **8 scholarly sources** (e.g. books, articles from scientific journals, and websites from academic or government sources). **At least 2 of these sources must come from the primary literature (e.g. from journal articles written by scientists).** If you are wondering if a source is scholarly check to see if it has an author cited; generally, if the source does not have an author it is not scholarly. You may also ask me or a librarian if you need help.

This is an annotated bibliography, so **included with the 8 sources should be additional information.**

1. Summary – A few sentences that summarize the main take-home points of the source. This will help you remember where you read information that you may want to include in your project.

2. Assessment of the source – After reading the source, you can assess its value to your project. Does it appear reliable/scientific? Does it supply you with useful information? Does it support/conflict with other sources you have read?
3. Reflection on the source – Some questions a reflection might answer include – Is this source useful to my project? Why or why not? How can I use this source in my project? Does this raise questions and prompt me to do additional research?

Video Outline due TBD – 10 points

After doing the initial research into your chosen "geologic wonder" the next step is to determine how you will present the information you have learned to your audience (park visitors). This is the fun, creative part of the project – you should not feel limited here, use your imagination! In the video outline I want you to explain your idea for communicating the information to the park visitors. Basically, this is your blueprint for the final project. Things to consider may be – What footage are you using? How will images be displayed? Are you recording everything? Using a slideshow? Who will do the recording? Are you using actors? Do you have a narrator? You should also consider what information you are presenting and in what order. Outline the major points. After putting together the video outline you should have a pretty good idea of where the project is headed.

Video Script due TBD – 20 points

This is the text that will be included in your video, probably as a narration or a script (unless you think of a different way!). It should include the facts that you have learned in your research (which must be cited!) as well as basic information that you have learned from class (which doesn't need to be cited). If you have questions about what needs to be cited and what doesn't *please ask me!* This text doesn't need to be long – remember you are aiming for a 5-7 minute video – but I expect it to be packed full of good information. This project is in place of a research paper, so **make sure that you are putting the same amount of thought and effort into the project as you would into a paper**. I will read this text and make comments on it so that you can make adjustments before your final project is due.

Final Project due TBD

This is your final product. It should be polished and ready for an audience. (We will be screening them as a class!) As products for a general audience are usually not littered with citations, you do not need to include citations in your final video. However, I am asking that,

along with the final video, you **turn in an updated version of your video script and an updated bibliography**.

A rubric that breaks down how the videos will be graded will be available on Carmen.

Final Project Screening TBD

Attendance is not required at this event, but it is fun to be able to see all of the videos that your classmates made. Also, if you attend you will be awarded an extra 10 points on your final project grade. During the screening, the class will vote on a “People’s Choice” award to go to the most entertaining video (this also comes with some extra credit points).

You may complete the final project in pairs or individually. If you choose to work with a partner, remember that **you will share all grades**. Make sure you choose to work with someone that you feel like you can trust to pull their equal weight in the project.

Your final project grade will reflect both your grade on the final product as well as your grades on the parts of the project that are turned in throughout the semester. **I highly recommend that you turn in each component on their assigned dates. I will not accept late work on these final project components**, because I am trying to get comments back to you as quickly as possible. This will help you to do better on your final project because it will allow me the time to give your feedback. Even if you turn in an excellent final product, but fail to turn in the parts of the project on their deadlines, your final project grade will suffer.

Final Project Points	**Total 150 pts.**
Annotated Bibliography	20
Video Outline	10
Video Script	20

Final Video	100

Even a 100 on the final product can only earn you a 67% on the final project if the other parts are not turned in

GEC COURSE ASSESSMENT PLAN FOR EARTHSCI 1105: Geology of the National Parks

INTRODUCTION

Here we present the assessment plan for a 3-credit hour, 100% distance learning general education (GE) course that serves as an introduction to physical geology through the lens of the national parks. Geology of the National Parks (EarthSci 1105) meets the University Bachelor of Arts GE requirement as a 'stand-alone' course. We would like to initiate this course in the Arts and Sciences College, School of Earth Sciences, in the autumn semester of 2020. This course is designed to align with the GE category of Natural Science (Physical Science) goals and learning outcomes.

COURSE DESCRIPTION

Geology of the National Parks is an introduction to the fundamentals of physical geology, including the origin and structure of earth layers, the processes involved in shaping earth's crust, the nature and classification of earth's rocks, and the dynamic interactions of the lithosphere with the hydrosphere and atmosphere. The course is designed to provide students with an overview of geologic processes as recorded in our national parks.

This course provides a basic introduction to the principles and methods of Earth Science, using the National Parks to illustrate geologic processes at work in our planet.

This course provides a basic introduction to the principles and methods of Earth Science, the scientific method, and critical thinking about the complexities of the natural world in the context of the national parks. During this class you will

- Explore the theory of plate tectonics and how this theory relates to other geologic processes
- Learn how to identify and classify common rocks and minerals
- Use proxies to interpret ancient environments make inferences about the geologic history of a landscape
- Develop hypotheses and evaluate those hypotheses based on collected data
- Gain skills in scientific research
- Gain critical thinking skills and practice applying knowledge to new situations

GE RATIONALE

The following section discusses how each individual GE expected learning outcome will be met in most or all of the following: (a) the course objectives, (b) course topics, (c) the readings, (d) videos, (e) the weekly assignments and quizzes, and a (f) final project.

GE Physical Sciences ELO1: Students understand the basic facts, principles, theories and methods of modern science.

- Class modules focus on the fundamental principles, theories, and methods of modern earth science, including: the structure of the earth; the principles of plate tectonics; the composition and interrelationship among earth materials; geologic time; natural hazards such as earthquakes and volcanic eruptions; weathering and erosion processes; controls on global climate; and the relationships between the rock cycle, the tectonic cycle, and the hydrologic cycle.
- The above topics are addressed through reading of online modules, online videos, weekly assignments, and are assessed through quizzes, exams, and a summative project.

GE Physical Sciences ELO2: Students understand key events in the development of science and recognize that science is an evolving body of knowledge.

- Class modules will explore how the development of paleomagnetism supported the establishment of the plate tectonic theory; how the understanding of radioactivity provided a powerful tool for geochronology; and how the behavior of seismic waves traveling through different materials allowed geoscientists to understand and describe the different layers inside Earth.
- The above topics are addressed through reading of online modules, online videos, weekly assignments, and are assessed through quizzes and exams.

GE Physical Sciences ELO3: Students describe the inter-dependence of scientific and technological developments.

- Class modules will address how scientific developments in fields such as physics, chemistry, and biology help explain the development of earth's rocks, its atmosphere, hydrosphere and surface features.
- The above topics are addressed through reading of online modules, online videos, weekly assignments, and are assessed through quizzes, midterms, and a summative group project.

GE Physical Sciences ELO4: Students recognize social and philosophical implications of scientific discoveries and understand the potential of science and technology to address problems of the contemporary world.

- Class modules explore the relationship between science and societal decision-making pertaining to natural hazards, natural resources, global climate change and human sustainability.
- The above topics are addressed through reading of online modules, online videos, weekly assignments, and are assessed through quizzes, midterms, and a summative group project.

EXPECTED LEARNING OUTCOMES (ELOS)

The following table presents the general topics addressed throughout the course and how each topic aligns with the GE Natural Science (Physical Science) category expected learning outcomes in general terms.

Topic #	Topic List	# of Weeks	PS ELO 1	PS ELO 2	PS ELO 3	PS ELO 4	Course ELO 1	Course ELO 2	Course ELO 3	Course ELO 4	Course ELO 5	Course ELO 6
1	Plate Tectonics and Earth's Interior	1	X	X	X		X		X	X		X
2	Minerals and Mineral resources	1	X		X	X		X				X
3	Magma Formation and Volcanoes	2	X			X	X			X	X	X
4	Igneous Rocks	2	X				X	X	X	X	X	X
5	Sedimentary Rocks, Past Environments, and Fossils	2	X					X	X	X	X	X
6	Stratigraphy and Geologic Age	1	X	X	X				X	X	X	X
7	Weathering, Erosion, and Cave Formation	1	X			X			X	X	X	X
8	Metamorphic Rocks	1	X				X	X	X		X	X
9	Climate Change	1	X		X	X	X				X	X

PS ELO 1: Students understand the basic facts, principles, theories and methods of modern science.
PS ELO 2: Students understand key events in the development of science and recognize that science is an evolving body of knowledge
PS ELO 3: Students describe the inter-dependence of scientific and technological developments.
PS ELO 4: Students recognize social and philosophical implications of scientific discoveries and understand the potential of science and technology to address problems of the contemporary world.
Course ELO 1: Students will explore the theory of plate tectonics and how this theory relates to other geologic processes
Course ELO 2: Student will learn how to identify and classify common rocks and minerals
Course ELO 3: Student will use proxies to interpret ancient environments make inferences about the geologic history of a landscape
Course ELO 4: Students will develop hypotheses and evaluate those hypotheses based on collected data
Course ELO 5: Students will gain skills in scientific research
Course ELO 6: Students will gain critical thinking skills and practice applying knowledge to new situations

COURSE ASSESMENT STRATEGY

Two techniques will be used to assess the extent to which the course satisfies expected learning outcomes (ELOs) associated with the Natural Science (Physical Science) category. These will include:

(1) A direct method to asses student performance with respect to the ELOs. To specifically test if the course is achieving its goals and ELOs this direct measure includes embedded testing into assignments, quizzes, midterms and final exams. Results will be analyzed each semester to evaluate whether this course is meeting its objectives. The goal for the embedded question assessment is that 80% of students give the correct answer for the embedded multiple-choice questions. Questions for which fewer than 80% of students give a correct answer or disagree with meeting the objectives will be pinpointed as areas of weakness.

For the DL course, the accuracy rate for embedded questions will also be compared to the accuracy rate in the in-person course of prior years to assess the quality of the course compared to the in-person delivery. After this period, the procedure will be repeated annually to ensure the course continues to meet GE goals and ELOs.

(2) An indirect method to track student knowledge, learning experience and perceptions in the form of a student survey (pre and post-tests) given at the beginning of course and at the end of course. Survey questions would be the same both times. Changes in the answers from beginning to end of semester would characterize the impact of the course on its students and serve as a guide for adjustments to the course contents, organization, etc. The survey questions will be repeated each semester

GE Expected Learning Outcomes	**Methods of Assessment** **Direct methods are required. Additional indirect methods are encouraged.*	**Level of student achievement expected for the GE ELO.** *(for example, define percentage of students achieving a specified level on a scoring rubric)*	**What is the process that will be used to review the data and potentially change the course to improve student learning of GE ELOs?**
<u>ELO 1</u> Students understand the basic facts, principles, theories and methods of modern science.	**1.** Embedded questions into quizzes, midterm and final exam **2.** Final Project Students choose a national park and create an informative video on the geologic feature(s) of that park, integrating much of the skills and content of the semester. Grading Criteria: ***Excellent*** *(demonstrates superior creativity, originality, or understanding in approach, content, or presentation)* ***Above average*** *(demonstrates creativity, originality, or understanding beyond basic expectations)* ***Acceptable*** *(meets basic expectations for presentation, approach and content)* ***Marginal*** *(below average in presentation, approach, understanding or content)* **3.** Student Survey (pre and post-tests)	**1.** The expectation is that 80% of students give the correct answer for the embedded multiple-choice test questions, averaged across all sections **2.** The expectation is that 90% of students achieve the level of "acceptable" or better	Standardized questions for which fewer than 80% of students give a correct answer will be pinpointed as areas of weakness. To address weaknesses instructor will analyze the instructional materials and craft changes. Embedded questions will be collected by the instructor and incorporated into the end of semester assessment report The student surveys (pre and post- tests) are distributed by the instructor. Students are encouraged to take survey by way of small extra credit earning. The results are shared with evaluation team throughout the end of semester assessment report Review SEIs with special emphasis on any negative comments on activities.

	Pre and Post tests are identical to check gains in understanding of material. The test consists of 15-20 questions relevant to the course ELOs. Pre-tests are administered in the first week of classes. Post-tests are administered during the last week of classes or incorporated into the final exam. **4.** End of Semester Self-Assessment Questionnaire (10 questions) where students indicate which of the following responses they feel better represents their knowledge on end of course goals (see syllabus): *Extremely well/very well/adequately well/not very well/not at all*	**3.** The expectations is that students would increase their knowledge per goal by at least 25%. **4.** The expectation is that 100% of students will feel they have achieved the goal at the level of "adequately well" or better	In-class discussion and real time feedback from students
<u>ELO 2</u> Students learn key events in the development of science and recognizes that science is an evolving body of knowledge.	**1.** Embedded questions into weekly assignments, midterm and final exam **2.** Student Survey (pre and post- tests): see above **3.** End of Semester Self-Assessment: see above	**1.** The expectation is that 80% of students give the correct answer for the embedded multiple-choice test questions, averaged across all sections **2.** The expectations is that students would increase their knowledge per goal by at least 25%. **3.** The expectation is that 100% of students will feel they have achieved the goal at the level of "adequately well" or better	

ELO 3 Students describe the inter-dependence of scientific and technological developments.	**1.** Embedded questions into weekly assignments, midterm and final exam **2.** Questionnaire/ Discussion Forum Approximately 15-20 questions relevant to an assigned topic followed by online forum where students discuss and summarize questionnaire. Grading criteria for forum based on: Contribution frequency, depth of presentation (critical thinking), relevant content and supporting evidence, netiquette **3.** Student Survey (pre and post- tests): see above **4.** End of Semester Self-Assessment: see above	**1.** The expectation is that 80% of students give the correct answer for the embedded multiple-choice test questions, averaged across all sections **2.** The expectation is that 85% of students achieve 80% or higher based on grading rubric. **3.** The expectations is that students would increase their knowledge per goal by at least 25%. **4.** The expectation is that 100% of students will feel they have achieved the goal at the level of “adequately well” or better	

ELO 4 Students recognize social and philosophical implications of scientific discoveries and understand the potential of science and technology to address problems of the contemporary world.	**1.** Embedded questions into weekly assignments, midterm and final exam **2.** Questionnaire/Discussion Forum: see above **3.** Student Survey (pre and post- tests): see above **4.** End of Semester Self-Assessment: see above	**1.** The expectation is that 80% of students give the correct answer for the embedded multiple-choice test questions, averaged across all sections **2.** The expectation is that 85% of students achieve the level of "acceptable" or better **3.** The expectations is that students would increase their knowledge per goal by at least 25%. **4.** The expectation is that 100% of students will feel they have achieved the goal at the level of "adequately well" or better.	

Arts and Sciences Distance Learning Course Component Technical Review Checklist

Course: EarthSci 1105
Instructor: Jill Leonard-Pingel
Summary: Geology of the National Parks

Standard - Course Technology	Yes	Yes with Revisions	No	Feedback/ Recomm.
6.1 The tools used in the course support the learning objectives and competencies.	X			• Carmen • Office 365 • Departmental film library.
6.2 Course tools promote learner engagement and active learning.	X			• Carmen Discussion Boards • CarmenWiki • Student Video Project
6.3 Technologies required in the course are readily obtainable.	X			All software is available for free via OSU site license.
6.4 The course technologies are current.	X			All are updated regularly.
6.5 Links are provided to privacy policies for all external tools required in the course.	X			No external tools are used
Standard - Learner Support				
7.1 The course instructions articulate or link to a clear description of the technical support offered and how to access it.	X			Links to 8HELP are provided.
7.2 Course instructions articulate or link to the institution's accessibility policies and services.	X			a
7.3 Course instructions articulate or link to an explanation of how the institution's academic support services and resources can help learners succeed in the course and how learners can obtain them.	X			b
7.4 Course instructions articulate or link to an explanation of how the institution's student services and resources can help learners succeed and how learners can obtain them.	X			c
Standard – Accessibility and Usability				
8.1 Course navigation facilitates ease of use.	X			Recommend using the Carmen Distance Learning "Master Course" template developed by ODEE and available in the Canvas Commons to provide student-users with a consistent user experience in terms of navigation and access to course content.
8.2 Information is provided about the accessibility of all technologies required in the course.	X			No 3rd party tools are used.
8.3 The course provides alternative means of access to course materials in formats that meet the needs of diverse learners.	X			Instructions are provided.
8.4 The course design facilitates readability	X			
8.5 Course multimedia facilitate ease of use.	X			All assignments and activities that use the Carmen LMS with embedded multimedia facilitates ease of use. All other multimedia resources facilitate ease of use by being available through a standard web browser

Reviewer Information

- Date reviewed: 6/1/20

- Reviewed by: Ian Anderson

Notes: Ready to be submitted!

[a] The University strives to make all learning experiences as accessible as possible. If you anticipate or experience academic barriers based on your disability (including mental health, chronic or temporary medical conditions), and you would like to request academic accommodations based on the impact of a disability qualified under the Americans with Disabilities Act and Section 504 of the Rehabilitation Act of 1973, please let me know immediately so that we can privately discuss options. Discussions are confidential. To establish reasonable accommodations, I may request that you register with the Office for Disability Services (ODS) at 226 Warner Center, (740) 366-9441.
For students at the Columbus campus, please contact the Student Life Disability Services at 614-292-3307 or ods@osu.edu to register for services and/or to coordinate any accommodations you might need in your courses at The Ohio State University.
Visit http://ods.osu.edu for more information.

[b]Add to the syllabus this link with an overview and contact information for the student academic services offered on the OSU main campus.
http://advising.osu.edu/welcome.shtml

[c]Add to the syllabus this link with an overview and contact information for student services offered on the OSU main campus. http://ssc.osu.edu. Also, consider including this link in the “Other Course Policies” section of the syllabus.