

PHY 1060, Earth Science/GEO 1060, Physical Geography

4 Credit Hours

Fall 2020

THIS IS AN ONLINE COURSE

Instructor: Kapila Clara Castoldi

Contact: castoldi@oakland.edu

Phone: (*home*) 734-994-7114

Virtual Office Hours: upon request – via video conferencing or by phone

Course Management System: Moodle

Course (Catalog) Description: The Earth: its structure, history, and the geography of its surface. *Topics include:* Minerals and Rocks, the Rock Cycle; Geologic Time; Plate Tectonics, Earthquakes and Earth's Interior, Volcanoes, Mountains; Atmosphere, Oceans, Rivers, Glaciers, Deserts; Energy Resources; the Solar System; Geology of the other Planets and their Moons.

Prerequisites: None

General Education Learning Outcomes: This course satisfies the university general education requirement in Natural Science and Technology (NST) Knowledge Exploration area.

The learning outcomes for NST courses state that the student will demonstrate:

- Knowledge of major concepts from natural science or technology, including developing and testing of hypotheses; drawing conclusions; and reporting of findings through some laboratory experience or an effective substitute (Laboratory experiences are met by either a limited number of interactive experiences, collecting and interpreting raw data, or other effective experiences such as a virtual laboratory). Requires at least 3 laboratory experiences during the course.
- How to evaluate sources of information in science and technology.

In addition to the general-education learning outcomes, this course also includes the crosscutting capacity of Critical Thinking.

Course Goals and Objectives: The course's main focus is the exploration of the dynamics of Earth's Geologic Systems which contribute to the continuous shaping of its surface and to sustain life on the planet: the Hydrologic System and the Tectonic System. The historical aspect of geology will also be examined: how our present is affected by our past and how the present will shape the future. The role of people-planet relationship will be discussed within the context of the planet's Natural and Energy Resources. A comparison with the geology systems of the other planets and moons of our Solar System is added to gain further insight on the geologic evolution of our planet and also to explore the possibility of past/present/future existence of Life elsewhere in the solar system. The course will also introduce basics of magnetism, heat and mechanisms of heat transportation, waves and their propagation.

A variety of tools will be utilized to aid and deepen the understanding of concepts:

- **Case Studies** – to learn about models in Earth Science, how to test and apply these to particular situations, and also to analyze and discuss collected data. These substitute the in-class Laboratory experiences
- **Online Quizzes** – for review of chapter concepts
- **Project Condor** and **Mobile Field Trips** – short videos of landscapes with sketching and annotations meant to improve the visualization of main geologic concepts
- **Interactive animations** – visualization and coaching activities
- **Video Library** – a series of twelve, 20 min videos will help reinforce and visualize the course's fundamental concepts

When you complete this course, the student will be able to:

- Identify the different regions inside the Earth, and understand the scientific data that allows scientists to know the properties of each region.
- Explain the origin of the Earth's magnetic field, and understand the evidence in support of past magnetic reversals.
- Become familiar with the main features and properties of the sea floor, including mid-ocean ridges and oceanic trenches.
- Realize that the Earth's surface consists of moving plates, and that most interesting geological activity occurs at the boundaries between these plates.
- Analyze the evidence supporting the hypothesis of continental drift and examine how scientists used the scientific method to test this hypothesis.
- Identify three main types of plate boundaries and explain the role of each type of boundary in the theory of plate tectonics.
- Calculate the rate of plate tectonic motion based on measured magnetic field anomalies in the sea floor.
- Relate the location and distribution of mountain belts, volcanoes, earthquakes, and coastal features to plate boundaries.
- Identify types of faults and explain under which conditions each originates.
- Know the history of several of the Earth's largest recent earthquakes, volcanic eruptions, mass wasting events, tsunamis and floods.
- Determine the location of an earthquake from seismic wave data.
- Determine the relative age of rock formations using the principles of superposition and cross-cutting relationships.
- Calculate the absolute age of a rock using isotopic dating.
- Examine the evidence supporting the hypothesis that a meteor impact caused the extinction of dinosaurs.
- Understand the periodic table and how atoms bond to form molecules.
- Distinguish the structure of several silicate minerals.
- Describe the rock cycle and the three main types of rocks.
- Understand how volcanic gases can influence the Earth's climate.
- Appreciate the impact of dams on rivers.
- Know the relative amount of water in the oceans, glaciers, ground, lakes, and rivers.
- Realize what an aquifer is and the implications of over pumping water from one.

- Understand how the worldwide air circulation influences the location of deserts.
- Examine the evidence supporting the hypothesis that glaciers once covered much of the Earth, and show how experiments tested this hypothesis.
- Learn how the most recent ice age created the Great Lakes and other geological features in Michigan.
- Know the major sources of energy in the United States.
- Learn how the burning of hydrocarbons may influence global warming.
- Realize how limited is the supply of oil, and examine possible alternative sources of energy.
- Compare the geologic nature and evolution the Earth to that of the Moon, Venus and Mars.

Textbook: Tarbuck-Lutgens – Earth: An Introduction to Physical Geology – Pearson – 13th Ed

If you choose to purchase the book at the Campus Bookstore, you have two options:

- Loose Leaf with Access Card to Modified Mastering Geology and e-text
ISBN: 9780135687031 – \$183 – or
- Access Card to Modified Mastering Geology and e-text
ISBN: 9780135238455 – \$85

If you choose to purchase directly through the publisher,
go to **www.mypearsonstore.com** and search by ISBN:

- Modified Mastering Geology and e-text – Instant Access
ISBN: 9780135238493 – \$80 – or

If you purchased a used textbook,

- Modified Mastering Geology without e-text – Instant Access
ISBN: 9780135238509 – \$45

Lecture Notes: Lecture notes are available online on *Moodle*.

These serve both as guidelines for the study of the chapters on the textbook and as chapter summary.

Recorded Lectures: For each chapter, my lecture recordings are available on *Moodle* in the form of Power Point with voice-over.

You may want to print the power point, so that you can take notes as you are listening to the online lecture.

Case Studies: A number of Case Studies will be assigned to develop critical thinking, learn how to analyze data, and utilize collected sets of data to test models. These will substitute the mandatory Lab experiences and will be available online on **Moodle**.

No late Case Studies are accepted after one week from the due date. For each late day there will be a 10% penalty.

Note: You have to turn in all three Case Studies in order to pass the course.

The Case Studies are worth 20% of the final grade.

Chapter Quizzes: This homework consists of online Reading Questions, Tutorials, Interactive Animations, Smart Figures, and other coaching activities for each chapter. These are in the form of multiple choice questions intended to help the students familiarize with the concepts introduced by the course and to help them gauge their understanding of the material.

The quizzes are found on the **pearson.com/mastering** website.

Please see 'How to Access the Online Quizzes' on page 9 of the syllabus.

No late Quizzes are accepted after one week from the due date. For each late day there will be a 10% penalty.

The Chapter Quizzes are worth 15% of the final grade.

Chapter Questions: For each chapter a few critical thinking questions will be posted on **Moodle**. Students are asked to work in assigned groups of three and submit, as a group, one set of answers by e-mail to the grader.

No late Chapter Questions are accepted after one week from the due date. For each late day there will be a 10% penalty.

The Chapter Questions are worth 15% of the final grade.

Videos: A series of twelve, 20-minute videos are available on **Moodle**. These will help the students reinforce and visualize the course's fundamental concepts.

Exams: There will be three online exams in the form of multiple-choice questions. The exams will take place on the **MasteringGeology.com** website. These exams will have the duration of 1 hour and may be taken any time of the day on the specified date:

Exam #1 – online Chapters 1, 2, 3, 4, 5

Exam #2 – online Chapters 6, 7, 8, 9, 11, 12

Exam #3 – online Chapters 13, 14, 16, 17, 18, 21, 23

Note: You have to take all three exams in order to pass the course.

The Exams are worth a total of 50% of the final grade.

(Exam 1: 15%, Exam 2: 15%, Exam 3: 20%)

Gradebook: All grades will be posted on Moodle's Gradebook.
The Gradebook will be updated regularly as new grades become available.

Final grade: Grades will be based on the following percentages:

- * **Case Studies:** **20%**
- * **Quizzes:** **15%**
- * **Chapter Questions:** **15%**
- * **Online Exams:** **50%**

Grading Scale:

A	96-100
A-	90-95
B+	85-89
B	80-84
B-	75-79
C+	70-74
C	65-69
C-	60-64
D+	55-59
D	50-54
F	< 50

Add/Drops: The University add/drop policy will be explicitly followed.
It is the student's responsibility to be aware of the University deadline dates
for dropping the course.

Reasonable Accommodations

Accessibility and Accommodations: It is the University's goal that learning experiences be as accessible as possible. Students with disabilities who have questions about course accessibility are encouraged to contact the instructor immediately. The Office of Disability and Support Services (DSS) is available to help. Currently, in-person services, such as face-to-face meetings and proctoring services, are not available. You may call the office at 248-370-3266 or visit <https://www.oakland.edu/dss> and click on "Request Accommodation Form".

Policy on Academic Misconduct

The University's regulations that relate to academic misconduct will be fully enforced. Any student suspected of cheating and/or plagiarism will be reported to the Dean of Students and, thereafter, to the Academic Conduct Committee for adjudication. Anyone found guilty of academic misconduct in this course may receive a course grade of F, in addition to any penalty assigned by the Academic Conduct Committee. Students found guilty of academic misconduct by the Academic Conduct Committee may face suspension or permanent dismissal. The full policy on academic misconduct can be found in the General Information section of the Undergraduate Catalog.

Excused Absence Policy

The University excused absence policy applies to participation as an athlete, manager or student trainer in NCAA intercollegiate competitions, or participation as a representative of Oakland University at academic events and artistic performances approved by the Provost or designee.

For the excused absence policy, see:

<https://www.oakland.edu/provost/policies-and-procedures/>

Bereavement Policy

In the event of the death of certain members within families or among loved ones, the University grants necessary bereavement absences upon student request.

For the official bereavement policy, see:

<https://www.oakland.edu/provost/policies-and-procedures/>

Student Preferred Name/Pronoun Policy

The University recognizes that as a community many of its members use names other than their legal names to identify themselves. As long as the use of this different name is not for the purposes of misrepresentation or a legal name is required by University business, policy or legal need, the University acknowledges that a "preferred name" will be used wherever possible. The University reserves the right to not accept a preferred name if it is deemed inappropriate, including a preferred name that is vulgar, offensive, fanciful, or creates confusion with another person.

Communication:

Instructor → Student:

Communications from the instructor will happen via **Announcements** in **Moodle** (forwarded by Moodle to your Oakland e-mail account.)

The student is expected to be familiar with Moodle. The e-Learning department offers introductory sessions at the beginning of each term.

Go to:

<https://moodle.oakland.edu>

Click on '*Students*' at the top and choose '*Moodle Orientation*'

- Each student is expected to login at least twice a week on Moodle and check the e-mail regularly
- A Weekly format will be used in Moodle, so that guidelines for the homework and all other activities will be posted week by week.

You will have to scroll down the Moodle page to check each week of the course.

Student → Instructor:

Contacts with the instructor will happen primarily through **Oakland webmail** at **castoldi@oakland.edu**

An example of *subject* of the e-mail is shown below:

e.g. '*PHY 1060 – your lastname – a few explanatory words*'

I will read my e-mail regularly throughout the day.

Do not send me communication through Moodle.

Student → Student:

Contacts among students may happen in a number of ways:

- '*Student Chat Room*' Forum – setup on Moodle for students to initiate a chat
- '*Getting to know each other*' Forum – setup on Moodle so that each student can share some basic information about himself/herself with others and the instructor. Participation in this forum is *mandatory*.

Virtual Office Hours:

The student-instructor communication can happen also via YuJa video conferencing. Upon request we can setup a **phone call** or **YuJa** meeting time to solve group issues.

Guide for Learning Remotely

You may want to read the **Student Guide to Learning Remotely** published by the E-Learning department under ‘Face-to-Face Suspension Tools’:

<https://www.oakland.edu/elis/>

For **TECHNICAL ISSUES**, please contact:

Moodle:

Read the documents on the e-Learning & Instructional Support (e-LIS) website.

In particular, the ‘*Welcome to the Online Student Orientation*’:

http://www2.oakland.edu/elis/SO_index.cfm

If this doesn’t help, contact the e-LIS at **248-370-4566**

You may also submit a Help Request Form to e-LIS:

<http://www2.oakland.edu/elis/help.cfm?LMS=2>

Online Quizzes:

Go to the **<https://www.pearsonmylabandmastering.com/northamerica/>** website

Under ‘Student’, click on ‘Support’, you may

- Get help with Registration
- Read answers to Top Questions,
- Access the Student User Guide, or
- Get Technical Support

Things to do during the first week:

Syllabus Quiz: during the first week of the course, you will have to take this simple quiz, to be sure that you understand what you have to do for the course. A nominal grade of 1 point is assigned to this Quiz (for participation).

Are you ready for Online Learning Quiz:

during the first week of the course you are also required to take this short quiz which will help you understand whether you are fit for an online course or not. Kindly email the results to Dr. Castoldi.

Getting to Know each Other Forum:

This Forum is meant to help all of us to get to know each other. It may also initiate conversation and friendship with other students in the course. Please answer the questions and share information about yourself with all of us.

Important Note from the Instructor:

Online courses have numerous advantages, including flexibility for those with a busy schedule. On the other hand I wish to bring to your attention that **not everybody is fit for an online course**. Remember that to be fit for an online course,

- You must be able to **work independently**.
- You must feel quite **comfortable** working **with computers**.
- You must be **self-motivated** and **disciplined** in order to access all assignments in a timely manner, actively participate in discussion panels and study the textbook in a timely manner.
- You must be able to **follow directions**. Most online activities are announced with written directions. It's important that you understand what the instructor requires.
- You must be **organized**. For example, create a folder on your computer for the class. Within it create other folders for each of the class activities.

Last but not least, **never** wait until the last minute to work at an assignment. Working with computers means that the internet may be down when we least expect it, making us miss an important deadline. To prevent this, we must work ahead of deadlines.

HOW TO ACCESS THE ONLINE QUIZZES

The textbook is packaged with the *Access Code to Modified Mastering Astronomy*.

If you purchased a used textbook, you may choose to purchase the Access Code to Modified Mastering online during the registration process.

Day One: Register for the Class

Go to the Modified Mastering Astronomy website:

<https://www.pearson.com/mastering/>

Prior to registering, you may want to read information on how to get started and the Student User Guide. Click on **Support** under the green **Students** area, or go directly to:

<https://www.pearson.com/mastering/students/support/>

Under **Register** select **Student** and follow the instructions

The Course ID is: **castoldi96486**

The Course Name is: **Phy 1060 - Fall 20 - Castoldi**

Notice: there is a 14-day grace period in Modified Mastering during which you may do the homework even if you do not have the Access Code yet.

Accessing the Homework:

Once you are registered, select **Go to My Courses**.

On the **My Courses** page, select the course **Phy 1060 - Fall 2020 - Castoldi**

On the main page a list of available *Assignments* will appear.

Click on the assignment. It is a mix of multiple-choice questions and a few short tutorials.

(For more details, read the file **Student Registration Instructions** on Moodle)

PHY 1060 – WEEKLY SCHEDULE – FALL 2020

Week 1 – September 3 – 9

Chapter 1: Introduction

Due Sept 9 – [Syllabus Quiz](#)
[Are you ready for Online Learning Quiz](#)
[Getting to Know Each Other Forum](#)

Week 2 – September 10 – 16

Chapter 2: Plate Tectonics

Due Sept 12 – [Ch 1 Online Quizzes \(individually on Mastering\)](#)

Week 3 – September 17 – 23

Chapter 3: Matter and Minerals

Due Sept 19 – [Ch 2 Online Quizzes \(individually\)](#)
[Ch 2 Chapter Questions \(in a group\)](#)

Week 4 – September 24 – 30

Chapter 4: Igneous Rocks

Chapter 5: Volcanoes

Due Sept 26 – [Ch 3 Online Quizzes](#)
[Ch 3 Chapter Questions](#)
[Case Study 1: Hot Spots \(individually\)](#)

Week 5 – October 1 – 7

Chapter 6: Weathering

Chapter 7: Sedimentary Rocks

Due Oct 3 – [Ch 4 & 5 Online Quizzes](#)
[Ch 4 & 5 Chapter Questions](#)

[Online Exam # 1: October 4 – Chapters 1, 2, 3, 4, 5](#)

[The exam is available from 7:00 am to 10:00 pm on pearson.com/mastering.](#)
[Once you start, you have 60 minutes to complete it.](#)

Week 6 – October 8 – 14

Chapter 8: Metamorphic Rocks

Due Oct 10 – [Ch 6 & 7 Online Quizzes](#)
[Ch 6 & 7 Chapter Questions](#)

Week 7 – October 15 – 21

Chapter 9: Geologic Time

Due Oct 17 – [Ch 8 Online Quizzes](#)
[Ch 8 Chapter Questions](#)

Week 8 – October 22 – 28

Chapter 11: Earthquakes

Chapter 12: Earth's Interior

Due Oct 24 – [Ch 9 Online Quizzes](#)
[Ch 9 Chapter Questions](#)

Week 9 – Oct. 29 – Nov. 4

Chapter 13: Divergent Boundaries

Chapter 14: Convergent Boundaries

Due Oct 31 – [Ch 11 & 12 Online Quizzes](#)
[Ch 11 & 12 Chapter Questions](#)
[Case Study 2: Mid-Ocean Ridge – Heat Flow](#)

Online Exam # 2: November 1 – Chapters 6, 7, 8, 9, 11, 12

**The exam is available from 7:00 am to 10:00 pm on [pearson.com/mastering](https://www.pearson.com/mastering).
Once you start, you have 70 minutes to complete it.**

Week 10 – November 5 – 11

Chapter 16: Running Water

Due Nov 7 – [Ch 13 & 14 Online Quizzes](#)
[Ch 13 & 14 Chapter Questions](#)

Week 11 – November 12 – 18

Chapter 17: Groundwater

Due Nov 14 – [Ch 16 Online Quizzes](#)
[Ch 16 Chapter Questions](#)

Week 12 – November 19 – 25

Chapter 18: Glaciers

Due Nov 21 – [Ch 17 Online Quizzes](#)
[Ch 17 Chapter Questions](#)

Week 13 – Nov. 26 – Dec. 2

Chapter 21: Global Climate Change

Due Nov 30 – [Ch 18 Online Quizzes](#)
[Ch 18 Chapter Questions](#)
[Case Study 3: Global Climate Change](#)

Week 14 – December 3 – 9

Chapter 23: Energy and Mineral Resources

Due Dec 7 – [Ch 21 & 23 Online Quizzes](#)

[Online Exam # 2: December 9 – Chapters 13, 14, 16, 17, 18, 21, 23](#)

[The exam is available from 7:00 am to 10:00 pm on \[pearson.com/mastering\]\(https://www.pearson.com/mastering\).](#)
[Once you start, you have 80 minutes to complete it.](#)