

NASC209 - Physical Geology
SPRING SEMESTER 2019
COURSE INFORMATION



Instructor

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The Course

Physical Geology is a Natural Science Division course designed for both non-science and science majors. This course will fulfill three credit hours of the Core *Ways of Knowing: Natural World* requirement for graduation. The overall goal of the course is for you to gain an understanding of the role that physical geology, as a scientific process, plays in understanding earth systems by studying its main models and theories. Of course, it will be impossible to cover all of what constitutes physical geology in one semester; we will barely scratch the surface of an exciting, diverse, and active realm of science. By focusing on several major phenomena that have significant impact on our collective culture and on our lives, I hope that you will gain some insight into the underlying scientific process and an appreciation for the complexity of the sciences. Above all, have fun with this course! Question everything about the beautiful and complex universe we live in!

Class Meetings

The *official* listed class meetings are MWF from 9:00 AM - 9:50 AM in SCIC 202. We will occasionally meet in SCIC 131 for lab exercises. In class, we will discuss topics from the text as well as a few supplemental topics. We all benefit from dialogue and discussion of the course material; to facilitate this, we will frequently work in groups (see details below). Class participation is a course requirement. Reading the appropriate sections of the text and working on homework before class is also required! The order of topics and relevant sections of the text are listed below; I will keep you posted on the current reading assignment each week via the course website (see below). It is your responsibility to inform me of any anticipated absences from class meetings or exams. If you miss any class meetings it is your responsibility to contact me to find out if you can make up any missed work and to get notes from a classmate. Work done in class can only be made up if you have an excused absence. Please note that mobile phone use (including for texting) during class is prohibited unless specifically instructed to use it as a resource; unapproved mobile phone use will affect your class participation grade.

Text and References

The textbook is **Earth: An Introduction to Physical Geology** by Edward J. Tarbuck, Fredrick K. Lutgens & Denis Tasa (Eleventh Edition, Pearson Education, 2014). Readings for this course will be mostly from the text. Keeping up with the reading assignments is a course requirement. We will not discuss all of the reading material in class, but I will assume that you have read it and will ask me questions about unclear material. As you read through the book, write down questions that you have. Bring this list of questions with you for discussion in class. At the end of each chapter are ***Give it Some Thought*** questions related to the material. Be sure you understand the answers to all of these that are relevant to the material we cover.

The web is a great place to find extra resources related to geology. My webpage for our course (see below) has links to a lot of external resources that you may find interesting and helpful. There are also loads of other great web-based resources out there on the topics we will be covering that you can find by doing a simple web search on appropriate terms. I encourage you to use the wealth of web-based resources to help you along as you prepare for class.

You will likely encounter much new vocabulary in the text; each week I will give you a list of **Key Terms**, mostly from the readings, that you should know (or bring questions about them to class). Yes, spelling counts! I strongly recommend the use of flash cards for learning **Key Terms**. Several other physical geology texts have been placed in the Math/Physics Study Room (in SCIC 113) to provide different perspectives on the topics we will cover. There is a class Web page accessible through the Manchester University Home Page, via the Department of Physics Home Page (<http://users.manchester.edu/facstaff/gwclark/nasc209/index.htm> is the direct URL). From here you can access **Key Term** lists, assignments, and other fascinating stuff.

Homework and Quizzes

Homework will be assigned weekly. Assignments will be from the end-of-chapter **Review Questions** and from handouts. You will have a chance to go over questions about the homework in Base Groups (see below). Not all homework will be collected, but the homework will help prepare you for class meetings and quizzes. Your completed homework will serve as your **Base Group Ticket** (see below). I will not accept any work on paper ripped out of spiral-bound notebooks; please do your homework on 8.5" x 11" paper without ragged edges so that it is acceptable should I collect it. All work in this course should be *legible* (if you want it graded!).

We will have weekly Monday quizzes [except on 25 March, the Monday after the midterm exam] for a total of twelve quizzes. The format of the quizzes will typically be a combination of short answer, multiple choice, essay, and/or problems (just like on the exams). Your lowest quiz score will be dropped. There will be **NO** make-up quizzes. If you have an excused absence, the missed quiz score will be replaced by the average of your other quizzes for the semester. It is **your responsibility** to check with me as to whether a missed quiz can be counted as excused. It is imperative that you know and understand the daily list of **Key Terms** - *some will be on each quiz!* You will have the opportunity to add bonus points to each quiz with successful **Base Group** work (see below).

⇒ Incidentally, you may occasionally find a calculator for laboratory and home work useful. One that does scientific notation would be best. It's not a bad idea to bring your calculator with you to all class meetings, just in case!

Laboratories

We are blessed with a reasonably well-stocked geology collection for a University of our size. Take advantage of this resource! We will have **laboratory** experiences for this course every once in a while in room SCIC 131. The labs will help you gain some practical insight into the course material. You may find that you may occasionally need to spend additional time in the lab to finish an activity or to utilize the laboratory resources for study; arrangements will be made as needed. Please do not remove any of the specimens or equipment from the laboratory.

There will be one required half-day field trip during this course that will constitute one of our labs. The field trip will be the morning of Friday, 12 Apr 2019 (rain date: Friday, 19 Apr 2019). We will visit sites in southern Wabash county of geologic interest. You will be excused from your other classes until 1:00 pm on the day of the trip.

Free Points!

Minute Papers: Occasionally, we will take some time to write one or two lines each on two questions:

1. What is the most important/interesting thing you have learned since the last "minute paper?"
2. What are some questions you have about the material covered?

For each minute paper that you hand in, you will receive one point (*Minute Paper Points*) which will be added to the total of your homework/classwork scores at the semester's end. You must be present to hand in a minute paper.

Current News Article: You may bring in a copy of a **current** (within the past week) newspaper, news site, or popular magazine article (e.g., New York Times, CNN, Time, Newsweek, etc.; online versions are acceptable) relating to geology to earn *Minute Paper Points* that are added to your homework/classwork score (general WWW sources and scientific journals are excluded from this offer!). The article will be posted on the bulletin board in the classroom. To earn points, the date, source, and your name must be indicated and the story must be on an event that was not previously reported in this class. On occasion, quizzes may refer to these articles - be sure to check out the bulletin board every day. [Limit one article per student per week; six for the entire semester!]

Examinations and Grading

We will have one **midterm examination** on Friday, 15 March 2019 and a **cumulative final examination** on Wednesday 15 May 2019, from 8:00 AM - 9:50 AM. Please note that cell phone use during quizzes or exams will result in failure of the quiz/exam. The breakdown for the course grade will be as follows:

Quizzes	25%
Graded Homework, Classwork, Class Participation, Group Work	20%
Laboratory Work (including field trip)	10%
Midterm Exam	20%
Final Exam	25%

Important Dates for this Course

W, 30 Jan 19	Class meetings begin
F, 15 Mar 19	Midterm Exam
W, 09 Apr 19	Last day to convert to P/NP or withdraw with a W for a course
F, 10 May 19	Last class meeting
W, 15 May 19	Final Exam

Academic Integrity

Academic dishonesty in any form is a serious offense. Academic dishonesty includes, but is not limited to, cheating on exams or quizzes; submitting another’s work as your own, in whole or in part; failing to correctly cite any sources used; and falsifying documentation. Plagiarism, indeed, academic dishonesty in any form, will not be tolerated and will result in the forfeiture of the work involved with no opportunity to make up that work. *The presence of work (labs, homework, etc.) from previous offerings of this course in class or in lab is not permitted and will be treated as plagiarism.* Although you are **expected** to work together on homework and to discuss the material from this class, any work you hand in should be an expression of **your own understanding** of the material, *unless* an assignment is specifically given to a group. Please see The Source Handbook for specific college policy. If you are not sure what constitutes plagiarism, please address these questions before an assignment is due.

Course Topics

The four major ideas that we will focus on are: the *rock cycle*, *plate tectonics*, *surface processes* and *geological resources*. The topics we will discuss include, but are not limited to, material from the following sections of the text (in approximately the given order). Detailed reading assignments will be given with the **Key Term** list each week on the course website. Please keep in mind that this outline is somewhat tentative and may evolve a bit as the term progresses.

<u>TOPIC</u>	<u>READING</u>	<u>TOPIC</u>	<u>READING</u>
I. An Introduction to Geology	Ch 1	VIII. Glaciers and Glaciation	Ch 18
II. Matter and Minerals	Ch 3	IX. Running Water	Ch 16
III. Magma, Igneous Rocks, ...	Ch 4	X. Ground Water	Ch 17
IV. Volcanoes and Volcanic Hazards	Ch 5	XI. Earthquakes & ... Hazards	Ch 11
V. Weathering and Soil	Ch 6	XII. Plate Tectonics	Ch 2
VI. Sedimentary Rocks	Ch 7	XIII. Convergent Boundaries: Origin of Mountains	Ch 14
VII. Metamorphism and Meta-Rocks	Ch 8		

One lesson, Nature, let me learn of thee. 🌱 Matthew Arnold

Every now and then things become clear. 🌱 Jane Siberry

The Book of Nature is written in mathematical characters. 🌱 Galileo Galilei

The universe is not only queerer than we imagine, it is queerer that we can imagine 🌱 J. B. S. Haldane

What more can we require? Nothing but time. 🌱 James Hutton,

GROUP WORK

Informal Group Work

Often, we will work on questions and problems during class in pairs; we will utilize the following procedure:

1. **Formulate** your own answer to the question/problem.
2. **Share** your answer with your partner.
3. **Listen** carefully to partner's answer. Don't change your mind unless persuaded by logic or information to do so.
4. **Create** a new answer, as a pair, that is superior to or incorporates each member's initial answer by synthesis, critical analysis, and cooperation.

Formal Group Work

We will occasionally work in the context of **Formal Groups** formed for specific tasks (e.g., laboratory work). All members are expected to participate actively, work to maintain effective working relationships with other participants, assist classmates, express their ideas, not change their minds unless persuaded by logic or information to do so, and indicate agreement with the group's work, in writing. You will get more information on these groups as they form!

Base Groups

Most Mondays, we will have Base Group meetings. You will be assigned to a Base Group and remain with the same Base Group for the term. Ideally, your Base Group that will provide you with additional support, encouragement, and assistance needed to make academic progress. Base Groups personalize the work required and the course learning experience. You should be sure to exchange phone numbers and schedules with your base group members as you may wish to meet or chat outside of class. All members are expected to participate actively in class discussions, work to maintain effective working relationships with other participants, complete all assignments, assist classmates in completing their assignments and express their ideas. Think critically; interact cordially!

In your base group meetings, you should:

- ☛ Congratulate each other on survival since the last meeting and check if anyone is under any undue stress.
- ☛ Check to see if members have completed their homework or need help/assistance doing so. Insure that each member gets answers to his/her specific questions! Insure that all group members understand the homework.
- ☛ Complete the Base Group WorkSheet (BGWS).

In order to facilitate this, I suggest the following procedure (we will deviate from this on occasion!):

1. Quickly make a list of homework questions needing the most attention. Write the question numbers on your Base Group Record Sheet in the appropriate column.
2. For each of these questions and for the questions on the BGWS, one group member is the explainer (explains their answer) and the other members are accuracy checkers (check the explanation for accuracy).
3. Rotate these roles for each question/problem so that each member does an equal amount of explaining.
4. If there is disagreement on an answer, discuss until a consensus is reached. Concentrate on parts of the homework and BGWS where there is confusion or misunderstanding. If you can not agree on an answer, find the section of the book where the issue is discussed and note the page number(s) and/or call me over for help.

If all members of your Base Group achieve a quiz score of 80% or above, bonus points will be added to the quiz score of each member. The same holds for the Midterm and Final exams, but with a 70% cut-off.

Base Group meetings are **NOT** intended to be times for beginning or copying homework. You must show up with your homework completed, except, perhaps, for a few questions/problems with which you are having difficulty. During Base Group meetings, your homework should be out and visible so that I and your partners can see it. If you are completely lost on an assignment, you should seek me out before the work is due. Your completed homework will serve as your **Base Group Ticket**, which allows you to earn Base Group participation points and to take the quiz. I will monitor and grade you on your Base Group participation. Those who do not abide by Base Group expectations will not receive Base Group participation credit. If you are having problems with one of your Base Group members (not contributing, no homework, etc.) please let that person know that their behavior is not acceptable. If problems persist, please inform me.

Manchester University Essential Information

Student Disability and Reasonable Accommodation Policy:

Manchester University, in compliance with federal guidelines, is committed to assuring students with disabilities equal access to programs and activities however, it is the student's responsibility to self-disclose the disability. Students who feel they may need an accommodation based on the impact of a disability should contact Mia Miller, the Disability Support Coordinator, to establish eligibility and to coordinate reasonable accommodations. Students whose accommodation requests are approved will be provided with confidential letters to deliver to their professors. Each letter verifies the disability and documents the need for auxiliary aids and services and/or academic adjustments/accommodations. Students are encouraged to meet with each professor early in the semester to discuss academic implications as they relate to each specific course and to request appropriate accommodation. The Disability Support Services office is in the Success Center (second floor of the Jo Young Switzer Center) and can be reached by phone at 260-982-5888 or 260-982-5499 to schedule an appointment.

Medical Emergency/Evacuation Assistance Statement:

Students should speak to the instructor immediately if (1) they may require medical attention during class, or (2) they have a disability, chronic condition, or a temporary injury that may limit or affect their ability to evacuate the classroom/building in an emergency. The student and the instructor should discuss the student's specific needs and the types of precautions that should be made in advance of such an event. In the event of a fire or other situation requiring emergency evacuation, students with ambulatory disabilities are to go with or without assistance to the nearest stairwell area. Faculty and staff will assist with evacuation management efforts until such time as the Campus Safety and/or Police and Fire Departments arrive on the scene to assist in student evacuation from the building. Elevators are not to be used for evacuation by any persons.

Students who need special arrangements in the event of an evacuation should also register with Mia Miller in the Success Center as early as possible in the semester to help facilitate the provision of needed emergency assistance.

Title IX Student Conduct Reporting Requirement:

Manchester University is committed to fostering a safe community where the infinite worth of all individuals is respected. Title IX and institutional policy prohibit discrimination on the basis of sex and gender identity. Consequently, sexual misconduct—including harassment, domestic and dating violence, sexual assault, and stalking—is also prohibited at Manchester. Faculty, staff and administrators encourage anyone experiencing sexual misconduct, dating/domestic violence, or stalking to talk to someone about what happened, so they can get the support they need and Manchester University can respond appropriately.

To speak confidentially with a Manchester employee/on-campus representative about an incident of sexual misconduct, please contact:

MU Counseling Services (260-982-5306)

MU Health Services (260-982-5306)

MU Campus Pastor (260-982-5243)

North Manchester Campus Victim Advocate (260-563-4407)

Off-campus resources include the following:

Hands of Hope (Service to North Manchester Campus-24/7 Hotline 260-563-4407)

Fort Wayne Sexual Violence Treatment Center (Service to both Fort Wayne & North Manchester Campuses-24/7 Hotline 260-423-2222)

YWCA of Northeast Indiana (Domestic Violence & Sexual Violence: 260-447-7233)

Individuals who wish to file a report of sexual misconduct should contact the Title IX Coordinator (260-470-2658) or/and Manchester University Campus Safety (260-982-5999).

For questions about institutional policies and procedures regarding sexual misconduct, please contact the Title IX Coordinator. To make a police report, contact the North Manchester Police Department (260-982-8555) or Fort Wayne Police Department (260-472-1222).

Learn more about Title IX and survivor support at the following websites:

<https://www.manchester.edu/about-manchester/university-priorities/title-ix> &

<https://www.manchester.edu/student-life/care-initiative/care-initiative-home>.

****Manchester University strives to uphold privacy and confidentiality as much as possible and only shares information received with those who have a need to know in order to respond. Individuals who desire anonymity in discussing and seeking assistance about sexual misconduct should contact and/or be referred to a confidential employee.****