

Investigations Into Earth & Space Science

EARTHSCI 3500



Spring 2013

Room: Latham 111

Time: M & W - 1:00 to 2:50

F - 1:00 to 1:50

Text: *The Good Earth*, 2nd Edition by

McConnell, Steer, Knight, & Owens

Course Webpage: UNI eLearning

Instructor: Dr. Kyle Gray

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Office: Latham 124

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Office Hours: MW 3-4, W 9-10, F 11-12
& 2-3 or by appointment

Course objectives (Students)

The state of Iowa requires that elementary science teachers...

1. Understand the nature of scientific inquiry, its central role in science, and how to use the skills and processes of scientific inquiry.
2. Understand the fundamental facts and concepts in major science disciplines.
3. Be able to make conceptual connections within and across science disciplines, as well as to mathematics, technology, and other school subjects.
4. Be able to use scientific understanding when dealing with personal and societal issues.

To address these goals, this course has the following objectives...

1. Deepening your understanding of the nature of earth science investigations.
2. Improve your understanding of key concepts from astronomy, geology, oceanography, and meteorology.
3. Improve your ability to critically evaluate scientific claims or data using knowledge drawn from other disciplines such as mathematics, chemistry, and economics.
4. Relate earth and space science concepts to personal and societal needs and issues.
5. Improve your attitude towards teaching earth and space science.

Grading procedure and policies

Grades will be assigned based on the percentage of points earned throughout the semester using the percentages in this table. The lower limit for each grade range will not move up but might move down. A curve will not be used in this class.

| | |
|---------|--------|
| A > 93% | A->90% |
| B > 83% | B->80% |
| C > 73% | C->70% |
| D > 63% | D- 60% |
| F < 60% | |

Grades will be based the points you earn for the following activities:

| | | |
|------------|------------------|---------------------|
| Exams | Class Activities | Reflections |
| Final Exam | Homework | Notebook |
| Quizzes | Final Project | Inquiry Experiences |

Expectations

I expect the following from each student.

1. Attend every class
2. Read the book **BEFORE** class
3. Study outside of class
4. Do your best

Assignments

Besides the exams and quizzes, your grade will be based on the following assignments.

In-Class Activities

Activities are in-class projects, labs, and assignments that students complete individually while working within their student table-groups. You will have at least one in-class activity per week. Some in-class assignments will be graded using a check plus, check, or check minus system, but others will have a designated point value. I reserve the right to assign points to any in-class assignment and not every activity will be collected and graded. Unless otherwise noted, each in-class activity will be due the beginning of the following class session whether or not it is collected for a grade.

Homework Assignments

Homework assignments are typically student answers to assigned questions from the textbook or a handout. Homework assignments will be graded with a designated point value. I reserve the right to assign a check-plus, check, or check-minus to any homework assignment. Some in-class activities may be counted as homework assignments.

Reflections

At least once for each unit, you will write a short paper reflecting in the concepts from class and connecting what you have learned to your daily lives and future teaching practice. Each reflection is worth ten points. See the handout posted online for more information regarding these assignments.

Interactive Science Notebook (ISN)

You will use a bound notebook in class to record observations, design studies, and reflect on your learning. Throughout the semester the notebook will be a way to interact with the material from class. See the handout from class for more information on how to set up and use these notebooks.

Final Project

At the end of this course, you will work with your teammates on a project that will require you to synthesize your knowledge of Earth science and apply it to a different context. Parts of this project will be done within the context of your group, however each person will turn in an individual project report. A project handout with more information will be available near the end of the semester.

Inquiry Experiences

You will be required to participate in three activities outside of the classroom. These activities give you an opportunity to experience earth science in the real world. Each activity is worth 25 points. See the university's eLearning website for assignments associated with each activity. For each experience, you will submit a paper detailing your experience as explained in each assignment. At least one Inquiry Experience must be completed BEFORE spring break (by Friday, March 15th). All three activities MUST be turned in no later than the beginning of class on Friday, May 3rd. Example assignments include...

- Field trips to local areas
- Visits to the UNI planetarium
- Projects observing the natural world

Extra Credit

You have two ways to earn extra credit for the course (up to a maximum of 20 points). Each extra credit assignment is worth 10 points. The last day to submit any extra credit assignment is ***Friday, May 3rd***.

Earth Science Today: You may submit a current article (e.g. W-CF Courier/DM Register, Newsweek, a scientific journal, and online report or story) that discusses some issue related to an earth science topic covered in class. Provide a short write up (about 1 page) that summarizes the article, connects the article to our course, and relates the content to your role as a teacher.

Additional Inquiry Experience: Complete a third Inquiry Experience or attend a second Earth Science Department seminar.

Academic dishonesty

Plagiarism and cheating are not tolerated on the UNI campus (the [UNI policy](#) will be followed). If in doubt, look up the policy or talk to me.

Class attendance and participation

This class models different types of inquiry-based learning through hands-on activities conducted during class. The points you earn reflect this fact. **Traditional lectures will be rare**, therefore it is **VERY** difficult to make up missed classes, so attendance is ***CRUCIAL***.

With your major, you aspire to be a classroom teacher and will expect your students to be in class every day, so I expect the same from you. Research shows a strong correlation between teacher effectiveness and the number of absences taken throughout the school year. (Highly effective teachers are rarely absent.) That's why some districts restrict the number of days and dates a teacher can be absent throughout the year. To help you develop a professional work ethic and excel at your first job, this course will model the absence policies of many districts.

It is common for teachers to receive five sick/personal days per year in which you can be absent for any reason. In this course, I am giving you **four** sick/personal days in which you can be absent from class without losing credit. This includes absences for sickness, bereavement, or your car broke down. Any absences beyond four will be considered unexcused absences and you will not receive credit for that day's assignments, even if you complete them and turn them in. Absences due to sanctioned university programs (such as athletics) will be excused and do not count toward your four personal absences, but I must be notified at least two weeks ahead of time. If you have **seven absences or more**, your final course grade will be **reduced** by one letter grade. Absences due to illness or death in a family may require documentation before being excused. Absences the day before or after a university holiday or the day of an exam or quiz are not allowed and cannot be used as one of your four personal days.

Emergencies happen and will be dealt with on a case by case basis, if something does happen, contact me

Other Info

- If you have any special needs please let me know.
- I regularly check my email between the hours of 8:00 AM to 5:00 PM Monday through Friday except when I am in class or in a meeting. I typically **DO NOT** check my email after 5:00 PM on weekdays and nor do I check it on weekends. This means that if you send me an email late Friday afternoon, it most likely will **NOT** be answered until early Monday morning. Therefore, plan your study time accordingly.
- This is a cell phone free classroom. Please turn them off before you get to class. Unauthorized use of cell phones during class may result in the loss of credit for that activity or the loss of your phone until the end of that class session. You may use your phone's calculator during in-class activities.
- If you need help, I encourage you to utilize the Academic Learning Center's free assistance with writing, math, science, reading, and learning strategies. UNI's Academic Learning Center is located in 008 ITTC. Visit the website at www.uni.edu/unialc or phone 273-2361 for more information.
- The Earth Science Department typically has students available for tutoring. Watch the notes on the blackboard for days and times.
- **Drinks in spill-proof containers are allowed. Food may be consumed before, but not during, class.**

Course Schedule

The course schedule included in this syllabus is to be considered a **tentative** outline of the topics covered over the course of the semester. Exact dates for exams and assignments may change. Any alterations to the syllabus will be posted on eLearning and announced in class. Each Friday I will also distribute a detailed summary of the following week's activities and assignments. If a weekly summary differs from this schedule, the information on **the summary will always take precedent**. It is expected that you will complete the reading **BEFORE** we cover it in class.

Tentative Course Schedule

| Unit | Theme | Text Readings (Due each Monday) |
|--|---|------------------------------------|
| Unit 1 - Astronomy | | |
| Week 1 (Jan 14-18) | Nature of Science & Earth Science Inquiry Review | Chapter 1 |
| Week 2 (Jan 21-25) | Earth & the Solar System - <i>No Class Monday</i> | Chapter 2 (part 1) |
| Week 3 (Jan 28- Feb 1) | Stars, Nebulae, & The Universe | Chapter 2 (part 2) Handout |
| Week 4 (Feb 4-8) | Near Earth Objects | Chapter 3 |
| Exam 1 (Friday, February 15th) | | |
| UNIT 2 – Geology | | |
| Week 5 (Feb 11-15) | Earth's Composition Rocks & Minerals | Chapter 2 & 7 |
| Week 6 (Feb 18-22) | Plate Tectonics | Chapter 4 |
| Week 7 (Feb 25- Mar 1) | Earthquakes | Chapter 5 |
| Week 8 (Mar 4-8) | Volcanoes Mountain Building | Chapter 6 |
| Week 9 (Mar 11-15) | Geologic Time | Chapter 8 |
| Exam 2 (Friday, March 15th) | | |
| Mar 18-22 | Spring Break | No Classes |
| UNIT 3 – Oceans, Water, & Erosion | | |
| Week 10 (Mar 25-29) | <i>InTeGrate</i> - Streams & Erosion | Chapter 11 Handout |
| Week 11 (Apr 1-5) | <i>InTeGrate</i> - Streams & Floods | Chapter 11 Handout |
| Week 12 (Apr 8-12) | Landslides & Slope Failure Oceans | Chapter 10 Chapter 13 |
| Exam 3 (Friday, April 19th) | | |
| UNIT 4 – Weather & Climate | | |
| Week 13 (Apr 15-19) | The Atmosphere Weather Systems | Chapters 14 & 15 |
| Week 14 (Apr 22-26) | Climate Climate Change | Chapters 16 & 17 |
| Week 15 (Apr 29 – May 3) | Final Project & Review | |
| Week 16 (May 6-10) | Final Exam 1:00-2:50 p.m. Tuesday, May 7th, Latham Hall 111 | |

* Approximately 50% of the Final Exam will contain new concepts since Exam #3 and the remainder will be a comprehensive review of concepts from previous exams.