GEOL 106LRS: Earth and Space Science

For future teachers

Instructor Information

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Office Hours
Location: LO 1228
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Monday 2-3pm,
Tuesday 12:30-1:30pm,
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Bring To Class

- Relevant chapters of your textbook, *Introduction to Environmental Geology, 4/E* by Edward Keller.
- Lecture tutorials
- Your course notes

Other Notes

It is the responsibility of each student in this course to know and follow all written guidance given by the instructor in this class.

These policies and schedules are subject to change in the event of extenuating circumstances.

Special needs

I am committed to accommodating those with special physical or learning needs. Please let me know.

A class for future teachers

If you want to be a teacher, it's time to start thinking like one. During this class, we will switch back and forth between thinking like students, scientists, and teachers. The course is officially listed as a "lecture course," but be prepared to do active participation by yourself and with your team. We'll include a number of techniques, including:

- **Lecture-tutorials**. Learn about common science misconceptions your future students might have.
- **Challenge problems**. See how scientific knowledge gets applied to new and complicated situations.
- **K-12 lessons**. You do the teaching!

Teaching is one of the most gratifying professions you can imagine, but it is also serious and challenging work. Teachers often spend more time with their students than many parents, and over a career you might deeply touch over a thousand lives (parent to over a thousand children!). You therefore have the responsibility to be a positive role model. You can't be late (or if you are, you'll be fired). You can't yell every time you get a little frustrated (or if you do, you'll be much less effective). You can't lie (your students will always catch you). In many cases, you can't even go to the bathroom. Teachers are superstars. If you want to be one, now is the time to start practicing these skills of excellence. This class has high expectations for learning and integrity, and low tolerance for excuses.

Questions

We will spend time periodically addressing your questions from the question box. Questions can be about course material but also about anything you are curious about in Earth science. There are no bonus points added to your score for asking questions, but curiosity is a valuable skill for a teacher. Your curiosity will be rewarded in intangible ways both in this course and beyond.

Team based learning

Research shows that you can learn more from your peers than you can from professors. To facilitate this learning, you will spend a good portion of the class working in teams. You will work with the same team the entire semester, and you will not be able to choose your team. Since having unprepared teammates can impact your experience, there is a procedure for "firing" a student from your team posted on the Moodle website for our class. In past experience, we rarely need to employ this policy. Almost all required teamwork will be in class, so there is no need to worry about coordinating your schedules.

Electronic Equipment

You are in charge of your own education. Many people think they can multi-task effectively, but are rarely successful at it. Making phone calls, text messaging, or web surfing in class sends the message "*I do not care about my education enough to focus on it for the short duration of class.*" If you want to make that statement to people evaluating you like your professor and teammates, feel free. They will notice and I will notice. The choice is yours.

Grades

The grading policy in this class gives merit to four general areas:

- Your **individual mastery** of course material.
- Your **team's mastery** of course material. Assessed throughout the semester as team based challenge problems, quizzes, & exams.
- Your **contributions to the team**. Includes being prepared, asking questions, helping teach other teammates, and helping answer questions. Assessed by peer evaluations once during term and once at end of the term.
- Your **ability to teach** all members of the team, assessed by two methods: 1) You will teach one K-12 lesson to your team; 2) On the three exams and final exam only, 5% of your score will be the average of your teammates' scores. If they fail, your score is lower. If this sounds unfair, wait until you get into the classroom. Teachers are assessed 100% on the score of their students. If students don't learn, the teacher fails.

Academic dishonesty, copying, cheating

I expect high standards of academic integrity from future teachers so there is a zero-tolerance rule for academic dishonesty in this class. I will refer all cases of academic dishonesty (including copying, allowing others to copy your work, plagiarism, copying/pasting text from the internet even with modifications, misrepresentation of others' work as your own, accidental failure to cite your source, etc.) to the VP of Student Affairs' office for arbitration and possible disciplinary action. The first offense will result in, *at minimum*, the reduction of your final grade by one partial letter grade (A- becomes B+), the second offense will result in an F for the class. It is not worth the risk to cheat or let someone copy your work in this class.

Quizzes, primarily RAP's (approximately weekly):	15%	(75% Individual, 25% Team)
Concept maps	5%	(100% Individual)
K-12 Microteaching	10%	(100% Individual)
Peer evaluation	10%	
Exams I, II, and III	15% each	(75% Individual, 20% Team, 5% teaching)
Final Exam	15%	(75% Individual, 20% Team, 5% teaching)

I will calculate your grade using the categories in the table above. Numbers in parentheses indicate what portion of that category is based on your individual grade versus team grades.

No Extra credit. There will be no individual extra credit, though there will be occasional team bonus points awarded for winning competitions, etc.

Readiness Assessment Procedure (RAP)

RAP's are quizzes given at the beginning of the class period designed to test if you have done the reading and are ready to apply it to interesting and challenging problems with your team. They have a set time limit. They CANNOT BE MADE UP and time extensions are not granted except to students with special needs (upon proper documentation). If you don't do the reading before class, you won't do well on the RAP's.

Absences

Class time is important for this course. During many class sessions, we apply our knowledge to interesting challenge problems. The solutions to these problems and the material we discuss are not available in any written resource. When you miss class, you miss the opportunity to participate in this part of the learning process.

When you miss a class:

- DO contact your teammates. They determine 10% of your course grade based on your contributions to the team. You are accountable to them when you do not show up. If you have justifiable excuses and good overall attendance, they will be understanding.
- DO ask your teammates for notes and information about what you missed.
- Do NOT contact the professor (unless you will miss one of the 3 exams).

Late Assignments

Late assignments are **not accepted**. Assignments are due at the beginning of class and most can be submitted digitally on Moodle.

If You Miss An Exam or Microteaching

You cannot make up an exam or microteaching unless:

1) You notify me **in advance**. As a teacher, you can't simply not show up. You call your school and tell them so that they can schedule a substitute teacher ASAP. You must notify me *at least 10 minutes* before the start of the exam. Program my phone number into your cell phone just in case!

AND

2) You have a **valid and documented excuse**. Participation in organized CSUN events (athletics or other) are typically considered valid excuses, if notification is given in the beginning of the semester. Bring a copy of the doctor or plumber's bill, etc.

Credit and penalties for missed exams:

- Full credit for your work on the "individual" portion of the exam.
- Excused from the "team" portion of the exam with no penalty.
- You will receive 0% credit on the "teaching" component of the exam. No matter how valid your excuse, you still were not able to be there when your team needed you, and there is a penalty for that.

Credit and penalties for missed microteaching:

- Make an attempt to swap scheduled dates with teammates.
- Excused from the microteaching with no penalty.

Dropping

Read the Schedule of Classes. If you decide that you don't want to continue with this course, you must drop the class – you will not be dropped automatically if you simply stop showing up.

"Incomplete", Withdrawal from the Course, Change Of Grade

The Department Chair insists that the faculty adhere to the "incomplete" and "withdrawal" policies and deadlines published in the Schedule of Classes.

TIPS FOR DOING WELL

Preparation. Do the reading carefully. I provide reading notes on the Moodle website to help you focus on which sections are most important for our class period, and to provide some clarifications for parts of the book that are complicated. Review the reading notes before starting to read. Class time is for applying concepts and not for simply revisiting or re-telling the material in the book. Much of the reading material will not be repeated in class, but it will be essential for challenge problems and will appear again on exams (and CSET exams for teachers).

Take responsibility for your own learning in class. Don't just let your teammates do the work while you sit back. If you don't understand something, ask them questions. When you don't understand material, it can hurt your team's score.

Contribute to your team. Everyone has something valuable to contribute to the team. If you often knows the answers, hold back and wait for others to participate. If you are struggling, don't be afraid to speak up.

* Portions of this syllabus are copied from a model for this class by Professor Doug Yule, 2009.

Overview of Assignments

There are 3 main types of assignments that you will be required to complete outside of class time. The next few pages outline key facts about them:

RAP Quizzes

These are fact-based, multiple choice reading quizzes taken on Moodle *prior* to the first class we discuss the material. You will complete one RAP quiz for each of the eight sections in the course.

Goals and motivation for RAP Quizzes

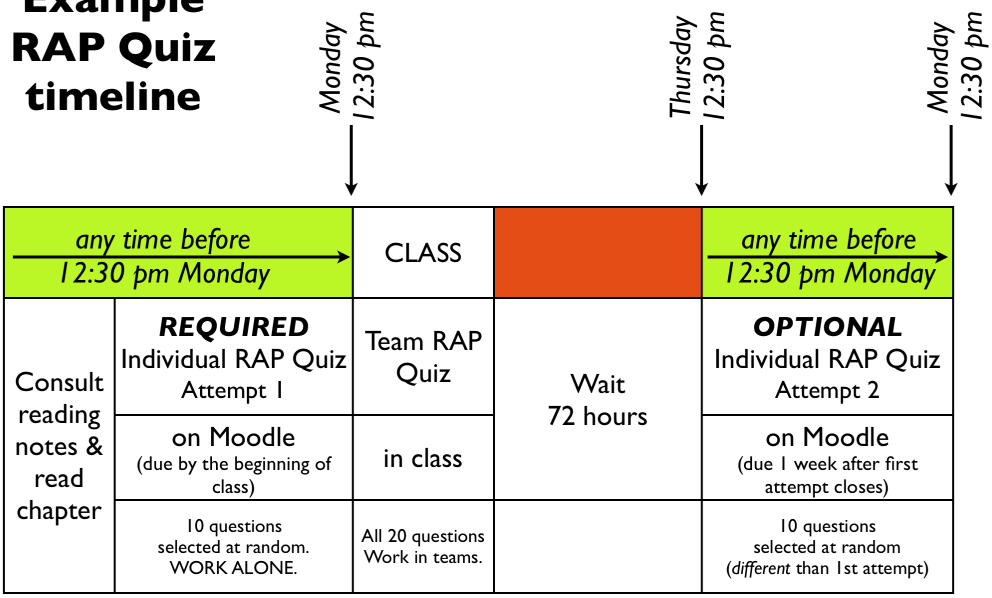
- The textbook introduces fundamental ideas and a common vocabulary for us to use in class.
- Being quizzed on the material in advance forces you to come to class prepared.

Logistics

- You complete your *individual* RAP quiz **online** using Moodle.
- The *team* portion is **completed in class**.

You can make two attempts at the individual portion – one before the team exam and one after. Everyone should score 100% on the 2nd attempt because we discuss the answers in class. The only catch is that you have to wait 3 days to complete your second attempt (forcing you to retain the information for at least that long).

Example RAP Quiz timeline



Assessment

Your grade is 75% individual and 25% based on your team's performance. Here is how your individual score is calculated:

You did...	Your individual score will be recorded as...	
Completed Attempt 1 only	Score in Attempt 1	Did well on Attempt 1? Great!
Completed Attempts 1 + 2	Average of Attempts 1 & 2	Increase your score by taking the optional 2nd attempt!
Completed Attempt 2 only	Zero	You must complete your first attempt before the Team RAP.

Concept Maps

Concept maps are graphical ways to organize and present information. They are more than just outlines of information because they illustrate complex connections between ideas. You will complete one concept map for each of the eight sections in the course.

You will be able to bring your concept maps to each of the exams, so there is motivation to construct them well!

Goals and motivation for Concept Maps

- You retain information better when you connect ideas to one another.
- Requiring a concept map requires you to revisit the information in the chapter.
- You can refer to your concept map years from now when you are a classroom teacher.

Logistics & Assessment

- *Concept Map 1*: I provide a concept map for the first section on plate tectonics. You complete an assignment on Moodle to reflect on how concept maps organize information.
- *Concept Map 2*: I provide a list of concepts and you connect them to make your first attempt at a concept map. A rubric for grading is available on Moodle.
- *Concept Maps 3-6*: You construct your own concept maps from scratch. I will use a different grading rubric from the previous assignment, also available on Moodle.
- *Concept Maps 7-8*: You will construct your own concept maps from scratch. Your teammates will evaluate the completeness of your concept map but they will not assign you a score. You receive credit for submitting the concept map and for completing an assessment of your peers' concept maps. Bonus points will be awarded to the author of the concept map that your team selects as the "best" and also for effective grading.

You have 3 options for submitting your concept maps:

1) Construct concept map with paper and pencil and bring to class next time.
2) Construct concept map on computer and bring a printout of it to class next time.
3) Construct concept map on computer and upload the file here by the start of class. The best files are .cmap files, but PDF and MS Office files work well too.

Remember: You do NOT have to construct your concept map on the computer. Hand-drawn concept maps are great! Just make sure you do it on a **plain sheet of printer/copier paper** so that it will not jam when I scan it on my computer. *Binder paper will not be accepted.*

K-12 Microteaching

Each member of your team will teach at least one K-12 lesson during the course. I provide the lesson plan and you teach your mini "class" that consists of your team – the same people you've been building relationships with all semester long.

You will sign up for a specific date from the choices given to your team sometime in the first two weeks of the semester. If you need to change dates (even at the last minute), coordinate with your teammates so that someone is ready to teach the lesson.

Goals and motivation for microteaching

- You learn material best when you have to teach it.
- You must start thinking like a teacher if you are going to take control of a classroom in a few years. This takes practice.
- Microteaching provides you a safe environment to practice science teaching in a small setting.
- I provide the lesson plans, so the focus is on teaching the lesson effectively, not designing a lesson from scratch.
- You will get specific, instant feedback from your teammates.

Logistics:

- Lesson plans are available online.
- One week before your lesson, I will provide a paper copy of the lesson plan and some of the materials. You will need to return these at the end of microteaching.
- For lessons that require additional materials, I will provide them to you when you arrive on the day of your microteaching.
- You must be prepared to start your lesson 5 minutes after the normal start of class.
- You must complete your lesson in the allotted time (typically 45 minutes).
- You may deviate from the given lesson as much or as little as you like.
- You may provide additional visual aides.
- You must make any photocopies of student worksheets that you want your students to use.

Assesssment

- Your teammates will complete an anonymous feedback form.
- The feedback form is available on Moodle in advance for you to consult.
- Feedback includes written comments and numerical rating scales.
- Your score, which accounts for 10% of the grade is based on the numerical rating scales given to you by your teammates.

GEOL 106 LRS: Course Schedule

Mon/Wed 12:30 - 1:45 pm - LO 1219

Professor d'Alessio

Week		Date	Topic	Activities	Homework
1	M	Jan-24	Introduction	Welcome, Discovering Plate boundaries, Course Themes	Surveys on Moodle
	W	Jan-26	Plate tectonics	Team Selection, Discovering Plates, Concept Mapping	Read Chapter/RAP on Moodle
2	M	Jan-31	.	Team RAP, Kinesthetic Plate Tectonics, Lecture Tutorials	Concept Map Question on Moodle
	W	Feb-2	.	Lecture Tutorials	Ch. 2 RAP, second attempt
3	M	Feb-7	.	Challenge Questions, Q&A and Themes,	Read Chapter / RAP
	W	Feb-9	Rocks	Team RAP, Lecture Tutorial, Q&A and Themes	Concept Map
4	M	Feb-14	.	Lecture Tutorials, Q&A and Themes	Prepare for K-12, Ch. 3 RAP second attempt
	W	Feb-16	.	K-12: Rock Stories	Peer Evals 1 on Moodle
5	M	Feb-21	.	Rock Challenge	Review Questions on Moodle
	W	Feb-23	Exam 1	Exam	Read Chapter / RAP
6	M	Feb-28	Earthquakes	Team RAP, Lecture Tutorial, Q&A and Themes	Concept Map, Prepare for K-12
	W	Mar-2	.	K-12: Epicenter from Amplitude	Read Chapter / RAP, RAP 2nd attempt
7	M	Mar-7	Volcanoes	Team RAP, Lecture Tutorial, Q&A and Themes	Concept Map
	W	Mar-9	.	Lecture Tutorial, Challenge Questions	"What you know about water" survey on Moodle, Review Questions on Moodle, RAP 2nd attempt
8	M	Mar-14	Exam 2	Exam	Read Chapter / RAP
	W	Mar-16	Water Contamination	Team RAP, Lecture Tutorial, Q&A and Themes	Concept Map
9	M	Mar-21	.	Lecture Tutorials	RAP 2nd attempt, bring one laptop per team with wi-fi.
	W	Mar-23	.	Groundwater Challenge	Prepare for K-12
10	M	Mar-28	.	K-12: Water in Earth materials (FOSS)	Read Chapter / RAP
	W	Mar-30	Landforms	Team RAP, Lecture Tutorial, Q&A and Themes	Concept Map, Prepare for K-12
11	M	Apr-4	SPRING BREAK		
	W	Apr-6	SPRING BREAK		
12	M	Apr-11	Landforms	K-12: Landforms (FOSS)	"What you know about water" survey on Moodle, Review Questions on Moodle, RAP 2nd attempt
	W	Apr-13	Exam 3	Exam	Read Chapter/RAP on Moodle
13	M	Apr-18	Earth History/Oil	Team RAP, Lecture Tutorial, Q&A and Themes	Concept Map
	W	Apr-20	.	Lecture Tutorials	Relative dating practice on Moodle, RAP 2nd attempt
14	M	Apr-25	.	Oil Challenge	Complete Concept Map Grading, Prepare for K-12
	W	Apr-27	.	K-12: Schoolyard Geo	Read Chapter / RAP
15	M	May-2	Space	Team RAP, LT1, Q&A and Themes	Concept Map
	W	May-4	.	Lecture Tutorials	Surveys on Moodle, RAP 2nd attempt, Prepare for K-12
16	M	May-9	.	K-12: Scale Model of the Solar System	Peer Assesment 2 on Moodle, Complete Concept Map Grading
	W	May-11	Review day	Review Game	Prepare for Exam

Final Exam May 16, 12:45-2:45 pm in LO 1219 - Same as our classroom