

Inquiry in Math and Science: Follow the “yellow” brick road

INSTRUCTOR

Dr. Benjamin Brunner
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MEETING PATTERN & LOCATION

Tuesday and Thursday 12:00pm-1:20pm LART 202, 3 credits
BS students (SCI 1301, CRN 18059)

COURSE DESCRIPTION

In this class we will explore the origin of a peculiar rock that contains a brilliant yellow mineral – sulfur. Our geologic journey will lead us from the basics of Earth Science to the cutting edge of research. Our path will touch on themes from Biology, Chemistry, Geology, Math and Physics and show how they all work together.

REQUIRED TEXTBOOK

No required textbook. There will be handouts & material posted on Blackboard.

COURSE OBJECTIVES

- 1) Obtaining insight into scientific thinking and working:
 - a. Thinking inside and outside the box
 - b. Taking notes
 - c. Processing notes
 - d. Anticipating results, forming a hypothesis

- 2) Catching a glimpse of Geomicrobiology:
 - a. A geochemical perspective:
 - i. Atoms, elements, molecules, minerals, rocks
 - ii. From past to present – and back
 - iii. From sea to land
 - iv. How comes that a rock dissolves in water?
 - b. A biological perspective:
 - i. Winogradsky – a special Russian cocktail
 - ii. Microbes rock
 - iii. Isotopes are sweet



YOUR PARTICIPATION IS ESSENTIAL (SEE GRADES)

Please contact Dr. Brunner about any concerns, schedule conflicts, etc. in advance or otherwise as soon as possible! A significant portion of your grade is based on participation, so any missed classes and assignments must have proper documentation or your grade will drop. Valid excuses include illness, absence with the instructor's prior approval, official University business, etc.

Accommodations are possible for active duty military and others, but arrangements must be made in a timely manner. If you are in the military with the potential of being called to military service and /or training during the course of the semester, you are encouraged to contact the instructor as soon as possible.

If you think you may have a disability or if you are experiencing learning difficulties, please contact the Disabled Student Services Office (DSSO) at (915) 747-5148. They are located in Union East room 106 or you can reach them by email at dss@utep.edu. The student is responsible for presenting to the instructor any DSS accommodation letters and instructions.

Important notes:

- 1) During the classes and as homework assignments, there will be various exercises. In class, students who struggle with the exercises will have the opportunity to work with the instructor in a smaller group to overcome specific hurdles. This is by no means meant to single out students who do not reach the goals of the lecture/exercises – it is an attempt to give everybody a fair chance to immediately address the encountered challenges, and to stay on track with the class. Students who take advantage of this opportunity but still encounter difficulties can schedule additional tutoring with Dr. Brunner.
- 2) **Learning in teams** is much more effective than learning alone, and is highly encouraged.
- 3) **Course Drop Deadline: October 30, 2015**
- 4) **Grades:** Quiz & Reports (60%), Participation in discussion (40%), **always** be prepared for 5 minute quizzes!



Never swim alone!

SCHEDULE OF TOPICS – *subject to change!*

Date:	Topic:	Reading & Assignments
Week 1 150823-	<ul style="list-style-type: none"> • The yellow brick road and you? Introduction of participants. • How this class is different – a tale of dense fog, heroic teachers, and treasures along a mountain path 	Syllabus
Week 2 150830-	<ul style="list-style-type: none"> • The most basic scientific concept – a box. • The most basic scientific tool – a hypothesis. • Getting the most out of lectures, experiments, and life: taking notes, and be prepared. 	3 questions regarding a rock
Week 3 150906-	<ul style="list-style-type: none"> • Doing some middle-age geochemistry I • Atoms, elements, molecules, minerals, rocks – and how to search for information about them. 	<i>Hand in your 3 questions regarding a rock</i>
Week 4 150913-	<ul style="list-style-type: none"> • Doing some middle-age geochemistry II • Atoms, elements, molecules, minerals, rocks – and how to search for information about them. • Our first attempt at a Russian cocktail - Winogradsky 	<i>Hand in your lecture notes</i>
Week 5 150920-	<ul style="list-style-type: none"> • From past to present – and back I • From sea to land – and back I 	<i>Form a hypothesis: quiz questions to come</i>
Week 6 150927-	<ul style="list-style-type: none"> • From past to present – and back II • From sea to land – and back II 	Not another quiz?
Week 7 151004-	<ul style="list-style-type: none"> • Winogradsky – a special Russian cocktail 	<i>Hand in report on Winogradsky columns I</i>
Week 8 151011-	<ul style="list-style-type: none"> • Gathering information on sulfur deposits • Movie-time: Manus Basin 	<i>Hand in your 3 pieces of information on sulfur</i>
Week 9 151018-	<ul style="list-style-type: none"> • Microbes rock I 	
Week 10 151025-	<ul style="list-style-type: none"> • Microbes rock II 	Attention – drop deadline
Week 11 151101-	<ul style="list-style-type: none"> • The chase to the cutting edge: Isotopes are sweet 	<i>Hand in report on Winogradsky columns II</i>
Week 12 151108-	<ul style="list-style-type: none"> • The chase to the cutting edge: Isotopes are sweet 	
Week 13 151115-	<ul style="list-style-type: none"> • Burning topics in geomicrobiology & geology 	<i>Hand in your assessment of what you learned</i>
Week 14 151122-	<ul style="list-style-type: none"> • Burning topics in geomicrobiology & geology 	
Week 15 151129-	<ul style="list-style-type: none"> • Course review 	EXAM