

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

INSTRUCTOR

Dr. Benjamin Brunner
Assistant Professor, Geological Sciences

Office: 404A Geology Building
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MEETING PATTERN & LOCATION

Monday and Wednesday 1:30pm-2:50pm Geology Building, Room 404, 3 credits
BS students (SCI 1301, CRN 15490, 15491)

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

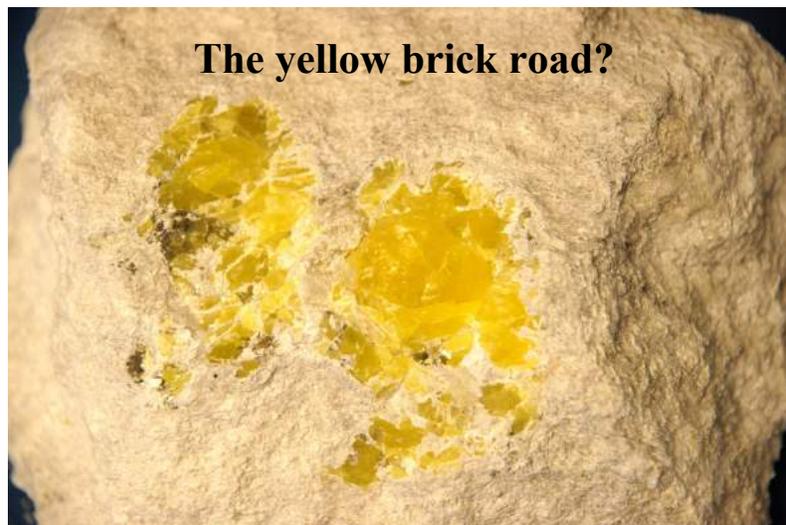
No required textbook. There will be handouts & material posted on Blackboard.

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. How comes that a rock dissolves in water?
 - iii. The meaning of pH
 - b. A biological perspective:
 - i. Winogradsky – a special Russian cocktail
 - ii. Microbes rock
 - iii. Diffusion and advection of nutrients

Class drop deadline date:
November 1, 2019



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.

How to be excused for absence or being late to class:

- Apply to be excused by writing email to bbrunner@utep.edu.
- Subject line **MUST** include (in this order): SCI1301 – YOUR NAME – Date of absence
- If absence is foreseeable (examples: job interview, surgery, wedding): before the absence
- If absence was not foreseeable (examples: migraine, car crash, childbirth, being arrested): asap, when can be done safely (do not text and drive!). Not finding a parking spot is **NOT** an excuse – it is bad planning.
- Student must ensure that excuse for absence has been granted, i.e. must have received email with confirmation of excuse of absence from Dr. Brunner.
- More than three unexcused absences and/or late arrivals to class will result in you being dropped from class (W) or an automatic failing grade (F).



Dr. B. Brunner

Office hours:

Preferred: by appointment
made via email

bbrunner@utep.edu

*It you cannot resist the
temptation:*

TR: 2:00pm – 3:00pm
404A Geology Building

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: November 1, 2019**
- 4) **Grades I:** Quiz & Reports (60%), Participation in discussion (40%), **always** be prepared for 5-minute quizzes!
- 5) **Grades II: More than three unexcused absences and/or late arrivals to class will result in you being dropped from class (W) or an automatic failing grade (F).**

Disabilities: I will make any reasonable accommodations for students with limitations due to disabilities, including learning disabilities. Please see me personally before or after class in the first two weeks or make an appointment, to discuss any special needs you might have. If you have a documented disability and require specific accommodations, you will need to contact the Center for Accommodations and Support Services (CASS) in the East Union Bldg., Room 106 within the first two weeks of classes.

CASS can also be reached in the following ways:

Web: sa.utep.edu/cass

Phone: (915) 747-5148 voice or TTY

Fax: (915) 747-8712

E-Mail: cass@utep.edu



**Never
swim
alone!**

Cheating/Plagiarism:

Cheating is unethical and not acceptable. Plagiarism is using information or original wording in a paper without giving credit to the source of that information or wording: it is also not acceptable. Do not submit work under your name that you did not do yourself. You may not submit work for this class that you did for another class. If you are found to be cheating or plagiarizing, you will be subject to disciplinary action, per UTEP catalog policy. Refer to <http://www.utep.edu/dos/acadintg.htm> for further information.

SCHEDULE OF TOPICS – *subject to change!*

Date:	Topic:	Reading & Assignments
Week 1 Aug 25-31	<ul style="list-style-type: none"> • The yellow brick road and you? • Introduction of participants. • Scandalous insights into this class! • Why are you here, and how this class is different – a tale of dense fog, heroic teachers, and treasures along a mountain path 	Syllabus Hand in 3-line self-introduction
Week 2 Sep 1-7	<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. • Monday Sept 2 – Labor Day, NO class 	3 questions regarding a rock
Week 3 Sep 8-14	<ul style="list-style-type: none"> • Our attempt at a Russian cocktail – Winogradsky Columns • And what on Earth is pH? • Reading a scientific paper • Sept 11: This is the last day to register for classes. If payment is not received by this day, students will be dropped. 	Hand in your 3 questions regarding a rock
Week 4 Sep 15-21	<ul style="list-style-type: none"> • Science and Religion – Po-tay-to Po-tah-to? 	Hand in report on Winogradsky columns I
Week 5 Sep 22-28	<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. • Doing some middle-age geochemistry II • Atoms, elements, molecules, minerals, rocks – and how to search for information about them. • Sept 23: Students who were given a payment deadline extension will be dropped at 5:00 pm if payment arrangements have not been made. 	Form a hypothesis: quiz questions to come
Week 6 Sep 29-Oct 5	<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. 	Not another quiz?
Week 7 Oct 6-12	<ul style="list-style-type: none"> • Multiplying bunnies 	
Week 8 Oct 13-19	<ul style="list-style-type: none"> • Gathering information on sulfur deposits • Movie-time: Manus Basin 	Hand in your 3 pieces of information on sulfur
Week 9 Oct 20-26	<ul style="list-style-type: none"> • Activity & concentration: Time for a sad fairy tale about a princess and a prince who encounter sailors in a bar 	
Week 10 Oct 27-Nov 2	<ul style="list-style-type: none"> • Distance, speed, acceleration: The fast and curious • Nov 1: Course drop deadline The College of Science will not approve any student- or faculty-initiated drop requests for a course after that date, except under circumstances of complete withdrawal of all courses due to medical or non-medical reasons. 	Attention – drop deadline
Week 11 Nov 3-9	<ul style="list-style-type: none"> • The chase to the cutting edge: Diffusion confusion 	Hand in report on Winogradsky columns II

Week 12 Nov 10-16	<ul style="list-style-type: none"> • Scientific report I – cleaning up the mess 	
Week 13 Nov 17-23	<ul style="list-style-type: none"> • Scientific report II – make sense of the mess, and come up with a new one 	<i>Hand in your poster and personal report</i>
Week 14 Nov 24-30	<ul style="list-style-type: none"> • Burning topics in geomicrobiology & geology • <i>Nov 28/29: Thanksgiving – please negotiate with Dr. Brunner what you would like do</i> 	<i>Hand in your group report</i>
Week 15 Dec 1-7	<ul style="list-style-type: none"> • Discussion and presentation of group reports • Course review • Dec 5 Last day of classes, Dec 6 Dead day 	Course review
Week 16 Dec 8-14	<ul style="list-style-type: none"> • <i>Dec 9-13th Final Exams: GOOD LUCK!</i> 	No finals in this class