

**GEL 3405-1**  
**Petrology**  
**Spring 2006**

Instructor: Matthew E. Brueseke (that's breeze-uh-key)  
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Office hours:  
M: 3:00 - 4:00 pm  
R: 9:00 - 11:00 am  
F: 10:00 am-12:00 pm

For the most part, if I am in my office, consider it an office hour. If, however, you would like to schedule a specific time outside of these hours, please talk to me after class or email me.

Lecture: M-W-F, 1:00 – 1:50 PM, 1060 Physical Science  
Lab time: Thursday 1:00 – 2:40 PM, 1060 & 1121 Physical Science

**General course information**

Required textbook:

*Petrology- The Study of Igneous, Sedimentary, & Metamorphic rocks*, 2<sup>nd</sup> edition, by L. Raymond, 2002.  
This book covers the fundamental concepts of igneous, sedimentary, and metamorphic petrology. Other books will be provided as laboratory/extra resources.

**Web sites**

My website: <http://www.ux1.eiu.edu/~mebrueseke/> Check here often for course related announcements and notes.  
Publisher's site: <http://catalogs.mhhe.com/mhhe/viewProductDetails.do?isbn=0073661686>

**Scope of Course**

Petrology is the study of rocks, in this case igneous and metamorphic rocks. Because rocks are aggregates of minerals, this course is in many ways a continuation of Mineralogy (you can't escape!). In Petrology, you will learn to recognize, describe, and classify common igneous and metamorphic rocks in both hand specimen and thin section. In addition, you will learn to understand certain aspects of mineral textures, processes, occurrences, and principles that will allow you to interpret parts of the geologic history of the rocks you encounter in class (and later outside of class). A rock's mineralogy, mineral textures, mineral chemistry, and bulk chemistry provide a language that we can read and ultimately make into a story. Interpreting this story is crucial to understanding the geologic history of a particular location or time period on the Earth. Accordingly, Petrology overlaps substantially with the structural/tectonic history of the Earth as well as other geologic disciplines. Lab work will principally be the study of rock hand samples and thin sections and will commonly require work outside of the scheduled lab time. Come to class prepared to listen and think and also make sure you do any necessary readings ahead of time. Falling behind in this course will be detrimental to your mental and physical well-being!!

**Students with Disabilities (Whether learning, physical, psychiatric, or sensory)**

Eastern Illinois University promotes equal educational opportunities for students with disabilities. If you have a disability and may need any assistance, please notify your instructor and make an appointment immediately with the Office of Disability Services (9th Street Hall, or Office Phone: 581-6583, Voice TTY: 581-6583, Fax: 581-7208, or <http://www.eiu.edu/~disabltty>)

**Make ups, Missed, and Late Assignments:**

"Make ups" are generally not allowed except in the most unusual and dire of circumstances. If a "make up" is allowed, it is best you discuss the reason with me ahead of time, not after the fact. Late lab assignments will be docked 5 points per day. Missed assignments will not be made up unless you have a valid reason (and note from a coach, doctor, etc.) and have talked to me first.

### **Classroom policy**

You are in this class to learn, so disruptions will not be tolerated. Not only is this disruptive to me, but also to your fellow classmates. With this in mind, I ask that you arrive to the class on time and that there are no classroom conversations or other distractions. If you must talk, please take it outside, or I will ask you to do so. Pagers, beepers, or cell phones are not allowed to ring in class.

### **Grading**

Here is a tentative breakdown:

**Exams:** There will be two exams that are worth 15% of your grade each. These will be a combination of multiple choice and short answer questions and may require you to draw or label diagrams.

**Final Examination:** The final examination will have the same format as the other examinations and will primarily cover material presented after Exam #2. It is also worth 15% of your total grade. The final exam will last two hours and is scheduled for Tuesday, May 2 from 2:45-4:45 pm.

**Labs:** Labs are fundamental to learning geology. In this course, making the link between the sometimes abstract nature of lecture material and actual rock samples is essential. Another essential part of this course is learning the basic skills necessary to recognize common rock-forming minerals in hand sample and thin section, as well as learning to interpret the textures found in rocks and their significance. Labs are due the week after they are assigned. Labs will be worth 20% of your grade. In lab you will have two lab exams, worth 10% of your grade apiece. The first will be on igneous rocks and the second on metamorphic rocks.

**Homework:** You will also have a few homework assignments to complete; these will be assigned/discussed primarily during the laboratory section and will cover fundamental concepts discussed throughout the course.

<b>Assignment</b>	<b>Total %</b>
Labs	20%
Lecture Exams (2 @ 15%)	30%
Final Exam	15%
Lab Exams (2 @ 10%)	20%
Homework	15%
<b>Total</b>	<b>100%</b>

The grading scale will be based on the following:

90% - 100% = A

80% - 89% = B

70% - 79% = C

60% - 69% = D

0 - 59% = F

## Class Schedule

Assignments should be completed before class - read the chapters and review the labs. **Weeks 1-11 will cover Igneous Petrology while weeks 12-16 will cover Metamorphic Petrology.**

<b>Week</b>	<b>Date</b>	<b>Day</b>	<b>Topics</b>	<b>Assignment</b>	<b>Lab</b>
1	1/9	Monday	Introduction, Class Policies, Structure/Texture	Chapters 1, 2	Igneous Minerals & Textures Petrographic Microscope I
	1/11	Wednesday			
	1/13	Friday			
2	<b>1/16</b>	<b>Monday</b>	<b>No Classes - M.L. King's Birthday</b>	Chapter 3	Petrographic Microscope II Mafic Plutonic Rocks (Lab #1)
	1/18	Wednesday	Chemistry & Mineralogy		
	1/20	Friday			
3	1/23	Monday	Chemistry & Mineralogy continued... Classification	Chapter 3	Mafic Volcanic Rocks (Lab #2)
	1/25	Wednesday			
	1/27	Friday			
4	1/30	Monday	Phase Diagrams	Chapter 4	Intermediate Plutonic Rocks (Lab #3)
	2/1	Wednesday			
	2/3	Friday			
5	2/6	Monday	Phase Diagrams	Chapters 4	Intermediate Volcanic Rocks (Lab #4)
	2/8	Wednesday			
	2/10	Friday			
6	2/13	Monday	Magma Origin & Evolution	Chapter 5	Felsic Rocks (Lab #5)
	2/15	Wednesday			
	<b>2/17</b>	<b>Friday</b>			
7	<b>2/20</b>	<b>Monday</b>	<b>Exam I</b>	Chapters 6, 9	No lab...
	2/22	Wednesday	Mafic/Ultramafic Volcanic		
	2/24	Friday	Mafic/Ultramafic Plutonic		
8	2/27	Monday	Intermediate Volcanic Silicic Volcanic	Chapters 8, 7	Alkaline & Ultramafic Rocks (Lab #6)
	3/1	Wednesday			
	3/3	Friday			
9	3/6	Monday	Intermediate/Silicic Plutonic	Chapter 10	Pyroclastic Rocks (Lab #7)
	3/8	Wednesday			
	3/10	Friday			
10	<i>No classes – Spring Break</i>				
11	3/20	Monday	Alkaline Magmas	Chapter 11	Review & Take Home Thin Section Exam Assigned (due Friday, March 31)
	3/22	Wednesday			
	<b>3/24</b>	<b>Friday</b>			
12	3/27	Monday	Introduction, Textures, & Structures	Chapter 21	<b>Igneous Hand Sample Exam</b>
	3/29	Wednesday			
	3/31	Friday			
13	4/3	Monday	Conditions, Mineralogy, Protoliths, & Facies	Chapter 22	Metamorphic Minerals & Textures, Contact Metamorphism (Lab # 8)
	4/5	Wednesday			
	4/7	Friday			
14	4/10	Monday	Phase Diagrams (AFM/ACF)	Chapter 23	Regional Met: Low Grade (Lab #9)
	4/12	Wednesday			
	4/14	Friday			
15	4/17	Monday	Contact Metamorphism & Regional Metamorphism	Chapters 24, 25	Regional Met: High Grade (Lab #10)
	4/19	Wednesday			
	4/21	Friday			
16	4/24	Monday	Regional Metamorphism continued, Eclogites & Serpentinites	Chapters 26, 27, 29	<b>Metamorphic Rock Exam Take Home Thin section Exam Assigned</b>
	4/26	Wednesday			
	4/28	Friday			
17	<b>5/2</b>	<b>Tuesday</b>	<b>Final Examination 2:45-4:45 PM</b>		