

**COURSE SYLLABUS**  
**GEL 345**  
**PETROLOGY**  
**3 SEMESTER CREDIT HOURS**  
**Spring 2008**

**Professor: Dr. Brian Cooper**  
**(SHSU Tel: 41566)**  
**(e-mail: bjcooper@shsu.edu)**



Gabbro  
Source: Wikipedia

# COURSE SYLLABUS

## GEL 345 Petrology

### 3 Semester Credit Hours

Spring 2008

**Room:** LDB 307  
**Classes meet:** TuTh 8-11 (Includes Lab)  
**Professor:** Brian Cooper  
**Office:** LDB 300C  
**Tel:** 41566  
**e-mail:** bjcooper@shsu.edu  
**Office Hours:** 11-11.50 T-days or by appointment

### Course Description

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**Prerequisites:** GEL 133/113 or 132/112, with GEL 134/114 highly recommended.

**Methods:** Lectures and Labs

**Grading:** 4 exams x 100 points each = 400 points. No extra credit.

**Grading Scale:** 850-1000=A; 750-849=B; 650-749=C; 550-649=D; ≤549=F

**Objectives:**

- Scientific thinking and analysis
- The recognition of over 100 minerals.
- The ability to identify unknown minerals.
- The ability to determine crystal symmetry.
- The ability to interpret X-ray powder diffraction patterns.
- The ability to quantitatively determine certain properties.
- The ability to determine a mineral's optical properties (more on this in Petrology).

**Course text:** Klein, C., Manual of Mineralogy, 23rd ed. (or older edition if you have one)  
Nesse, W.D., Introduction to Optical Mineralogy, 3rd ed.

**Attendance:** Attendance is required. There are NO excused absences. No visitors  
Each absence in excess of 3 absences costs 10 points off the final grade.  
Three tardies count as one absence. If you miss a lecture, it is your responsibility to obtain the material presented in the lecture from a fellow student.

**Make-up Exams:** Only medical reasons will be accepted as last minute excuses for missing lecture exams. Obtain an official medical note. Major events in a student's life (such as weddings, etc.) that might conflict with an exam must be reported to the instructor before the exam. Make arrangements to make up the exam as soon as possible.

**Grading:** 850 - 1000 points = A (a "curve" is already built into this distribution so do not count on any more points)  
750 - 849 points = B  
650 - 749 points = C  
550 - 649 points = D  
less than 549 points = F

|          |                 |             |
|----------|-----------------|-------------|
| Lecture: | First Exam      | 100 points  |
|          | Second Exam     | 100 points  |
|          | Final Exam      | 100 points  |
| Lab:     | Ig Practical    | 100 points  |
|          | Mike Practical  | 100 points  |
|          | Final practical | 100 points  |
|          | Exercises       | 400 points  |
| Total:   |                 | 1000 points |

## Academic Conduct

University statement: *All students are expected to engage in all academic pursuits in a manner that is above reproach. Students are expected to maintain complete honesty and integrity in academic experiences both in and out of the classroom. Any student found guilty of dishonesty in any phase of academic work will be subject to disciplinary action. The University and its official representatives may initiate disciplinary proceedings against a student accused of academic dishonesty including, but not limited to, cheating on examinations or other academic work which is to be submitted, plagiarism, collusion and the abuse of resource materials.*

I assume that a basic honor system applies to this course and that you must take care to respect your fellow students. Cheaters will automatically fail. Please keep your eyes on your own exam. You get one warning, then you get a zero on the exam. See *Student Guidelines*

## VISITORS IN THE CLASSROOM:

University statement: *Unannounced visitors to the classroom must present a current, official SHSU identification card to be permitted in the classroom. They must not present a disruption to the class by their attendance. If the visitor is not a registered student, it is at the instructor's discretion whether or not the visitor will be allowed to remain in the classroom. This policy is not intended to discourage occasional visiting of classes by responsible persons.*

## Classroom Rules and Conduct

University statement: *Students are expected assist in maintaining a classroom environment that is conducive to learning. Students will refrain from behavior in the classroom that intentionally or unintentionally disrupts the learning process and, thus, impedes the mission of the university. Cellular telephones and pagers must be turned off before class begins. Students are prohibited from eating or drinking in class, using tobacco products, making offensive remarks, reading newspapers, sleeping, talking at inappropriate times, wearing inappropriate clothing, or engaging in any other form of distraction. Inappropriate behavior in the classroom shall result in a directive to leave class. Students who are especially disruptive also may be reported to the Dean of Students for disciplinary action in accordance with university policy.*

1. Class starts on time. Sleeping/reading in class = an absence.
2. Class ends when I say it ends. Leaving early without permission = a tardy.
3. Keep quiet when I am lecturing.
4. Raise your hand if you have a question or need to leave the room for any
5. During lectures and tests, cell phones and any other equipment capable of receiving, recording and/or transmitting information, must be put away in a book bag or purse. (In short, it must not be readily accessible or accessed during an exam.)
6. Assignments received after the due date receive the lowest grade obtained on that assignment thus far, minus one for each day late, minus whatever is missed on the assignment...which means a negative score is a very real possibility.  
No assignment = a zero for that grade.

**Americans with Disabilities Act:**

University statement: *It is the policy of Sam Houston State University that no otherwise qualified disabled individual shall, solely by reason of his/her handicap, be excluded from the participation in, be denied the benefits of, or be subjected to discrimination under any academic or Student Life program or activity. Disabled students may request assistance with academically related problems stemming from individual disabilities by contacting the Director of the Counseling Center in the Lee Drain Annex or by calling (936) 294-1720. Any student seeking accommodations should go to the Counseling Center and Services for Students with Disabilities in a timely manner and complete a form that will grant permission to receive special accommodations.*

**Religious Holidays:**

*Students who are absent from class for the observance of a religious holy day are allowed to take an examination or complete an assignment scheduled for that day within reasonable time after the absence. The period of time during which assignments and exams will be excused includes travel time associated with the observance of the religious holy day. A student who wishes to be excused for a religious holy day must present the instructor of each scheduled class that he/she will be absent from class for religious reasons with a written statement concerning the holy day(s) and the travel involved. The instructor should provide the student with a written description of the deadline for the completion of missed exams or assignments. In such cases, the student will be required to take the test or submit the assignment early—unless there are good reasons for not being able to do so and the instructor has agreed to those reasons.*

# GEL 345 PETROLOGY

## COURSE OUTLINE

### Lectures

|   |    |  |
|---|----|--|
| January                                   | 17 | Introduction and the Earth                                   |
| January                                   | 22 | Igneous Petrology  |
| January                                   | 24 | Phase Diagrams (colored pencils) introduction                |
| January                                   | 29 | Phase Diagrams (colored pencils) one component               |
| January                                   | 31 | Phase Diagrams (colored pencils) two component               |
| February                                  | 5  | Phase Diagrams (colored pencils) melting and crystallization |
| February                                  | 7  | Phase Diagrams (colored pencils) melting and crystallization |
| February                                  | 12 | Magmas: plate tectonic associations                          |
| February                                  | 14 | Magmas: plate boundary specific production mechanisms        |
| February                                  | 19 | Magmas: diversification, component concentration             |
| February                                  | 21 | Magmas: ascent and emplacement                               |
| <b>February 26 FIRST LECTURE EXAM</b>     |    |  |
| February                                  | 28 | Sedimentary Petrology  |
| March                                     | 4  | Sediments  |
| March                                     | 6  | Transport and Deposition                                     |
| <b>SPRING BREAK</b>                       |    |  |
| March                                     | 18 | Sedimentary Environments                                     |
| March                                     | 20 | Lithification  |
| March                                     | 25 | Sedimentary Rocks  |
| March                                     | 27 | Metamorphic Petrology  |
| April                                     | 1  | Metamorphism   |
| April                                     | 3  | Metamorphic Differentiation                                  |
| April                                     | 8  | Metamorphic Textures   |
| April                                     | 10 | Metamorphic Structures                                       |
| <b>April 15 SECOND LECTURE EXAM</b>       |    |  |
| April                                     | 17 | Metamorphic Zones  |
| April                                     | 22 | Metamorphic Facies vs. Plate Tectonic environments           |
| April                                     | 24 | Metamorphic Mineral Reactions                                |
| April                                     | 29 | Petrogenetic Grids   |
| May                                       | 1  | Metasomatism   |
| May                                       | 6  | The Big Picture  |
| May                                       | 8  | Overview   |
| <b>May 13 FINAL LECTURE EXAM 8 -10 am</b> |    |  |

**WEEK OF:                    TOPICS**  
**MINERALOGY   LABS**  
**WEEK OF:                    TOPICS**

|          |    |                                      |
|----------|----|--------------------------------------|
| January  | 17 | Minerals in Thin Sections            |
| January  | 22 | Igneous Textures and Classification  |
| January  | 24 | Minerals in Igneous Thin Sections    |
| January  | 29 | Mafic Intrusives                     |
| January  | 31 | Mafic Intrusive Thin Sections        |
| February | 5  | Mafic Extrusives                     |
| February | 7  | Mafic Extrusive Thin Sections        |
| February | 12 | Intermediate Intrusives              |
| February | 14 | Intermediate Intrusive Thin Sections |
| February | 19 | Intermediate Extrusives              |
| February | 21 | Intermediate Extrusive Thin Sections |
| February | 26 | Felsic Intrusives                    |
| February | 28 | Felsic Intrusive Thin Sections       |
| March    | 4  | Felsic Extrusives                    |
| March    | 6  | Felsic Extrusive Thin Sections       |

|                     |
|---------------------|
| <b>SPRING BREAK</b> |
|---------------------|

|       |    |                                     |
|-------|----|-------------------------------------|
| March | 18 | <b>IGNEOUS PRACTICAL</b>            |
| March | 20 | Igneous Thin Sections               |
| March | 25 | Clastic Sedimentary Rocks           |
| March | 27 | Clastic Sedimentary Thin Sections   |
| April | 1  | Chemical Sedimentary Rocks          |
| April | 3  | Chemical Sedimentary Thin Sections  |
| April | 8  | Lower Grade Metapelites             |
| April | 10 | Metamorphic Thin Sections           |
| April | 15 | Higher Grade Metapelites            |
| April | 17 | Metamorphic Thin Sections           |
| April | 22 | Metabasites                         |
| April | 24 | Metamorphic Thin Sections           |
| April | 29 | Calcareous and Ultramafic Rocks     |
| May   | 1  | <b>THIN SECTION PRACTICAL</b>       |
| May   | 6  | <b>COMPREHENSIVE ROCK PRACTICAL</b> |