This course is a survey of igneous and metamorphic processes and their role to the formation and evolution of the solid-earth. Course content is at the intermediate level, so students are expected to have completed an introductory level course in geology, as well as GEOL202 or a similar course in mineralogy. Students should also have completed or be concurrently registered in MATH122 or MATH141. The main objective of the course is to learn how modern methods in, mineralogy, petrology, geochemistry and volcanology, combined with related areas of geophysics (e.g., heat flow, isostasy, seismic tomography) are used to understand the formation and evolution of the solid earth. The laboratory component of the course focuses on the identification of the common igneous and metamorphic rocks and minerals, and the acquisition, presentation and interpretation of petrological and geochemical data.

Instructor
Gene Yogodzinski, PSC 714
(803)-777-9524 Email: gyogodzin@geol.sc.edu
OFFICE HOURS from 11:20-12:20 on Tue-Thu or by appointment

Graduate Teaching Assistant
Ben Hocking, EWS715
803-777- Email: bhocking@geol.sc.edu

Textbooks, Readings and Blackboard
There is no required textbook for this class. Readings may be assigned out of a variety of sources and will generally be posted to Blackboard. If you are interested in the subject matter and would like to purchase a textbook, we can recommend the following:


iClickers
Quizzes will be given in lecture on a frequent basis. The goal of the quizzes is to provide discussion and review of recently covered material. Quizzes will be administered with the iClicker electronic response system. If you do not already have an iClicker, please purchase one and be prepared to use it on Tuesday of the second week of class.
Learning Outcomes
Students completing this class will learn the following:
- how the solid earth formed and has evolved over its 4.55 Ga history
- how magmas form and evolve in different plate tectonic systems
- how metamorphic rocks form and evolve under different pressure-temperature conditions
- how geophysical data from isostasy, seismic, and heat-flow studies bear on igneous and metamorphic rock-forming processes in different plate tectonic settings
- to interpret petrological and geochemical data in the context of common igneous and metamorphic processes
- to identify the common igneous and metamorphic rocks and the minerals they contain in hand specimens and thin sections

Grades: Course grades will be assigned on a curve. The extent of the curve depends on class performance but in general, we find that about two thirds of students in the class earn grades of A and B and the average grade for GEOL345 is a low B. The overall weighting of course work and key dates are listed below.

<table>
<thead>
<tr>
<th>Component</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lecture Exam 1</td>
<td>10%</td>
</tr>
<tr>
<td>Lecture Exam 2</td>
<td>10%</td>
</tr>
<tr>
<td>Lecture Exam 3</td>
<td>10%</td>
</tr>
<tr>
<td>Lecture Quizzes</td>
<td>10%</td>
</tr>
<tr>
<td>Petrology Poster Project</td>
<td>15%</td>
</tr>
<tr>
<td>Labs and Lab Quizzes</td>
<td>15%</td>
</tr>
<tr>
<td>Laboratory Mid-Term</td>
<td>10%</td>
</tr>
<tr>
<td>Laboratory Final</td>
<td>20%</td>
</tr>
</tbody>
</table>

Attendance & Absence
Attendance to lectures will be monitored through the administration of frequent in-class quizzes using the iClicker system. Scoring of the quizzes will be designed primarily to reward participation (8 points for any answer, 10 points for correct answers). No opportunities are provided to make-up missed quizzes. However, I will drop at least 2 quiz grades prior to calculating your average quiz grade for the course.

If you have a significant academic conflict, early exams can be arranged if you notify the appropriate instructor in person or by email at least one week prior to the exam date. If you are sick or have an emergency and cannot attend a lecture exam, you must notify me by email immediately. Failure to do so will result in a grade of zero for the exam. Lab attendance is mandatory and essential to the successful completion of this class. If you miss a lab meeting due to an emergency, you must contact the lab instructor to arrange a makeup immediately.