GLY4310C - Igneous and Metamorphic Petrology

Professor Michael Perfit, Spring 2021

Sections 07D9 (Lab M. per. 8-9), 177H (Lab T. per. 3-4), 8866 (Lab T. per 5-6)

Room: Williamson Hall Auditorium Rm 101

- **Class Periods**: T, TR, F period 7 (1:55 - 2:45)
- **Office Hours**: T-R periods 8 -10, ~ 3 pm to 6pm or by appointment (send an email)
- **Office:** Wm 365, Phone 392-2128, **email**: mperfit@ufl.edu

Text: **(Required)** Principles of Igneous and Metamorphic Petrology 2nd Ed; J. D. Winter; Prentice Hall. (First Addition is OK…. **BUT** be aware that page numbers I assign are likely different in that edition and there are some new sections that will not be in the first edition.

Lab text: **Handouts will be provided before each class**

Recommended references (#'s 1 and 4 provide the most info. #'s 2 and 3 are similar to one another, have color imagery and can replace an optical book though they are not as complete a resource.

1. A basic mineralogy text including Optical Mineralogy (Nesse, for example)
2. Petrology of Igneous and Metamorphic Rocks by A. R. Philpotts; Prentice Hall
3. Minerals in Thin Section: Dexter Perkins and Kevin R. Henke; Prentice Hall
4. Petrography of Rocks in Thin Section: Williams, Turner and Gilbert (no longer in print)

Lab Instructors: Meridith Miska (meridith.miska@ufl.edu) and Peng Jiang (pengjiang@ufl.edu)

Lab Class Rm 101

Lab Syllabus 2021 (*updated Jan 7, 2021*)

Grade evaluation:

- 25% Lab
- 20% Class assignments and in class activities (Team projects), take-home assignments
- 10% final project/ paper
- 30% Exams *(3 @ 10%)*
- 15% Final Exam

Letter grades will be assigned as follows:

- A = 93% or above, A- = 90-92.5%,
- B+ = 87-89.5%, B = 83-86.5%, B- = 80-82.5%,
- C+ = 77-79.5%, C = 73-76.5%, C- = 70-72.5%,
- D+ = 67-69.5%, D = 63-66.5%, D- = 60-62.5%,
- E = 59.5% or below.

Course Summary and Objectives

- **This course covers a great deal of material.** It is important that you attend all classes, keep up with the reading assignments and spend extra time in the lab. I expect you to read all of the assigned material and complete your assignments on time. Late submission of assignments will result in a reduction of 10 % pts. per late day unless prior approval has been given. **Neatness, spelling (spelling like that used in texting is not acceptable) and grammar count.**

The subject material assumes a working knowledge of Physical Geology (e.g rock names, plate tectonics), Mineralogy, and basic Chemistry and Physics. If you are weak in these areas, make sure you review them.

- It is VERY important to review the volcanic, petrologic and metamorphic parts of your Physical Geology class and the mineral associations and phase diagrams from your Mineralogy class.
- Class lectures will be recorded on Zoom (see policy below) so that you can replay them at a later time to review and also in case anyone has to miss class for illness or COVID-19 protocols.
- Participation in class and in your group (determined later) is very important – you should not only try to answer questions based on your reading but also learn from your mistakes and discussion among your teammates.
- It is important for you to learn where significant "petrologic" localities are in the world and how they are related to plate tectonics. I will provide you with copies of important overheads and PowerPoint presentations that I show in class (on a Canvas course web site).
- I have very high expectations of you. I will put a great deal of effort into this class and I expect the same from you. This is a demanding class that can be difficult if you do not keep up with the reading and or lectures. I am willing and available to help you with any problems you may have with the course material.
- **Zoom UF Policy**
    - *Our class sessions may be audio visually recorded for students in the class to refer back and for enrolled students who are unable to attend live. Students who participate with their camera engaged or utilize a profile image are agreeing to have their video or image recorded. If you are unwilling to consent to have your profile or video image recorded, be sure to keep your camera off and do not use a profile image. Likewise, students who un-mute during class and participate orally are agreeing to have their voices recorded. If you are not willing to consent to have your voice recorded during class, you will need to keep your mute button activated and communicate exclusively using the "chat" feature, which allows students to type questions and comments live. The chat will not be recorded or shared. As in all courses, unauthorized recording and unauthorized sharing of recorded materials is prohibited.*

- **Etiquette, disabilities, cheating etc. :** No cell phones, etc. are allowed to be on during class. Please show courtesy to both your instructors and classmates by arriving and leaving on time and avoiding unnecessary disturbances during class. All students are expected to adhere to the student honor code and conduct code https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/. Cheating or plagiarism will not be tolerated. Students with disabilities should contact the instructor as soon as possible to discuss appropriate accommodations. The Students Disability Resource center website is https://disability.ufl.edu/students/

Date	Topic	Reading
12-14-Jan	Introduction to class Basic Concepts -Earth origin and structure	Ch 1
15-Jan	Igneous Rock Classification & Textures	Ch 2/3
19-Jan	Igneous Rock Classification & Textures	Ch 3/4
21-22 Jan	Igneous Structures and Field Relations	Ch 4
26-Jan	Phase Rule and Simple Systems	Ch 6/
28-29 Jan	Binary Systems	Ch6/7
2 Feb	Binary Systems/Ternary Systems	Ch 7
4-Feb	**Exam 1: (Ch 1-4, 6-7)**	
5-Feb	Chemical Petrology- major elements - concepts	Ch 8
9-11 Feb	Chemical Petrology major elements – modeling	Ch 8
12-Feb	Chemical Petrology major elements – magmatic series	Ch 8

16-18 Feb	Chemical Petrology trace elements	Ch 9
19-Feb	Chemical Petrology- trace elements/isotopes	Ch 9
23-25 Feb	Mantle Melting and Basaltic Magma genesis	Ch10
26-Feb	Basalt Genesis and Magma diversification	Ch10/11
2-March	**Exam 2: (Ch 8-11)**	
4- 5 Mar	Mid-Ocean Ridges	Ch 13/14
9-12 Mar	Intraplate Ocean Island (OIB) volcanism	
16-19 Mar	Subduction Zone Volcanism – Island arcs	Ch16
23-26 Mar	Continental Arcs	Ch 17
30-Mar	**Exam 3 (13,14,16,17)**	
2- Apr	Metamorphism and Metamorphic Rocks	Ch 21/22
6-9 Apr	Metamorphic Facies and Mafic Rocks	Ch 25
13-16-Apr	Metamorphism of Pelitic Rocks	Ch 28
20-Apr	**Final Project Due**	
	22-23 Apr- Reading Days	

FINAL EXAM (TBA)