**GLY 423 SEDIMENTARY PETROGRAPHY COURSE OUTLINE F-17**

**Instructor**: Dr. R. L. Martino

Office: room S174

 Hours: MWF: 10-11, Tue: 9-1 (appointment recommended)

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**Textbook**: *Sedimentary Petrology*, 2001, 3rd edition by M. E. Tucker

**Course Description**: 4 credit hours, PR GLY 201, Megascopic and microscopic identification and a depositional and post-depositional interpretation of sedimentary rocks.

**Policy Statement**

The main goal of this course is to help students to become competent professionals with a strong background in the description, classification and interpretation of sedimentary rocks.

Since sedimentary rocks cover about 70-75% of the land area and most of the seafloor, geologists dealing with environmental, engineering, and resource extraction companies or regulatory agencies need to have a comprehensive understanding of sedimentary rocks since they are the most likely rock type that these companies will be dealing with. You will be treated with respect and encouragement and you will be provided with the necessary tools to succeed just as you would if hired by a company. The rest is up to you. If you want to keep a job and move on to more advanced, better paying positions, you need to demonstrate interest, motivation, and reliability. You will succeed in this course if you adhere to these professional guidelines, and will not if you don’t. I want every student in this course to do well and I am here to help.

**Attendance**

Students should report to class **before** 11:00 for lecture and **before** 1:00 for lab. Attendance will be taken in the 5 minutes that precede class. Students who arrive after 11 or 1 will not be admitted without prior permission from me. It is disruptive to come to class late and it is not fair or respectful to other students trying to learn. To protect their interests, the door(s) will be locked at 11:00 for lecture and 1:00 for lab. Any student who opens the door to another student arriving after class has started will also be counted absent. If you arrive late, go to the library and study, and get the notes from someone who was present. I-phones or other similar devices are not permitted in lecture or lab. Those who have them out during the lecture or lab will be dismissed and receive a 0 for attendance and participation for that lecture or lab. Students will be allowed 2 unexcused absences without penalty. Subsequent missed classes without a university excuse will reduce attendance/participation by 5 % per class.

**Participation/Preparation**

Student participation/preparation will be based on homework, pop-quizzes, ability to participate in class or lab discussions, careful handling of specimens and equipment, and attitude and consideration for others.

**Grading**

 Lecture Grade

 Exams 1, 2, and 3 are 30 % each; attendance and participation = 10%

 Lab Grade

 Exercise Average= 30%, Lab Final = 60%, attendance/part = 10%

 Final Grade will be based on 65% lecture grade and 35% lab grade:

 90-100 = A, 80-89 = B 70-79 = C 60-69 = D less than 60 = F

Exams and lab work can be made up provided you obtain a University excuse. Absences may be excused by the University for serious medical or legal reasons, military obligation, or university activities. Attendance will be taken at the beginning of each class/lab. Discussion/review questions will be assigned for lecture. It is the student's responsibility to 1) complete any assigned reading or other homework before coming to class, 2) be prepared for pop-quizzes, and 3) participate effectively in class discussions.

# Course Objectives/Methods of Assessment

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| **Course Objective** | **Student Activity** | **Assessment Tool** |
| Become familiar with basic optical mineralogic principles and optical properties of sedimentary rocks as seen in thin sections using the petrographic microscope. | Reading, lab demonstration, hands-on lab experience; homework | Lab ExercisesLab Final ExamLecture Exams |
| Develop the capacity to describe various types of textures, framework grains, cements, matrix and pore space, and use the textural, compositional, and paleontologic attributes to provide a comprehensive rock description and classification. | Reading, lab demonstration, lecture interaction, hands-on lab experience. homework | Lab ExercisesLabs, Exams |
| Integrate textural, mineralogic, and paleontologic attributes into a reconstruction of sediment provenance, depositional environment, and diagenetic history. | Laboratory Analysis,Readings | Lab ExercisesLab Final |
| Train students to be responsible, professional geoscientists. | Class Preparation, Participation, lab reports | Class Participation, quizzes, lab reports |

**Outline of Lecture Topics**

Week No. Topic Assignment\*

1 Introduction: basic concepts and methods C. 1

2-7 Sandstones, Conglomerates & Breccias C.2

8 Mudrocks C.3

EXAM # 1\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

9-11 Limestones C.4

 12 Evaporites C. 5

EXAM #2\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

13-15 Fe-rich Rocks, Phosphates, Coal-Oil Shale C. 6,7,8

 14 Lab Final: December 4

EXAM # 3 (FINAL EXAM)\_\_\_\_\_\_Tue Dec 12: 10:15-12:15\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\* + Supplemental readings in optical mineralogy, and other topics

**Lab Topics (tentative)**

 (no lab- eclipse) wk 1

Optical Mineralogy/Mineral ID wk 2

 Sandstones, Conglomerates, and Mudrocks wk 3-8

 Carbonates wk 9-13

 Lab Final wk 14

Lab Exercises must be turned in on time. A lateness penalty (10 pts/day) will be assessed. Exercises will not be accepted from individuals after they have been returned to class. Though students may work together to learn how to use the scope and identify specific features, **the collection of data, description of rock properties, and answers to discussion questions on lab reports must be an individual effort**. Copying another’s work or allowing another student to copy yours constitutes *academic dishonesty*. Any form of *academic dishonesty* that occurs will result in dismissal from the course and an automatic final grade of “F” . A letter outlining the offense will be forwarded to the academic dean for consideration of further action. See academic dishonesty <http://www.marshall.edu/catalog/files/UG_16-17_published_08-25-16.pdf>.

 **Useful References**

1) Sandstone Petrology: A Tutorial Petrographic Image Atlas, 2nd Edition -<http://store.aapg.org/detail.aspx?id=79#sthash.oXbtgSoc.dpuf>

2) Color Guide to Petrography of Carbonate Rocks

Peter A. Scholle and Dana S. Ulmer-Scholle

<http://www.aapg.org/publications/special-publications/books/details/articleid/4380/m77-color-guide-to-petrography-of-carbonate-rocks>.

3) Carbonate Petrology: An Interactive Petrography Tutorial (v. 1.0) DVD-ROM – March 21, 2011

by [Kitty L. Milliken](http://www.amazon.com/s/ref%3Ddp_byline_sr_book_1?ie=UTF8&text=Kitty+L.+Milliken&search-alias=books&field-author=Kitty+L.+Milliken&sort=relevancerank) and Suk-Joo Choh

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[http://www.amazon.com/Carbonate-Petrology-Interactive-Petrography-Tutorial/dp/1588613976/ref=pd\_sim\_14\_1?ie=UTF8&refRID=00Y7EAAP90R3P1DP40RT](http://www.amazon.com/Carbonate-Petrology-Interactive-Petrography-Tutorial/dp/1588613976/ref%3Dpd_sim_14_1?ie=UTF8&refRID=00Y7EAAP90R3P1DP40RT).

4) AAPG Memoir 109: A Color Guide to the Petrography of Sandstones

*Dana S. Ulmer-Scholle, Peter A. Scholle, Juergen Schieber and Robert J. Raine*

[*http://www.aapg.org/publications/special-publications/books/details/articleid/17763/aapg-memoir-109-a-color-guide-to-the-petrography-of-sandstones*](http://www.aapg.org/publications/special-publications/books/details/articleid/17763/aapg-memoir-109-a-color-guide-to-the-petrography-of-sandstones)*.*