**GLY 325 STRATIGRAPHY & SEDIMENTATION F-18**

**Texts**: Sedimentology & Stratigraphy 2nd ed., 2009, Gary Nichols

Sedimentary Rocks In the Field, 4th ed., 2011. Maurice Tucker

**Instructor**: Dr. Ronald L. Martino

Office: S174; Office Hours: MW: 10-11,12-1 T: 9-1 (appt. recommended)

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**Time and Location:** MWF:11-11:50, Tue: 1-2:50, Room S170

**Course Description**: Stratigraphy & Sedimentation‑(GLY 325, 4 hrs)

Formation, organization, sequence, and correlation of sedimentary

rocks; study of the origin, transportation, and deposition of

rock‑forming sediments.

**Prerequisite Courses**: GLY 201 and 211L or permission

# Course Objectives/Methods of Assessment

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| **Course Objective** | **Student Activity** | **Assessment Tool** |
| Students will be able to describe the lithology and sedimentary structures of sedimentary rocks and interpret the physical, biological and chemical processes responsible for their origin; | Reading, homework, lectures,  class discussion; hands-on lab experience (optional) | Exams, Class Participation, Homework |
| Identify, describe, and interpret sedimentary facies, the basic building blocks of stratigraphic sequences; | Reading, homework, lectures,  class discussion, labs, field project | Exams, Lab Reports  Project Report |
| Understand and utilize various types of stratigraphic correlation; | Lectures,  class discussion,  field trips | Exams, Lab Reports  Field Project Report |
| Describe and analyze sedimentary strata in the field and in the subsurface | Lecture, labs, field trips,  Field Project | Class Participation, Exams,  Homework |
| Integrate relevant geologic literature into research projects | Field Project and Labs | Reports |
| Develop/Improve technical writing skills | Field Project, Labs | Reports for Labs and Project |
| Develop an understanding of interaction of climate, tectonics, and sea level changes in the development of sedimentary sequences | Field Project, Field Trips | Reports, Exams |

**Policy Statement**

The main goal of this course is to help students to become competent at describing and interpreting 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 training and 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. I want every student in this course to do well and I am here to help.

# Attendance

Attendance will be kept by taking roll at the beginning of each class. If a student comes in late, it is their responsibility to notify the instructor at the end of class or lab. It is disruptive to come to class or lab late and it is not fair or respectful to other students who are trying to learn. Both unexcused lateness (-2) and absence (-5) will lower the attendance grade beginning with the second instance in each case.

Only legitimate and verifiable excuses will be considered before allowing students to make up an exam, homework, quiz, or lab (examples include serious medical, legal, or military reasons, death in the immediate family, or extremely hazardous weather for commuting students). See p. 87-88 of 2018-19 Undergraduate Catalog: <http://www.marshall.edu/catalog/files/UG_18-19_published_08-17-18.pdf>.

**Participation**

Students should complete the assigned reading prior to coming to class or lab and be prepared to answer questions and participate in class and lab discussions. Review and homework questions will be assigned each week and there will likely be a quiz each week as well. The lowest quiz or homework assignment will be dropped.

# Lab Exercises

There will be approximately 7 lab exercises during the semester. They will involve collection and presentation of data, as well as analysis and interpretation. The writing portion will typically include 2‑3 pages. The objectives of these exercises will be to familiarize students with various methods of data acquisition and to develop the ability to analyze and interpret these data in a logical manner. Lab exercises must be turned in on time. A lateness penalty of 10 points per day will be assessed and labs turned in after I return them to the class will not be accepted and will receive a grade of 0. If there are extenuating circumstances (‘legitimate and verifiable reasons’, please let me know in advance of the due date.

# Grading

Lecture Lab

Exams 1, 2 : 33 % each 50 % Exercises

Final Exam: 34 % 50 % Lab Final

Final Grade in Course =

40 % lecture, 20 % lab, 20% Field Project, 10% Attendance 10% Participation

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 p. 73, http://www.marshall.edu/catalog/files/UG\_18-19\_published\_08-17-18.pdf).

**Course Outline (Tentative)**

Week No. Lecture Topic Assignment

Nichols Tucker

1-2 Introduction + Clastic Sediments, Texture C 1-3 T3

3 Sediment Transport & Sedimentary Structures C. 4 T5

4 Field Sedimentology, Facies & Environments C. 5

5 **EXAM # 1** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

5 Continents: sources of sediments C. 6

6 Glacial and Aeolian Environments C. 7-8

7 Rivers, Alluvial Fans, and Lakes C 9-10

8-9 Marine Realm, Coastal Systems C 11-13

10 \_\_**EXAM # 2** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

10 Shallow Marine Clastic Environments C. 14

11 Deep Marine Environments C. 16

12 Subsurface Stratigraphy C. 22

13 Lithostratigraphy/Biostratigraphy C. 19-20

14-15 Sequence Stratigraphy & Sea Level Changes C. 23

\_\_\_\_\_**FINAL EXAMS (comprehensive) \_\_ Dec 11 @ 11:00-12:50\_\_\_\_\_\_\_**\_\_\_\_\_\_\_\_\_

# *TENTATIVE* LIST OF LAB TOPICS/ACTIVITIES

Week Topic

1 Identification of Sedimentary Rocks

2 Sieve Analysis of Sand

3 Identification & Interpretation of Sedimentary Structures

4 Paleocurrent Analysis

5 Measuring/Describing/Interpreting Stratigraphic Section (outcrop) w/

Component Facies

6 Core Logging

7 Geophysical Logs

8-15 Field Project

+ 2 Field Trips (one may involve overnight camping)

**University Policies**

By enrolling in this course, you agree to the following University Policies:

Academic Dishonesty/ Excused Absence Policy for Undergraduates/ Computing Services Acceptable Use/ Inclement Weather/ Dead Week/ Students with Disabilities/ Academic Forgiveness/ Academic Probation and Suspension/ Academic Rights and Responsibilities of Students/ Affirmative Action/ Sexual Harassment

Please read the full text of each policy by going to www.marshall.edu/academic-affairs/policies/.