

Lectures: T-Th 11:30 AM – 12:45 PM, LFG 105

Instructor: Dr. Ganqing Jiang
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Laboratories: **LFG 105, Friday, 11:30 AM - 2:20 PM**
Office Hours: Thursday 2:30 – 5:00 pm and by appointment (walk in is fine)
Required Textbook: Gary Nichols, 2004, *Sedimentology and Stratigraphy*, Blackwell Publishing Company, 355pp. ISBN: 0-632-03578-1
Reference Textbook: Boggs, S., Jr., 2006, *Principles of sedimentology and stratigraphy*, 4th edition, Pearson Prentice Hall, 662pp. ISBN: 0-13-154728-3 (a copy is reserved in Lied Library)
T. A. : Jonathan Baker, Email: bakerj61@unlv.nevada.edu
Office: TEC 109; Phone: 702-895-3874
Office Hours: Will be specified by Jonathan in his lab syllabus

Objectives:

The purpose of this course is to provide an integrated overview of the sciences of sedimentology and stratigraphy. We will learn the following components: (1) Earth’s surficial processes that control and produce sediments and sedimentary rocks, (2) quantitative description and classification of sedimentary rocks, (3) spatial and temporal models for reconstructing depositional environments, (4) sedimentary sequences and their forming mechanisms, and (5) techniques (e.g., stable isotopes) useful for studying sedimentary rocks and exploring ancient seawater history. The final goal of this course is to provide a comprehensive answer to questions “*What is the paleoenvironmental origin of sedimentary rocks? What controls their lateral and temporal variations? What information can we obtain from sedimentary rocks to reveal the ancient Earth history?*”

Class Background:

This class is designed for senior undergraduates majoring in geology and will integrate materials that you have learned in previous classes. You will demonstrate that you have acquired the requisite skills related to sedimentary geology and acquisition of appropriate writing skills by completing field-based reports, and other assignments and exams. ***Concurrent enrollment in the lab section is required.***

Grading:

Class Attendance and Discussions.....10%
 Midterm Exam.....30%
 Final Exam.....30%
 Lab + research project.....30%
 Final grades are assigned on a percentage basis: A = 100-90%, B = 89-80%, C = 79-70%, D = 69-60%, F = 59% or lower; +/- designations are used. Grades will not be curved. This means that you can study together to get great grades because you aren’t competing against each other. Although I encourage you to study and work on projects together, you must turn in original work.

Lecture and Lab Schedule: The following schedule is tentative. We will need Fridays for field trips, and adjustments to the schedule may be made in accordance with the rate of progress in the classroom.

Date	Lecture Topic	Lab Topic	Reading Assignment
(T) Jan. 12	Class Intro, Intro to Sedimentary Processes and Sedimentary Rocks		p. 1-9
(Th) Jan. 14	Terrigenous Clastic Sediments and Sedimentary Rocks		p. 10-24
(F) Jan. 15	<i>Online and Library Research Methods</i> <i>Adobe illustrator basics and powerpoint</i>		<i>computer cluster, LFG105 first</i>

(T)	Jan. 19	Biogenic, Chemical and Volcanogenic Sediments and Rocks	p. 25-36
(Th)	Jan. 21	Sediments: From Source to Destination	p. 37-61, 76-89
(F)	Jan.22	<i>Alluvial-Fluvial Processes and Particle Transportation</i>	
(T)	Jan. 26	Sedimentary Structures	p. 43-61
(Th)	Jan. 28	Sedimentary Structures	p. 43-61
(F)	Jan.29	<i>Sedimentary structures</i>	
(T)	Feb. 2	Environments and Facies	p. 62-75
(Th)	Feb. 4	Siliciclastic Depositional System: Alluvial and Glacial	p. 76-89, 101-116
(F)	Feb. 5	<i>Sandstones/Conglomerates/Mudrocks</i>	
(T)	Feb. 9	Siliciclastic Depositional System: Fluvial and Lakes	p. 116-134
(Th)	Feb. 11	Siliciclastic Depositional System: Delta and Estuaries	p. 135-149
(F)	Feb. 12	<i>Clastic Petrology in Thin Sections</i>	
(T)	Feb. 16	Siliciclastic Depositional System: Coastal Environments	p. 167-180
(Th)	Feb. 18	Siliciclastic Depositional System: Shelf to Basinal Environments	p. 180-206
(F)	Feb. 19	<i>Field Trip to Rainbow Garden</i>	
(T)	Feb. 23	Carbonate Depositional System: An Overview	p. 187-191
(Th)	Feb. 25	Carbonate Depositional System: Peritidal Carbonates and Cycles	Reading Assignment
(F)	Feb. 26	<i>Carbonate Rocks</i>	
(T)	Mar. 2	Midterm Review	
(Th)	Mar. 4	Midterm Exam: 11:30 – 11:45, LFG 105	
(F)	Mar. 5	<i>Carbonate Petrology in Thin Sections I</i>	
(T)	Mar. 9	Carbonate Depositional System: Ramp and Rimmed Shelves	p.187-188
(Th)	Mar. 11	Carbonate Depositional System: Reef Banks and Epeiric	p. 190 and assign
(F)	Mar. 12	<i>Carbonate Petrology in Thin Sections II</i>	
(T)	Mar. 16	Microbial Induced Sedimentary Structures (MISS)	Reading Assignment
(Th)	Mar. 18	Stable Isotopes: Concepts and Analyses	Handouts
(F)	Mar. 19	<i>Field trip to Arrow Canyon: carbonate cycles</i>	
(T)	Mar. 23	Stables Isotopes: Revealing Ancient Climate Changes	Handouts
(Th)	Mar. 25	Diagenesis: An Introduction	p. 215-228
(F)	Mar. 26	<i>Discussion: Carbonate cycles for project preparation</i>	
March 29 – April 3, Spring Break, No class			
(T)	Apr. 6	Stratigraphic Concepts: An Overview	p. 229-240
(Th)	Apr. 8	Stratigraphic Techniques: Fossils and Other Dating Methods	p. 241-263
(F-S)	Apr. 9-11	<i>Weekend field trip to western Utah; Project for carbonate cycles</i>	
(T)	Apr. 13	<i>No class, work on the project</i>	
(Th)	Apr. 15	Sequence Stratigraphy and Sea Level Changes (I)	p. 264-289
(F)	Apr. 16	<i>Project work: stratigraphic columns in illustrator</i>	
(T)	Apr. 20	Sequence Stratigraphy and Sea Level Changes (II)	p. 290-298
(Th)	Apr. 22	Basin Analysis, Tectonics and Sedimentation	p. 66-74, 299-315
(F)	Apr. 23	<i>Research Project: Data Integration</i>	
(T)	Apr. 27	In-class discussion of the project progress	
(Th)	Apr. 29	Final Exam Review	
(F)	Apr. 30	<i>In-class presentation of the project</i>	LFG 105
(Th)	May 6	Final Exam: 10:10 – 12: 45, LFG 105 (this is the official exam time)	

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Religious Holidays Policy -- Any student missing class quizzes, examinations, or any other class or lab work because of observance of religious holidays shall be given an opportunity during that semester to make up missed work. The make-up will apply to the religious holiday absence only. It shall be the responsibility of the student to notify the instructor no later than the last day at late registration of his or her intention to participate in religious holidays which do not fall on state holidays or periods of class recess. This policy shall not apply in the event that administering the test or examination at an alternate time would impose an undue hardship on the instructor or the university which could not be avoided. For additional information, please visit: <http://catalog.unlv.acalog.com/content.php?catoid=1&navoid=44&bc=1>.

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