

**Lectures: T-Th 11:30 AM – 12:45 PM, LFG 102**

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**Required Textbook:** Gary Nichols, 2009, *Sedimentology and Stratigraphy*, Blackwell Publishing Company, 432pp. ISBN: 978-1-4051-3592-4 **OR**  
Boggs, S., Jr., 2011, *Principles of sedimentology and stratigraphy*, 5th edition, Pearson Prentice Hall, 720pp. ISBN: 978-0321592576 (a copy is reserved in Lied Library)

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**Course Description:**

This course is designed for graduate students majoring in geology and geology-related disciplines and will integrate materials that students have learned from previous classes. It will provide students with (1) basic knowledge and tools to understand the production, transportation, and deposition of sediments, (2) formation of sedimentary textures and structures, (3) temporal and spatial facies variations, (4) diagenetic features associated with sediment burial and lithification, (5) sedimentary sequences and their forming mechanisms, and (6) techniques (e.g., stable and radiogenic isotopes) used for studying paleoenvironmental changes in Earth's history. At the end of the class students are required to acquire the requisite skills related to sedimentary geology and appropriate writing skills by completing class assignments, field-based reports, and exams. ***Concurrent enrollment in the lab section is required.***

**Learning Objectives:**

At the end of the class, every student should be able to:

- Understand the processes that control formation, transportation, and deposition of sediments;
- Quantitatively describe and classify sedimentary rocks in field and laboratory;
- Use facies and facies stacking patterns to reconstruct ancient depositional environments;
- Identify common sedimentary textures and structures formed in different depositional environments;
- Explain diagenetic processes and products associated with sediment burial and lithification after deposition;
- Interpret spatial and temporal facies variations in a sequence stratigraphic framework;
- Apply concepts of stable and radiogenic isotopes to interpret paleoenvironmental changes in Earth's history

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**Grading:**

- Class Attendance and Discussions .....10%
- Midterm Exam.....30%
- Final Exam.....30%
- Lab + Field projects.....30%

Final exam will be cumulative. No make-ups for exams except stated by the university rules (see below).

Final grades are assigned on a percentage basis: A = 100-90%, B = 89-80%, C = 79-70%, D = 69-60%, F: ≤ 59%

A plus/minus system may be employed at the instructor's discretion. Grades will not be curved; therefore, you are not competing against each other. You are encouraged to study and work on projects together with your classmates, but you must turn in original work.

**Lecture and Lab Schedule:** The following schedule is tentative. We will need a Saturday and a weekend for field trips. 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. 19	Class Intro, Intro to Sedimentary Processes and Sedimentary Rocks		(N)1-4 (B)xvii-xix
(Th) Jan. 21	Terrigenous Clastic Sediments and Sedimentary Rocks		(N)5-27 (B)101-134
(F) Jan. 22	<i>Adobe illustrator: How to draw a stratal column</i>	<i>computer cluster, LFG105 first</i>	
(T) Jan. 26	Biogenic, Chemical and Volcanogenic Sediments and Rocks		(N)28-43 (B)135-206
(Th) Jan. 28	Sediments: From Source to Destination		(N)44-68, 87-101 (B)3-42
(F) Jan. 29	<i>Alluvial-Fluvial Processes and Particle Transportation</i>		
(T) Feb. 2	Sedimentary Structures		(N)44-68 (B)65-98
(Th) Feb. 4	Sedimentary Structures		(N)44-68 (B)65-98
(F) Feb. 5	<i>Sedimentary structures</i>		
(T) Feb. 9	Environments and Facies		(N)69-86 (B)207-245
(Th) Feb. 11	Siliciclastic Depositional System: Alluvial and Glacial		(N)102-113, 129-149 (B)207-245
(F) Feb. 12	<i>Sandstones/Conglomerates/Mudrocks</i>		
(T) Feb. 16	Siliciclastic Depositional System: Fluvial and Lakes		(N)129-161 (B)207-245
(Th) Feb. 18	Siliciclastic Depositional System: Delta and Estuaries		(N)179-214 (B)247-269
<b>(ST) Feb. 20</b>	<b><i>Saturday Field Trip to Rainbow Garden</i></b>		
(T) Feb. 23	Siliciclastic Depositional System: Coastal Environments		(N)199-214 (B)260-279
(Th) Feb. 25	Siliciclastic Depositional System: Shelf to Basinal Environments		(N)215-261 (B)280-307
(F) Feb. 26	<i>Clastic Petrology in Thin Sections</i>		
(T) Mar. 1	Carbonate Depositional System: An Overview		(N)225-245 (B)308-334
(Th) Mar. 3	Midterm Review		
(F) Mar. 4	<i>Carbonate Rocks</i>		
(T) Mar. 8	Carbonate Depositional System: Peritidal Carbonates and Cycles		Reading Assignment
<b>(Th) Mar. 10</b>	<b>Midterm Exam: 11:30 – 12:45, LFG 102</b>		
(F) Mar. 11	<i>Carbonate Petrology in Thin Sections</i>		
(T) Mar. 15	Carbonate Depositional System: Ramp and Rimmed Shelves		(N)225-245 (B)308-334
(Th) Mar. 17	Microbial Induced Sedimentary Structures (MISS)		Reading Assignment
(F) Mar. 18	<i>Carbonate Petrology in Thin Sections</i>		
<b>March 21 – 26, Spring Break, No class</b>			
(T) Mar. 29	Stable Isotopes: Concepts and Analyses		Handouts
(Th) Mar. 31	Stables Isotopes: Revealing Ancient Climate Changes		Handouts
(F) Apr. 1	<i>Discussion: Carbonate cycles for project preparation</i>		
(T) Apr. 5	Diagenesis: An Introduction		(N)274-296 (B)159-167
(Th) Apr. 7	Stratigraphic Concepts: An Overview		(N)297-310 (B)335-357
(F) Apr. 8	<i>No Lab, Geosymposium [need to confirm with Lauren Perry]</i>		
(T) Apr. 12	Stratigraphic Techniques: Fossils and Other Dating Methods		(N)311-334 (B)335-357
(Th) Apr. 14	Sequence Stratigraphy and Sea-level Changes (I)		(N)335-368 (B)365-388
<b>(F-S) Apr. 15</b>	<b><i>Weekend field trip to western Utah; Project for carbonate cycles</i></b>		
(T) Apr. 19	No class, work on the project		No class
(Th) Apr. 21	Sequence Stratigraphy and Sea Level Changes (II)		(N)335-368 (B)365-388
(F) Apr. 22	<i>Project work: stratigraphic columns in illustrator</i>		
(T) Apr. 26	Summary: Cycles and Sequence Stratigraphy		
(Th) Apr. 28	In-class discussion of the project progress		
(F) Apr. 29	<i>Research Project: Data Integration</i>		
(T) May 3	Final Exam Review		
(Th) May 5	In-class presentation of the project		LFG 105
(F) May 6	<i>In-class presentation of the project</i>		LFG 105
<b>(Th) May 12</b>	<b>Final Exam: 10:10 am – 12: 10 pm, LFG 102 (this is the official exam time)</b>		

## UNLV POLICIES

**Academic Misconduct** – Academic integrity is a legitimate concern for every member of the campus community; all share in upholding the fundamental values of honesty, trust, respect, fairness, responsibility and professionalism. By choosing to join the UNLV community, students accept the expectations of the Student Academic Misconduct Policy and are encouraged when faced with choices to always take the ethical path. Students enrolling in UNLV assume the obligation to conduct themselves in a manner compatible with UNLV's function as an educational institution. An example of academic misconduct is plagiarism. Plagiarism is using the words or ideas of another, from the Internet or any source, without proper citation of the sources. See the Student Academic Misconduct Policy (approved December 9, 2005) located at: <https://www.unlv.edu/studentconduct/student-conduct>.

**Copyright** – The University requires all members of the University Community to familiarize themselves with and to follow copyright and fair use requirements. **You are individually and solely responsible for violations of copyright and fair use laws. The university will neither protect nor defend you nor assume any responsibility for employee or student violations of fair use laws.** Violations of copyright laws could subject you to federal and state civil penalties and criminal liability, as well as disciplinary action under University policies. Additional information can be found at: <http://www.unlv.edu/provost/copyright>.

**Disability Resource Center (DRC)** – The UNLV Disability Resource Center (SSC-A 143, <http://drc.unlv.edu/>, 702-895-0866) provides resources for students with disabilities. If you feel that you have a disability, please make an appointment with a Disabilities Specialist at the DRC to discuss what options may be available to you. If you are registered with the UNLV Disability Resource Center, bring your Academic Accommodation Plan from the DRC to the instructor during office hours so that you may work together to develop strategies for implementing the accommodations to meet both your needs and the requirements of the course. Any information you provide is private and will be treated as such. To maintain the confidentiality of your request, please do not approach the instructor in front of others to discuss your accommodation needs.

**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 within the first 14 calendar days of the course for fall and spring courses (excepting modular courses), or within the first 7 calendar days of the course for summer and modular courses, of his or her intention to participate in religious holidays which do not fall on state holidays or periods of class recess. For additional information, please visit: <http://catalog.unlv.edu/content.php?catoid=6&navoid=531>.

**Transparency in Learning and Teaching** – The University encourages application of the transparency method of constructing assignments for student success. Please see these two links for further information:  
<https://www.unlv.edu/provost/teachingandlearning>  
<https://www.unlv.edu/provost/transparency>

**Incomplete Grades** – The grade of I—Incomplete—can be granted when a student has satisfactorily completed three-fourths of course work for that semester/session but for reason(s) beyond the student's control, and acceptable to the instructor, cannot complete the last part of the course, and the instructor believes that the student can finish the course without repeating it. The incomplete work must be made up before the end of the following regular semester for undergraduate courses. Graduate students receiving "I" grades in 500-, 600-, or 700-level courses have up to one calendar year to complete the work, at the discretion of the instructor. If course requirements are not completed within the time indicated, a grade of F will be recorded and the GPA will be adjusted accordingly. Students who are fulfilling an Incomplete do not register for the course but make individual arrangements with the instructor who assigned the I grade.

**Tutoring and Coaching** – The Academic Success Center (ASC) provides tutoring, academic success coaching and other academic assistance for all UNLV undergraduate students. For information regarding tutoring subjects, tutoring times, and other ASC programs and services, visit <http://www.unlv.edu/asc> or call 702-895- 3177. The ASC building is located across from the Student Services Complex (SSC). Academic success coaching is located on the second floor of the SSC (ASC Coaching Spot). Drop-in tutoring is located on the second floor of the Lied Library and College of Engineering TEB second floor.

**UNLV Writing Center** – One-on-one or small group assistance with writing is available free of charge to UNLV students at the Writing Center, located in CDC-3-301. Although walk-in consultations are sometimes available, students with appointments will receive priority assistance. Appointments may be made in person or by calling 702-895-3908. The student's Rebel ID Card, a copy of the assignment (if possible), and two copies of any writing to be reviewed are requested for the consultation. More information can be found at: <http://writingcenter.unlv.edu/>.

**Rebelmail** – By policy, faculty and staff should e-mail students' Rebelmail accounts only. Rebelmail is UNLV's official e-mail system for students. It is one of the primary ways students receive official university communication such as information about deadlines, major campus events, and announcements. All UNLV students receive a Rebelmail account after they have been admitted to the university. Students' e-mail prefixes are listed on class rosters. The suffix is always [@unlv.nevada.edu](mailto:@unlv.nevada.edu). **This class is not using WebCampus!**

**Library Resources** — Students may consult with a librarian on research needs. For this class, the subject librarian is [https://www.library.unlv.edu/contact/librarians\\_by\\_subject](https://www.library.unlv.edu/contact/librarians_by_subject). UNLV Libraries provides resources to support students' access to information. Discovery, access, and use of information are vital skills for academic work and for successful post-college life. Access library resources and ask questions at <https://www.library.unlv.edu/>.

**Final Examinations** — The University requires that final exams given at the end of a course occur at the time and on the day specified in the final exam schedule. See the schedule at: <http://www.unlv.edu/registrar/calendars>.

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