GEOL 332 Course Syllabus
Sedimentary Geology
(4 Units)

Humboldt State University
Department of Geology
Arcata, CA 95521

Fall 2016

Lecture: CRN 44819 Section 10 TR 17:00 – 18:20 Founders Hall 25
Labs: CRN 44820 Section 11 R 11:00 – 13:50 Van Matre 110
CRN 44821 Section 12 W 14:00 – 16:50 Van Matre 110

Instructor: Jason Robert Patton **Email:** Jason.Patton@humboldt.edu

Office: Founders Hall 136 **Phone:** 707.826.3923

Course Website: http://www.science.earthjay.com/?page_id=4373

Office Hours: Tuesday 13:00 – 15:00

Prerequisites: GEOL 109, General Geology **Field Trips:** Two Weekend Field Trips

Required Textbook:

Prothero, D.R. and Schwab, F., 2013. *Sedimentary Geology*, 3rd ed., W.H. Freeman, New York, NY, 500 p. ISBN-13: 978-1429231558 ISBN-10: 1429231556

Recommended Reading:

- Hsü, K.J., 2004. Physics of Sedimentology, 2nd ed., Springer, Berlin, 240 p. ISBN 978-3-662-09296-5 (ebk) ISBN 978-3-540-20620-0 (hbk) ISBN 978-3-642-05832-5 (sbk)
- Coe, A.L. (ed.), 2003. *The Sedimentary Record of Sea-Level Change*, Cambridge Univ. Press, 288 p. ISBN-13: 978-0521538428 ISBN-10: 0521538424
- Nittrouer, C.A., Austin, J.A., Field, M.E., Kravitz, J.H., Syvtski, J.P.M>, and Wiberg, P.L., 2007. Continental Margin Sedimentation: From Sediment Transport to Sequence Stratigraphy, Wiley-Blackwell, Malden, MA, 560 p. ISBN: 978-1-4051-6934-9

Contact: Please don't hesitate to email me with any questions, comments, or concerns. I welcome any feedback or suggestions. The best way to contact me for any reason is by sending an email directly to my HSU email Jason.Patton@humboldt.edu

Fulfills the following requirements: (1) the upper division geology core course for the Bachelor of Science degree with a major in Geology and (2) an option course for a minor in Geology.

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Required Supplies: three ring binder for class handouts including blank paper for drawing illustrations and notes during class; colored pencils for making illustrations; and the following (field gear = FG; office gear = OG):

1. Waterproof field notebook (available from HSU Bookstore) and hard lead pencil with good quality eraser (FG)
2. Ruler marked in English and metric (SI) divisions (FG, OG)
3. Hand lens (10X is best) (FG, OG)
4. Sturdy walking shoes (I will not let you go on field trips without good hiking/working shoes/boots—no kidding!) (FG)
5. Daypack/backpack (FG)
6. Digging tool (sed. rock hammer would work) (FG)
7. Sweater, cap, and rain gear (FG)
8. Sample bags (plastic freezer bags are good) (FG, OG)
9. Indelible marker (FG, OG)

Course Description:

Identification and interpretation of sedimentary rocks and structures. Application of stratigraphic and dating methods in the earth sciences. Impact of climate and geologic processes on depositional patters and facies analysis.

Communication

The instructor will send announcements via email to the student's humboldt.edu email addresses. Please contact the instructor only via the email listed above. The instructor will respond at their earliest convenience. Students will exchange contact information with their peers on the first day of classes. This is important so that if anyone misses a class, they can contact more than one of their peers to go over the notes and lab materials.

Course Student Learning Outcomes:

- Be able to use sedimentologic and stratigraphic methods and concepts to understand application of scientific method to historical and experimental sciences.
- Demonstrate understanding of "deep time" in geology, methods of estimating relative and absolute ages of rocks, structures and stratigraphic units, and use geologic maps and field observations to interpret regional stratigraphic successions and geologic history.
- Apply basic classifications of sedimentary rocks, structures, stratigraphic units and use geologic maps to interpret regional stratigraphic successions and geologic history
- Communicate effectively in written and oral forms, and demonstrate competence in using research resources including electronic data.

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Humboldt State University Student Learning Outcomes:

HSU graduates will have demonstrated:

- Effective communication through written and oral modes.
- Critical and creative thinking skills in acquiring a broad base of knowledge and applying it to complex issues
- Competence in a major area of study.
- Appreciation for and understanding of an expanded world perspective by engaging respectfully with a diverse range of individuals, communities and viewpoints.

HSU graduates will be prepared to:

- Succeed in their chosen careers.
- Take responsibility for identifying personal goals and practicing lifelong learning.
- Pursue social justice, promote environmental responsibility, and improve economic conditions in their workplaces and communities.

Grading

Late Assignments are NOT ACCEPTED.
There are NO EXTRA CREDIT opportunities.

Your final grade will be comprised of:

Summary	Points
Participation	100
Course Notes and Illustrations	100
Labs	390
Weekend Field Trip Report	100
Research Paper	140
Video Project	70
Lab Final Exam	100
Total	1000

There are 1000 points available and grades are assigned by the percentage of total points as follows:

1000-940=A 939-900=A- 899-870=B+ 869-830=B 829-800=B-
799-770=C+ 769-700=C 699-670=D+ 669-600=D <599=F

Classroom Conduct

Side conversations among classmates are disrespectful and disruptive to the instructor and your fellow students. Questions or comments about the course material are welcome at all times but should be approached in a respectful manner.

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Electronic and Smart Devices

The use of cell phones, iPods, or other items that may distract you, your instructor, or your classmates are not permitted during class. All such devices must be turned off. Failure to comply is grounds for removal from classroom, a failed grade, or disciplinary action.

Name changes, gender identity and pronouns

If the name or gender on your HSU email account or Moodle name is different than the one you are and are called by, please tell me.

Academic Honesty

You are encouraged to work together to review notes from lectures, to work on problems from the text, and to formulate ideas for any take-home assignments. However, all work you turn in must be your own independent, original work.

In the event that any work is copied from another student, zero credit will be given to all students involved (regardless of who copied from whom).

Any sources of information used in your written work must be referenced (regardless of whether the material was copied word-for-word). This includes your text book and all internet sources (reference these by including the name and URL). Any work including un-referenced material from another source (regardless of whether it was copied word-for-word) will be given zero credit.

More information is available at:
http://www.humboldt.edu/studentrights/academic_honesty.php

Academic Misconduct: Cheating, plagiarism, collusion, abuse of resource materials, computer misuse, fabrication or falsification, multiple submissions, complicity in academic misconduct, and/ or bearing false witness will not be tolerated. Violations will be dealt with according to the procedures and sanctions proscribed by Humboldt State University. Students caught plagiarizing or cheating on exams will receive an "F" in the course.

University Policies

Students with Disabilities: Persons who wish to request disability-related accommodations should contact the Student Disability Resource Center in the Learning Commons, Lower Library, 826-4678 (voice) or 826-5392 (TDD). Some accommodations may take up to several weeks to arrange. http://www.humboldt.edu/disability/

Add/Drop policy: Students are responsible for knowing the University policy, procedures, and schedule for dropping or adding classes.http://www.humboldt.edu/~reg/regulations/schedadjust.html

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Emergency evacuation: Please review the evacuation plan for the classroom (posted on the orange signs), and review http://www.humboldt.edu/emergencymgmtprogram/evacuation_procedures.php for information on campus Emergency Procedures. During an emergency, information can be found campus conditions at**: 826-INFO** or www.humboldt.edu/emergency

Academic honesty: Students are responsible for knowing policy regarding academic honesty: http://www.humboldt.edu/studentrights/academic_honesty.php

Academic dishonesty is willful and intentional fraud and deception to improve a grade or obtain course credit. It includes all student behavior intended to gain unearned academic advantage by fraudulent and/or deceptive means.

Attendance and disruptive behavior: Students are responsible for knowing policy regarding attendance and disruptive behavior: http://www.humboldt.edu/studentrights/attendance_behavior.php

Additional University Policies: See the link below for the official University policies on a) academic honesty, b) attendance and disruptive behavior, c) complaints against HSU employees, d) student code of conduct, e) animals in classrooms, f) adding/dropping classes, g) campus emergency procedures, h) counseling and psychological services, i) student disabilities resource center, j) financial aid office, k) academic and career advising center.

http://www2.humboldt.edu/academicprograms/syllabus-addendum-campus-resources-policies

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Class and Lab Schedule

	Lecture				Lab			
Week	Day	Date	Topic	Reading	Day	Date	Topic	Equipment
1	T	8/23/2016	Introduction to the course	Syllabus	W	8/24/2016	Introduction to the labs	Office Lab Gear**
	TR	8/25/2016	Geologic Time and Sedimentary Rocks	CH 1	TR	8/25/2016	Introduction to the labs	Office Lab Gear
2	T	8/30/2016	Sediments and Sediment Transport	CH 3	W	**8/31/2016**	**Field Trip: Mad River Beach**	Field Gear*
	TR	9/1/2016			TR	**9/1/2016**	**Field Trip: Mad River Beach**	Field Gear
3	T	9/6/2016	Sedimentary Structures	Ch 4	W	9/7/2016	Sedimentary Rock Identification (1)	hand lenses
	TR	9/8/2016			TR	9/8/2016	Sedimentary Rock Identification (1)	hand lenses
4	T	9/13/2016	Terrestrial Environments	CH 8	W	**9/14/2016**	**Field Trip: Mad River**	Field Gear, Brunton
	TR	9/15/2016			TR	**9/15/2016**	**Field Trip: Mad River**	Field Gear, Brunton
5	T	9/20/2016	Coastal and Marine Environments	CH 9, 10	W	9/21/2016	Sedimentary Rock Identification (2)	hand lenses
	TR	9/22/2016	**Research Paper Prospectus Due**		TR	9/22/2016	Sedimentary Rock Identification (2)	hand lenses
6	T	9/27/2016	**no class**		W	**9/28/2016**	**no lab**	
	TR	9/29/2016	**no class**		TR	**9/29/2016**	**no lab**	
7	T	10/4/2016	Siliciclastic Rocks	CH 5, 6	W	**10/5/2016**	**Weekend Field Trip (10/6-9)**	Field Gear
	TR	10/6/2016			TR	**10/6/2016**	**Weekend Field Trip (10/6-9)**	Field Gear
8	T	10/11/2016	Carbonate Rocks	CH 11	W	**10/12/2016**	**Field Trip: Mad River Slough**	Field Gear
	TR	10/13/2016			TR	**10/13/2016**	**Field Trip: Mad River Slough**	Field Gear

	Lecture				Lab			
Week	Day	Date	Topic	Reading	Day	Date	Topic	Equipment
9	T	10/18/2016	Authigenic and Biogenic Rocks	CH 7, 13, 14	W	**10/19/2016**	**Field Trip: Centerville Beach**	Field Gear, Brunton
	TR	10/20/2016			TR	**10/20/2016**	**Field Trip: Centerville Beach**	Field Gear, Brunton
10	T	10/25/2016	Lithostratigraphy and Biostratigraphy	CH 15, 16	W	10/26/2016	Particle Size Analysis	Office Lab Gear
	TR	10/27/2016			TR	10/27/2016	Particle Size Analysis	Office Lab Gear
11	T	11/1/2016	Correlation	CH 17	W	**11/2/2016**	**Field Trip: Big Lagoon**	Field Gear
	TR	11/3/2016			TR	**11/3/2016**	**Field Trip: Big Lagoon**	Field Gear
12	T	11/8/2016	Guest Lecture: Carbonate Environments	CH 12	W	11/9/2016	Well Log Correlation	Office Lab Gear
	TR	11/10/2016			TR	11/10/2016	Well Log Correlation	Office Lab Gear
13	T	11/15/2016	Guest Lecture: Geobiology	Suppl. Reading	W	11/16/2016	Ichnofossil Rock Identification	hand lenses
	TR	11/17/2016			TR	11/17/2016	Ichnofossil Rock Identification	hand lenses
NA	T	11/22/2016	**Thanksgiving**		W	11/23/2016	**Thanksgiving**	
NA	TR	11/24/2016	**Thanksgiving**		TR	11/24/2016	**Thanksgiving**	
14	T	11/29/2016	Geochronology	CH 18	W	11/30/2016	Turbidite Correlation	Office Lab Gear
	TR	12/1/2016			TR	12/1/2016	Turbidite Correlation	Office Lab Gear
15	T	12/6/2016	**Presentations**	NA	W	12/7/2016	**Lab Final**	
	TR	12/8/2016	**Presentations**		TR	12/8/2016	**Lab Final**	
	T	12/13/2016	**Paper Due**	5:00 PM				

* Field Gear is listed on the syllabus

** Office Lab Gear is listed on the syllabus

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Lectures: Lectures will consist of presentations and discussions led by the professor. There will also be additional peer review papers assigned during the semester that will be discussed during lectures. Papers will be provided one week prior to the day that they are discussed in class.

Reading: The readings are primarily from Prothero and Schwab, *Sedimentary Geology*. This reading is essential to your comprehension of the material in this course and will be a key to your success. In addition, there will be at least one peer review journal article associated with the lab material. The student is expected to read the assignment before class/lab.

Labs: Each week there will be a lab that will incorporate both analog and digital manipulation of data. Specialized software will either be available on campus or freely downloadable from the internet. The labs are due by the beginning of lab the following week, except for the turbidite correlation lab (the due date will be provided). The lab and lecture material may not coincide in subject material for various logistical reasons. Each lab will include a written report submitted electronically. These lab reports will be 3-5 pages long and typed in font size 12 and double spaced. As for all documents submitted electronically to my HSU email address, the filename needs to include the course number, the subject, and your last name, in the following format: GEOL332_Lab_01_lastname.docx (or *.pdf). Each lab report should have at least one figure or table, if not otherwise described in the assignment. As for all documents submitted electronically, each figure and table or plot needs to have a caption describing the figure, table, or plot.

Lab Final Exam: The lab final is worth 100 points. The exam is a mix of multiple choice, true/false, short answer, and essay questions based on the lectures, labs, homework, and course reading. Be sure to spend time reviewing your rock identification labs!

Geologic Time Scale: Students are required to commit to memory the major features of the Geological Society of America Geologic Time Scale (linked on the course website).

Participation: Students will be given up to 100 points for participating in class. Full credit will be given if students attend regularly, ask and answer questions in class, and participate in class discussion. When students conduct in behavior that is not respectful (as outlined in the syllabus), they jeopardize their participation grade.

Missing an exam: Make-up exams should be arranged for in advance. In the event of an emergency or sudden illness that prevents you from attending the exam, you must contact me

as soon as possible and arrange a time for the exam to be completed before the end of the semester. If you miss an exam (and do not contact me to make it up) or if you arrange a makeup that you do not take, you will receive a zero for that exam.

Course Notes and Illustrations: Each lecture may include handouts and several on-board illustrations that relate to the specific topic being discussed for that day. You will use your notebook to copy and label any illustrations. You are **required to have a three-ring binder** containing these handouts and your notes taken during every class. The notebooks will also contain all of your course materials (labs, syllabus, exams, etc.). Your material must be well organized within the notebook. These will be evaluated during the lab final. Credit of 100 points is given for careful reproduction of the illustrations including any notes, labels, and graphs. Don't miss out on this opportunity for 100 points (10% of your grade).

Library Research: There is one library research assignment that is worth 140 points. The report will be typed in font size 12, double spaced, and turned in electronically by 5 PM, Dec. 13, 2016. The report will be 6-10 pages long (5 ½ pages does not count). The paper will include between 1 and 3 figures and 1 and 3 data plots or tables. Each table, plot, or figure needs to have a caption describing the table, plot, or figure. The filename needs to include the course number, the subject, and your last name, in the following format: GEOL332_sediments_lastname.docx (or *.pdf). The research topic needs to be related to subjects covered in class. Students must use at least three peer review journal articles as references for their research paper. **An outline for the paper is due by the beginning of class on Thursday 9/22/16**.

Field Trips: We will have two optional weekend field trips.

The first field trip is for the Friends of the Pleistocene trip to southern California from **10/6-9/16**. Students will need to provide their own transportation. Students will be required to write a 3-5 page report from their observations during the field trip. For students that cannot attend the first field trip, they will need to also write a 3-5 page report, but this will be based upon material covered in the Field Trip Guidebook. Because of this field trip, there will be no labs held for the 7th week (10/5 & 10/6). This report will be worth 30 points just like other labs (this report is lab #6). Both (field trip and optional) reports will be typed in font size 12, double spaced, and turned in electronically within 2 weeks of the field trip end. The filename needs to include the course number, the subject, and your last name, in the following format: GEOL332_field_trip_FOP_lastname.docx (or *.pdf). The paper will include between 1 and 2 figures and 1 and 2 data plots or tables. Each table, plot, or figure needs to have a caption describing the table, plot, or figure.

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The second field trip is to the Cape Sebastian region of coastal Oregon and Point St. George region of coastal California on **10/15-16/16**. The Geology Department will provide transportation for the second field trip. Students will collect data in the field and work in teams of about three students. Each student will turn in a field trip report based upon their personal observations and their team's data and notes. Students who cannot make the Cape Sebastian field trip will also submit a research paper, for the same credit as the field trip report. The subject matter for this optional research paper must be related to coastal margin sedimentation. Both (field trip and optional) reports will be typed in font size 12, double spaced, and turned in electronically within 2 weeks of the field trip end. The field trip reports will be 4-8 pages long. The filename needs to include the course number, the subject, and your last name, in the following format: GEOL332_field_trip_coast_lastname.docx (or *.pdf). The (field trip and optional) reports are worth 100 points. The paper will include between 1 and 3 figures and 1 and 3 data plots or tables. Each table, plot, or figure needs to have a caption describing the table, plot, or figure.

There are also 5 field trips that are conducted during the week. Each field trip will involve collecting data, interpreting those data, and submitting a report. These weekday field trips contribute to the lab portion of the course grade.

Video: Students will prepare an educational video to be presented in class during the final week. Students will work in teams of about three students. The videos will be 4-7 minutes in length. The videos will be posted online, so ensure to document all material that is used (to ensure copyright laws are obeyed). References and credits at the end of the video do not count towards the required time length. Students will review others' videos in class. The grade, worth 70 points, includes the video (students need to demonstrate they worked as a team, as evidenced in the credits), the presentation of the video in class, and the review of others' videos in class. Videos must include some example of a sedimentary process actively occurring in the "wild," viewed and video recorded by the students. Start your semester off right by starting to record sedimentary processes everywhere you go (e.g. the beach, the river, etc.).

Electronic Presentations: All electronic presentations will be posted to the website for this course. Please use these presentations to review course material and to prepare for your exams and reports.

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Class will start on time at 5:00 PM and the Lab will start on time at either 11:00 AM or 2:00 PM (depending upon your section). You are responsible to be present for and be attentive to all the material covered in class. If you need to leave the class early, please let me know before the class starts. Lateness is unprofessional and chronic lateness is unacceptable. During field trips, the bus will leave on the hour. Missing the bus means missing the field trips. Rare lateness to class is completely understandable, but chronic lateness will result in a reduced attendance and participation grade.

This is a college-level science class, and will require a commitment of your time outside of class. This at-home time will enable you to digest the material we cover in class and help when you are asked on the exams to apply these concepts to different problems and applications.

You will spend 12 to 18 hours per week on course material outside of class, on average. You are encouraged to set aside a specific time each week outside of class devoted solely to each course:

- Reviewing lecture notes and in-class exercises each week
- Reading the textbook
- Studying for the exam

Note that 12 hours per week at home is the average minimum to pass. Some students may require more time at home just to pass; for some in this course that may be enough to get an A. A student who is very attentive in class, asks questions, and takes careful notes will need less at-home time.

Absences: It is extremely difficult to do well in this class without attending all the lectures. I understand there will be an occasional absence due to illness or emergency, however I consider more than two absences per semester excessive. If you do miss a class:

1. Obtain the course material online (PowerPoint slides, extra reading, and handouts). The slides will include information about any homework or in-class exercises that were assigned. Most assignments and handouts referenced by the slides will be in your handouts.
2. Next, try to obtain a copy of lecture notes from a classmate since there are many things we cover that are not spelled out directly on the slides or handouts. This is the most important step.
3. Read the required reading covering the material you missed.
4. After this, feel free to contact me by email with any questions.

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Final grade active attendance boost: If your final course grade after rounding to the nearest whole number is within 1 percentage point of a grade transition (C to C+, D to C, A- to A, etc.) I will give you the boost needed to obtain the higher grade if you have actively attended most classes and succeeded in many of the in-class pop quiz questions. More than 2 unexcused absences is considered excessive and will disqualify you from this opportunity. Conduct not in accordance with that outlined in the syllabus will also prevent you from receiving this bonus.

Computer skills: This class will require computer use outside of class. Activities involving the 4 skills listed below will be included throughout the semester. In addition, you will be expected to check Moodle and your email regularly for announcements.

1. Send and receive email from your Humboldt State University email account. Please only send email to my HSU email address.
2. Open a web browser and access a web page if you are given the web address.
3. Access the course material online (handouts, slides, announcements, etc.).
4. Create, edit, and export Microsoft word (.doc or .docx), Microsoft Excel (.xls or .xlsx) and Adobe .pdf documents. We will also be using specialized software to create, edit, and export files of other formats.

Groups: This class will conduct lab work in groups. Students are encouraged to collaborate by collecting data, taking notes, and sharing these data and results. Some labs will be turned in as a group and for some labs, students are required to turn in individual reports and assignments. See the notes about academic honesty in the Syllabus.

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