

GEOL 435 Course Syllabus
Geology Field Methods III
(1 Unit)

Humboldt State University
Department of Geology
Arcata, CA 95521

Spring 2017
CRN 24888 Section 1

Exercise 1: Trinidad Beach	Sat 4/15	08:00 – 14:00
Exercise 2: Redwood Creek	Sat 4/29	08:00 – 16:00
Exercise 2: College Cove	Sun 4/30	08:00 – 16:00

Instructor: Jason Robert Patton

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Course Website: http://www.science.earthjay.com/?page_id=3808

Office Hours: Tuesday 1:00 PM – 3:00 PM

Field Trips: Three Weekend Field Trips

Prerequisites: GEOL 235, 306, 312, 334, 335; GEOL 314 recommended

Required Reading: Coe, A.L. *Geological Field Techniques*. Wiley-Blackwell The Open University, 1st ed., 337 pp., 2010.

Suggested Reading: Hollocher, K. *A Pictorial Guide to Metamorphic Rocks in the Field*. CRC Press, 1st ed., 320 pp., 2014. ISBN: 978-1-138-02630-8 (Paperback) ISBN: 978-1-315-76141-1 (eBook PDF)

Required Supplies: colored pencils for making illustrations; field notebooks for taking notes during our field trips; hand lens; protractor-ruler (see attached longer list)

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 with GEOL 435 in subject line!

Fulfills the following requirements: the Department of Geology upper division core for the Bachelor of Science or Bachelor of Arts degree with a major in Geology

Course Description: Principles and methods of field mapping, in preparation for geology field camp: use of photo imagery; preparing notes, illustrations, and reports; using field instruments.

Time/Place: This 1-unit course consists of one 6-hour half -day field exercise and two full day field exercises. The schedule below shows the days we will be having these activities -- they are Saturdays and Sunday in April. I have coordinated with other faculty to avoid field trip conflicts. These will all be local field exercises. There will be no overnight trips, no camping

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Our full weekend field days will generally be long ones; typically we will leave for the field at 8 AM and be out till 4 PM. You will need to arrange your commitments accordingly. When leaving campus, we won't wait longer than 5 min for you if you're late.

Be prepared to hike on steep, uneven, and sometimes wet terrain, and to get dirty, sandy, wet, i.e., prepare for fun. Come prepared to work outside regardless of the weather. Wear sturdy shoes or hiking boots and a hat, sweatshirt, rain jacket, or whatever clothing you need to work comfortably outside for the duration of the field exercise. Wet weather gear is essential – don't show up on a rainy day wearing only a sweatshirt! Since we will be working along beaches outcrops waterproof boots (rubber is best) are essential.

You will need to bring all the necessary field gear with you – we can't supply forgotten items.

Important: To get credit for the course, you need to attend all of the field exercises. There's really no opportunity to make up a missed exercise on another date, so if you know you can't make one of the dates, you should drop the class.

Logistics:

I want this class to be fun, enlightening and productive for you (the student) and me (the teacher). We can achieve this goal by cooperating and working as a team. Let me know of concerns, problems, as well as successes in the class. Please do not hesitate to ask questions in class, or to stop by my office hours with questions or comments. I will make every effort to be in my office during my posted office hours or will post a note indicating where I can be found.

We will concentrate on developing the skills important for success at field camp, especially 1) rock description; 2) locating yourself on a map or aerial image; 3) effective use of the Brunton pocket transit, especially for taking bearings, strike & dip, fold axis trends, etc.; 4) mapping geology; and 5) improving your ability to see & interpret what you see.

I will be spending a large amount of time in the field with you, and will be available for consultation during my office hours, but you should expect to spend additional time in the office (and possibly in the field) completing assignments without my supervision.

In the field you will be taking notes, describing and sketching outcrops and relations, making attitude measurements, locating yourself on maps and aerial photos, and mapping rock units. At home or in the office you will use this data to prepare rock and outcrop descriptions and outcrop and geologic maps.

I expect the work that you do to be professional: that is, neat and careful. **Everything that you turn in should be well-organized, tidy, and readable.** Sloppy, scratchy work is unacceptable. This includes your original field notes, a copy of which you will turn in with each exercise.

Per the CNRS-HSU Field Trip policy, no alcoholic beverages or chemical substances except personal prescription medication shall be transported in any state/university vehicle or personal private vehicle used in support of a university sponsored activity.

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Course Learning Outcomes:

- Identify and describe different kinds of geologic contacts; collect geologic information to interpret the nature of contacts.
- Describe and interpret rocks and structures such as those found in metamorphic rocks using appropriate terminology; collect field measurements in order to discriminate between alternative interpretations of geologic features.
- Represent geologic relations accurately through construction of a detailed geologic map.
- Produce a report and final map summarizing geologic conditions.

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:

<u>Summary</u>	<u>Points</u>
Exercise 1	250
Exercise 2	375
<u>Exercise 3</u>	<u>375</u>
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

Communication:

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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. Also, students will need to interact during the online portion of this course and having other student's email addresses will facilitate this.

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.

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.

You may not leave the room during an exam or quiz unless you are ready to turn in your finished exam.

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:

Student Code of Conduct: Students are responsible for following the standards described in the Student Code of Conduct. https://www2.humboldt.edu/studentrights/sites/default/files/images/code_of_conduct.pdf

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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>

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

*** Please note that this document is informational and subject to change.**

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Field Trips

We will have three one-day weekend field trips (4/15, 4/29, 4/30). Each student will turn in a field trip report. The report requirements are outlined in the handouts for each lab.

Lab 1: Trinidad Beach (1 day). Our objective in this exercise is to make a reasonably detailed geologic map of the rock units exposed in the cliffs behind Trinidad Beach from the small sea-arch at the north end to Trinidad Head at the south end.

Field Trip Objectives:

1. to develop your skills at locating yourself on a topographic map, identifying rock units, interpreting structure, and making a geologic map
2. to improve your field description and note-taking skills, specifically
 - describing rocks
 - sketching and describing outcrops

Lab 2: Redwood Creek (1 day). The field area encompasses coastal bluffs between the mouth of Redwood Creek and the rocky point approximately 1500 ft north of the mouth.

Field Trip Objectives:

1. To develop and refine your field skills in:
 - observation and rock and sediment description
 - sketching and describing outcrops
 - locating yourself and in measuring attitudes, fold axes, and lineations
 - simple geologic mapping

Lab 3: Omenoku Point & College Cove (1 day). The purpose of reconnaissance geologic mapping is to quickly get a general picture of the rock units and geologic structure of a fair- sized area.

Field Trip Objectives:

1. to develop your skills at locating yourself on a topographic map, identifying rock units, interpreting structure, and making a geologic map
2. to gain experience in reconnaissance mapping

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Materials Needed

Necessary Field Gear

- Geology hammer (Estwing heavier model best)
- Hand lens (10X)
- Rite-in-the-Rain 4-5/8" x 7" field notebook: stapled paperback #301, 311, or 351; or hardbound # 300, 310 or 350. I recommend hardbound if you can afford it.
- Map case or some method for carrying your writing equipment (pencils, rulers) and maps and air photos
- Non-magnetic clipboard with cover (not needed if you have a map case that serves as one)
- Brunton pocket transit (will be checked out from stockroom)
- Pencils 2H and 3H (automatic ones OK)
- Colored pencils, set of 12 (medium hardness or soft; best if they have thin rather than fat lead, and should not be very water- soluble)
- Pencil sharpener or sandpaper
- Soft eraser: white plastic best for pencil (I prefer retractable erasers)
- 6" transparent plastic protractor-rulers: C-Thru W-37 (10 and 20 scale), W-38 (10 and 50 scale), W-43 (metric scales); I prefer the type with the center of the protractor that is on the edge of the ruler.
- Marking pen (Sharpie or El Marko type for marking rock samples) and plastic bags for samples
- Canteen or water bottles--most people take 2 -3 quarts
- Pocket knife
- Backpack for rock samples, lunch, raingear
- Bandages, sun block
- Leather work gloves or truckers gloves (optional, but I always carry a pair; they're very valuable if you have to fight your way through blackberry vines and heavy brush, or for scrambling up sharp rock slopes)
- Camera (optional)

Field Clothing

- Sturdy waterproof field boots with good tread (you need something that will keep your feet warm, dry, and protected, and give you good traction and ankle support. We will be walking through muddy and wet areas, and on rugged slopes.) Rubber boots are desirable, especially since we'll be working along beaches and having to deal with tides and streams. Sandals are NOT acceptable.
- Rain gear that will protect you for most of a day, even if it's windy -- poncho, or preferably rain suit. Umbrellas won't cut it, and won't leave your hands free.
- Sweatshirt and/or warm jacket. I recommend a sweatshirt for layering under a rain jacket or shell.
- Sturdy and comfortable field pants -- you need something that will 1) keep you warm and 2) protect your skin against falls, brush, stickers. Pants should be loose enough that you can climb or scramble easily in them.
- Hat with brim or bill -- not only to provide warmth and skin protection, but also to shade your compass and your map.