

ORIGINAL

General Education Course Proposal

NATURAL DISASTERS AND EARTH RESOURCES

Proposed Course: GEOL 1 Units 4

Department: GEOLOGY School: NATURAL SCIENCES

GE Category (Indicate one category only):

Foundation: A1; A2; A3; B4
Breadth: B1 x; B2; C1; C2; D; E
Integration: B; C; D; International/Multicultural

Existing Course x; Revised Course; New Course
Course Included in Current GE Program x

New courses require the Undergraduate Course Proposal form in addition to this form.
Revised courses require the Undergraduate Course Change Request in addition to this form.

Proposed catalog description: Limit course description to 40 words using succinct phrases. Include prerequisites, limitations, lecture/lab hours. Indicate former course number, e.g., (Former Biol 105)

Prerequisite: Math 45 or second-year high school algebra. Processes and materials which produce the different geologic resources and hazards (earthquakes, volcanoes, floods, landslides). Plate tectonic theory (including continental drift) as the unifying model to explain geologic phenomena. Emphasizes the relationship between geology and humans. General Education BREADTH, Area B1. (3 lecture, 2 lab hours; optional field trips) (CAN GEOL 2)

Enrollment limit per section: 50-150 (dependent on room size) Note: labs restricted to 20
Expected number of sections per semester - Year 1 3; Year 3 3

Attachments:

- 1. A statement presenting the ways in which this course meets the Specifications provided in the appropriate section of the General Education Policy as well as in the Policies for Inclusion and Evaluation of General Education Courses.
2. A statement of elements common to all sections of this course, identifying content, objectives, required student activities, grading policy, representative texts, and an approximate schedule for the course. Required student activities include such things as papers, research projects, homework, laboratory and/or studio performance, recitations, participation, attendance, and exams.
3. A typical syllabus for a particular offering of the course.
4. Any special cost factors associated with this course.

Approval for Inclusion in General Education

Department Chair: Stammser 8/25/98
School Curriculum Committee: Stammser 9/2/98
Dean: Stanley M. Zogh 9/2/98
General Education Subcommittee: Peter Amund 12/15/98
Associate Provost: Brant Keho 12/22/98

ATTACHMENTS:

1.0 Concurrence with Specifications and Policies for Inclusion:

In accordance with Executive Order 595 for Area B1-Physical Science, Geology 1 (3 lecture hours, 2 lab hours) integrates chemical, physical and mathematical principles to examine the processes and materials that form the physical Earth, and the methods used to develop and test hypotheses used. In particular, the course focuses on processes and materials that do and have significantly affected human existence and development.

1.0.1

Specification 1, that the course “must provide instruction in the fundamental principles and methods of science being studied, and the development and testing of hypotheses” is met by the following:

A) Throughout, the course uses the fundamental principles of chemistry and physics to explain Earth’s materials and processes. For instance, the formation of soils is discussed in terms of 5 chemical weathering processes that include oxidation, reduction, hydration, hydrolysis, leaching, and partial solution. Faulting and earthquakes includes discussion of the physical behavior of materials including elastic-plastic-brittle limits, elastic propagation of compressional and shear waves, acoustic amplification and attenuation, and structural resonance. The course assumes that the students have satisfied their high school science and math requirements, and develops physical/chemical principles as needed using appropriate amounts and levels of math. Lectures and labs are devoted to these topics and procedures (See syllabus).

B) The course examines the development and testing of various hypotheses of Earth Science including the age origin of the planet; the formation of oceans and continents (plate tectonics); cause and prediction of earthquakes and volcanoes, floods and landslides; origin and distribution of energy and mineral resources; problems of water contamination and supply; soil problems and conservation measures, and the physical significance of Earth’s minerals and rocks. In each, methods of data collection and analysis are examined, and the process of development and overturning of various hypotheses is examined where appropriate. Lectures and labs are devoted to these topics and procedures (See syllabus); for instance, two lectures and 1 lab are devoted to the data used in the formation of the theory of plate tectonics and continental drift.

1.0.2

Specification 2 states that “Instruction in the Physical Sciences must involve understanding and active exploration of the fundamental principles which govern the materials of the physical universe as well as the distribution of those materials and processes applicable to them, together with an understanding of and ability to employ the experimental and mathematical methods used in science.”

A) Geology 1 meets this Specification through a combination of lab and lecture topics as discussed in section 1.0.1 above. All of the labs in this course involve gathering data (descriptive or measurements), and forming interpretations. The first half of the labs is devoted to gaining an understanding of Earth’s rocks and soils by determining their chemical/mineralogical composition through a series of tests. By combining analyses of texture and composition, students can propose models for the materials’ formation.

1.0.3

Specification 3 states that “General education courses in the Physical Sciences must engage students in understanding the fundamental principles and laws of Physical Science, exploring the analytical and quantitative methods of inquiry, and clearly demonstrating the use of the scientific method. Students should have clear insight in to what science is, its methods, and its limits of inquiry.

A) Geology 1 meets this specification as described above in 1.01 and 1.02. A broad overview of the scientific method is given in the beginning of the semester, and several examples are used. The course examines numerous scientific and quasi-scientific debates ranging from Copernicus and Aristotle, to present debates regarding the San Louis Drain, groundwater quality regulations, nuclear power, global change, and the relationship between foreign policy and energy resources. We closely follow the development of the scientific revolution of plate tectonics, and how the theory was, and is, assembled from evidence is widely disparate fields of science, and examine the formation and use of minerals that are both beneficial and hazardous such as lead, asbestos, and arsenic, and discuss the evidence used in their regulation.

The labs, which comprise 25% of the course grade, emphasize hands-on inquiry and observations. Beginning with Earth materials, the students correlate chemical and physical properties with uses and hazards. Other topics include erosion, volcanic hazards, geological mapping, and making an earthquake machine. Local field trips allow the students to develop their own models of how the Fresno area evolved geologically building on basic principles and testing their hypotheses through geologic relationships.

1.0.4

Specification 4 states that the "University requires that its general education instruction in Physical Science utilize and emphasize the physical principles and math necessary for complete understanding of the analytical techniques utilized in scientific inquiry."

A) Geology 1 meets this specification as explained in section 1.0.1 A. Math is used in terms of exponents, calculations of density, seismic velocity, slope stability, rates of change, flood frequency, earthquake return time, movement of subsurface water, and concentration of contaminants and ore yield.

1.0.5

How Geology 1 meets the redundant specifications in 5a, 5b, and 5c, 5d is addressed in sections 1.01, 1.02, 1.03, and 1.04. Specification 5e--"discussion of ethical issues--a relatively minor component of the course--is met through examination of cases of scientific fraud, and foreign policy related to strategic mineral and energy supply. Regarding specification 5f, the course aspires to convey the beauty and wonder of the planet, in terms of its processes and not-limitless bounty. Special projects emphasizing energy or material conservation underscore the stewardship necessary for continued human survival--issues for which the students will eventually be the decision makers.

2.0 Common Elements and Student Activities:

2.1- Common Elements:

All sections of Geology 1 follow a similar sequence of lecture topics in order to coordinate with supportive lab activities (See sample lecture syllabus for content). A common text is used in lecture, and a common book is used in lab. Concepts and issues covered in each section are outlined below:

<u>Topics</u>	<u>Lec/Lab sects.</u>
Intro to science; population and issues	2 lec, 1 lab
Origin of the Earth and life	2 lec
Matter, chemistry, minerals, rocks-uses and hazards	6 lec, 5 lab
Physical processes of Earth's interior inc. evidence for plate theory	4 lec, 2 lab
Volcanoes and hypotheses for origin; impact on humans	4 lec, 1 lab
Earthquakes, material behavior, effect on humans; prediction	5 lec, 2 lab
Soils: chemistry, formation, use, problems and solutions	3 lec, 1 lab

Water-surface and ground. Physics, chemistry. Supply and quality.	6 lec, 2 lab
Oceans and coasts-physics, hazards	2 lec, 1 lab
Time and rates of change	3 lec

<u>Topics-con't.</u>	<u>Lec/Lab sects.</u>
Global change	2 lec, 1 lab
Resources: distribution, hazards, management, policy	2 lec

The grading policy is the same in all class sections, and is a sum of lecture grade (@75%) and lab grade (25%). Typically, the grade distribution is, but curving has been made for overall class performance:

88-100%	A
78-87%	B
65-77%	C
55-64%	D
<55%	F

The lab must be passed in order to pass the course; a failed lab may be repeated without re-taking the lecture within 2 semesters.

2.2-Student Activities:

In the lecture portion, exams constitute the main student activity. Exams contain a mixture of objective questions and essay. Other activities have included resource/energy conservation projects, semester-long geological journals (scrapbooks), and critical review of current articles or movies. Attendance is used to decide on borderline grades. A variety of non-graded activities are used in the different lecture sections.

Lab activities are varied, but are consistent throughout sections (See 2.1 above) --the lab instructors hold weekly meetings to ensure coordination and uniform evaluation. Activities include identifying rocks and minerals, constructing geologic maps, building an "earthquake machine", experimenting with soil erosion using stream tables. Written lab reports are due weekly; homework consists of preparatory calculations, reading, or writing summaries. Quizzes and two exams are given during the semester. Attendance is required; two make-ups are allowed.

3.0 Syllabi

For lecture and lab attached.

4.0 Special Cost Factors:

There are no special cost factors for this course.

5.0 Writing requirement:

The 2000 word writing requirement will be met through a series of lab write-ups that will be evaluated for content and writing. Sub standard work will receive a penalty that can be recovered if rewritten to University standards.

ATTACHMENTS:

- 1) Geology 1 lecture syllabus
- 2) Geology 1 lab syllabus



"That used to be my best subject. Ask me the capital of Spain."

CALIFORNIA STATE UNIVERSITY-FRESNO

Department of Geology

Geology 1 Lecture- Physical Geology

M-W-F 12:10-1:00; Rm. McL #121

Spring, 1998

Instructor: Dr. Roland H. Brady III

Office: MLH-288

Phone: 278-2391 E-mail: rbrady@csufresno

Home page: <http://zimmer.csufresno.edu/~rbrady>

Office Hours: M,T,W 10:10-11:00; W, F 1:10-2:00

Five Deaths and Two Millions of Dollars in Damages Due to Flooding in California! Earthquake Rocks China, 12 Dead and 15,000 Left Homeless! Fabulous New Gold Deposit Discovered in Australia! 12 of Fresno's Drinking Water Wells Closed Due to Contamination. Mammoth Earthquakes Portend Disaster? Price of Copper Tumbles as Chile Brings New Mine on Line. Metal Discovered In Dinosaur Eggs-Source Unknown. Carbon Dioxide in Glacier Ice Increased During 1800's.

These are some of the newspaper headlines from last semester. Almost every day there is an article about Geology and its effect on humans. Commonly, normal Earth processes are termed "Natural Disasters" or "Acts of God" when they negatively impact us; these include floods, earthquakes, landslides, drought, tsunamis and lava flows. However, these same processes also provide us with the sustenance of life: water, soil, minerals, ocean currents, and even scenery.

Because our lives are so intertwined with Earth processes and materials, the future of society depends upon our understanding the causes and processes of geologic hazards, the origin and distribution of mineral resources, and how the physical planet responds to our activities. Through this understanding, we can not only prepare for the tough decisions that lie ahead, but we gain greater insight into Human history, and better appreciate the landscape around us: the majesty of Yosemite, the power of the Big Sur coastline, the wonder of the Grand Canyon.

This course will introduce you to the scientific investigation of non-living materials which comprise the Earth and of the processes which have shaped and transformed these materials over 5 billion years. We will see how geologic evidence is gathered through field and laboratory observations and experiments which apply physical, chemical, and mathematical methods and laws. The evidence is then used to develop and test hypotheses and models about the Earth. We will discuss both the limitations and the successes of geology, and how these have shaped our lives.

The lectures are divided into 4 broad categories: 1) Earth materials, 2) Surficial processes, 3) Sub-surface processes, and 4) Earth resources (refer to accompanying schedule). We begin with a discussion of minerals and rocks and how they form. This will involve chemistry and physics. Ensuing topics treat the Earth's interior, and the forces which prevail there. We investigate a revolution in geologic models- plate tectonics- from historical and current perspectives resulting in an understanding of the status and methods of scientific inquiry in geology. Geologic time, one of the most difficult geological concepts, is discussed along with the "geologic clocks" used for determining the passage of time. Minerals and rocks are described using physical and chemical principles. Following topics deal with the formation and impact of volcanoes, how rocks form soils, waters at and beneath the Earth's surface, and the processes which form and alter the landscape. We examine current problems and solutions in the field of energy and non-renewable resources, waste disposal, medical geology, and land use planning.

Brady- Geology 1, Spring, 1998 p.2

Reference Materials:

Required:

Lecture: • Geology and the Environment by B. Pipkin and D. Trent; Second Edition (1997), West Publ.

Lab: • Lab Activities for Geology 1: Barabas, A. ed. , Simon and Schuster Pub. Co.
• Lab Workbook: Barabas, A. ed.

Optional:

• Chapter Study Guides Available at the Kennel Copy Center and on R. Brady's home page.

Grading:

Grades will be assigned generally as: 88-> 100%=A, $\geq 78-88\%=B$, $>65-78\%=C$, 60-65%=D, $<60\%=F$ as a sum of the following: (Borderline grades must show improvement to receive higher grade)

- Examinations – best 4 of 5 @ 18.75% ea. 75%
 - Four mid-terms and an equally weighted, "make-up" comprehensive final.
 - Extra Credit- journal project. (Up to 4% of your lecture grade) 4%
 - Lab (Note: you must pass the lab in order to pass the course-- see lab workbook). 25%
- 104%

Course Expectations:

What I Expect from You:

Most of the vocabulary and concepts presented in Geology 1 will be new to you. Therefore, successfully completing the course may require that you apply study techniques and effort beyond those with which you are accustomed. I expect that you will: 1) regularly attend the lectures, 2) begin reading the text before the lecture, 3) take comprehensive notes in class and re-write them afterwards, and 4) stay current with the course materials (review as we go). Because the University expects that you to expend 2-4 hours of outside work for each hour of class, your study obligation for the lecture part is a minimum 6 hours per week. If you have reading or writing difficulties, anticipate spending additional time.

What You can Expect From Me:

I find Geology 1 to be the most difficult but rewarding of all the courses (13) I have taught at CSUF. It is difficult because many students have limited background in Science, enroll in the course only because it is required, and tend to take GE courses less seriously than those in their major. You can expect that I will give you all my best effort: I will comport myself professionally in the classroom, give organized and clear lectures, provide guidance for study through Chapter Study Guides and review sessions, and compose challenging but fair exams.

Course Policies:

- 1) You are allowed to drop ONE exam score. If you cannot take an exam, it will automatically be counted as your one, "dropped" score. **NO** make-ups or re-scheduling of mid-term exams will be made unless: 1) you are hospitalized-copy of admission required) or, 2) there is a death in your immediate family (parents, spouse, children, siblings- death certificate required). There are absolutely **NO EXCEPTIONS** including athletic events, court appearances, or job interviews. Athletes: check your game schedules carefully, and use your "droppable" score for the away games. Please do not ask for special dispensation.
- 2) Once I return the midterms, it is your responsibility to claim them. I am not responsible for exams after the date of their original return. If you are going to be absent the day the exams are returned, have a colleague pick up your paper.
- 3) No changes or corrections on the grade on any exam will be made more than ONE class period after their return.
- 4) Cheating **WILL NOT** be tolerated, and will be dealt with as harshly as possible (I have done so several times in the past). Read p. 36 and 484 of the CSUF catalog if you are unsure of the definition of cheating.
- 5) Students with disabilities: arrangements will be gladly made to accommodate you. Please confer with the SSD office Library 1049, 278-2811 the first week of class.

Tentative Schedule of Activities: (May change if conditions dictate.)

Date: Topic: Text Chapter- begin before lecture.

Lab 1: Lab orientation; Mineral uses

<u>Jan.</u>		
26	Intro to class. Overview.	Chapter 1
28	Population/ science.	Chapter 1
30	Atoms/matter.	Chapter 2, p. 26-28; Appx. 1

Lab 2: Physical properties of minerals

<u>Feb.</u>		
2	Minerals.	Chapter 2, p. 28-30; Appx. 2
4	Minerals.	Chapter 2, p. 31-39
6	Minerals/Rocks.	Chapter 2, p. 31-39

Lab 3: Identification of rock-forming minerals

9	Rocks.	Chapter 2, p. 31-39
11	Rocks; Rock Cycle.	Chapter 2, p. 31-39
13	Earth's interior/Plate tectonics	Chapter 2, p. 24-26; Cptr. 3 p. 57-61;

Lab 4: Fresno's Geologic Story (I): Identifying local rocks

16	<i>President's Day. No Class</i>	
18	Volcanoes.	Chapter 5
20	Volcanoes.	Chapter 5

Lab 5: Topographic maps and contouring

23	Volcanoes.	Chapter 5
25	Volcanoes.	Chapter 5
27	<i>Midterm Exam #1 - Covers Cptrs. 1, 2, part of 3, 5 and Appx 1, 2.</i> BRING SCANTRON FORM #886-E WITHOUT MARKINGS	

Lab 6: Igneous rocks, volcanoes, and volcanic hazards

<u>March</u>		
2	Weathering and soils.	Chapter 6
4	Soils.	Chapter 6
6	Soils and conservation.	Chapter 6

Lab 7: Soils and weathering; atmospheric pollution

9	Oceans and coasts	Chapter 11
11	Stratigraphy/sedimentary environments	Chapter 11
12	Geologic Time/Dating.	Chapter 2 p. 40-48

Lab 8: Sedimentation, sedimentary rocks and environments

16	Climatic change	Chapter 12
18	El Nino	
20	Surface water	Chapter 9

Lab 9: Fresno's Geologic Story (II): Rock cycle

23	Surface water and flooding	Chapter 9
25	Surface water and flooding	Chapter 9; Chapter 11 p. 313-318
27	<i>Midterm Exam #2 - Covers Chapters. 6, 11 and 12. Bring Scantron #886-E.</i>	

Lab 10: Fresno's Geologic Story (III): Outcrop interpretation and sequences

30	Groundwater.	Chapter 10
<u>April</u>		
1	Groundwater.	Chapter 10
3	Groundwater.	Chapter 10

6-10 Spring Recess- No Class.

Lab 11: Groundwater

13	Groundwater contamination.	Chapter 10
15	Groundwater contamination/waste disposal.	Chapter 10, 15 p. 456-483
17	Faults and earthquakes.	Chapter 4

Lab 12: Faults and earthquakes (I)

20	Earthquakes.	Chapter 4
22	Earthquakes.	Chapter 4
24	Earthquakes.	Chapter 4

Lab 13: Faults and earthquakes (II)

27	Earthquake preparedness.	Chapter 4; Telephone book.
29	Plate tectonics.	Chapter 3
<u>May</u>		
1	Midterm Exam #3 - Covers Chapters 4, 9, 10, and the telephone book. Bring Scantron #886-E.	

Lab 14: Plate tectonics

4	Plate tectonics.	Chapter 3
EXTRA CREDIT PROJECTS DUE AT BEGINNING OF CLASS.		
6	Plate tectonics.	Chapter 3
8	Energy	Chapter 13

No Lab.

11	Energy	Chapter 13
13	Mineral resources.	Chapter 14

Wed., May 20, 1:15-3:15 Final Exam. Bring Scantron Form #886-E.

Consists of two parts:

Part 1: Midterm #4; covers Chapters 3, 13 and 14.

Part 2 : Make-up exam. Comprehensive; exclusively multiple choice questions from Midterm exams #1-3. Must be taken by all who missed a midterm exam; may be taken by anyone wishing to substitute for a low score on any midterm exam.

NOTE: If you choose not to drop any of the midterms, you do not have to take Part 2 of the final exam; however, you must take Part 1 (Midterm #4) regardless of this decision.

Extra Credit Geological Journal- Guidelines (See model in Reserve section of library)

Purpose:

This project is intended to increase your awareness of the nature and occurrence of geological events, and how they affect humans and the environment. Receiving full credit on your journal will make give you the higher grade in borderline cases.

Materials:

- Maps: Rand McNalley # 135-12862-5 (Calif) and # 101-12862-2 (world) Kennell bookstore reference.
- Report (tagboard) cover with clear cover and fold-over tabs
- Binder index tabs (set of 8 sufficient)
- Glue stick

Method:

In order to receive full credit, the journal must follow these guidelines and the model shown in class:

1) Articles:

Keep a journal containing articles from at least three sources (such as the Fresno Bee, Discover magazine, www). Separate articles by topic using appropriately labeled, loose-leaf indexes. All articles must be originals; photocopies are NOT acceptable. Web articles are considered to be a third source and may constitute no more than 1/3 of the articles.

Neatly glue (not tape or staple!) the articles onto blank 8 1/2 x 11 inch punched paper (one side), and place them in a small, ring binder. Fold large articles so they open to the top and right of the binder. You may include several small articles on the same page, but only if they cover a similar topic (volcanoes, landslides etc.). Include the source and date of each article. Assign a sequential number to each article (see item #3 below).

2) Map:

Plot the number of each article at its proper location on either the California or world map. Plot neatly and legibly. Accordion fold the map at the front of the binder.

3) Index:

Compile an index of each article serially by its number. This can be used to keep the articles' numbers current.

4) Event Tabulation:

Using the headings on your index dividers, write a brief tabulation of each event that states the Article #, Location, Brief description of event and effect on environment and humans. All articles must be included here. For example:

FLOODS:

- #1 Egypt: Monsoon rains cause floods on Nile. 30 drown 30; thousands homeless; typhoid outbreak from sewage.

EARTHQUAKES/FAULTS:

- #5 San Francisco Bay, CA: New earthquake fault discovered. Extent of activity uncertain.

Final Product:

Put your materials in the binder in this order: 1-map, 2-index, 3-index divider, 4-event tabulation, 5-articles. Place assembled material in the clear-front, tagboard report cover before turning in.

Evaluation:

This project is worth up to 4% of your grade in the lecture part of the class (which is 75% of the course grade). That means, the better you do in the class, the more the project is worth. Full credit will be given to neatly organized journals that contain all the required parts, and a sufficient number of articles representing the extent of the semester's geological events.

CALIFORNIA STATE UNIVERSITY, FRESNO
 Department of Geology
Geology 1 - Natural Disasters and Earth Resources Laboratory - Spring 1998

Instructor: _____ **Office Phone:** 278-6457 (Student TAs)
Office: MCL 282B (Student TAs) **Dept. Phone:** 278-3086 (Ms. Vengie Ballí, Secretary)

Required Lab Workbook: Arthur Barabas, Lab Activities for Geology 1, Spring 1998: Kennel Copy Center, CSUF.

Weekly Lab Schedule

Lab exercises will be conducted according to the weekly schedule given below. Required readings in the Workbook and Lecture Text (Press & Siever, Understanding Earth, 2nd Ed.) must be completed before the class in which the exercises are conducted. Text chapters in parentheses are optional. Take-Home Exercises are due at the start of the next class. General lab procedures are described in "Orientation Information for Geology 1 Laboratory" (included at the beginning of the Workbook), which is part of the required reading assignment for the first week's lab class.

Required Readings:

<u>Week</u>	<u>Dates</u>	<u>Lab Activity</u>	<u>in Workbook</u>	<u>in Lecture Text</u>
1	Jan. 27-30	Lab orientation, assignments, and procedures; Mineral Uses (<u>Take-Home Exercise</u>)	Orient. Info, Exercise 1	Chapter 23 (2 & 22)
	Feb. 2 (Mon.)	<u>Geology 3 Field Trip - Required Meeting: final enrollment, fee payment, history lecture; 4-6 PM, MCL 280</u>		
2	Feb. 3-6	Physical Properties of Minerals	Exercise 2	Chapters 2 & 22, Appendix 3
3	Feb. 10-13	Identification of Rock-Forming Minerals	Exercise 3	Chapter 2, Append. 3
4	Feb. 17-20	Fresno's Geologic Story, Part I. Identification of Local Rocks; Topographic Maps (<u>Take-Home Exercise</u>)	Exercise 4	Chapter 3
5	Feb. 24-27	Topographic Maps & Contouring	Exercise 5	Appendix 4
6	Mar. 3-6	Igneous Rocks, Volcanoes & Volcanic Hazards	Exercise 6	Chapters 4 & 5
7	Mar. 10-13	Soils, Weathering, & Atmospheric Pollution	Exercise 7	Chapter 6
8	Mar. 17-20	Sedimentation, Sedimentary Rocks & Environments	Exercise 8	Chapters 7 & 13
	Mar. 21 (Sat.)	<u>Optional Local Field Trip - see signup procedure</u>		
9	Mar. 24-27	Fresno's Geologic Story, Part II. The Local Rock Cycle	Exercise 9	Chapter 9 (8 & 10)
	Mar. 29 (Sun.)	<u>Optional Local Field Trip - see signup procedure</u>		
10	Mar. 31-Apr. 3	Fresno's Geologic Story, Part III. Outcrop Interpretation & Event Sequencing	Exercise 10	Chapters 9 & 16
	Apr. 2-5	<u>Geology 3 - Mother Lode Field Trip (Thurs.-Sun.)</u>		
	Apr. 4-12	<u>Spring Recess</u>		
11	Apr. 14-17	Fresno's Groundwater	Exercise 11	Chapter 12
12	Apr. 21-24	Faults & Earthquakes, Part I	Exercise 12	Chapters 18 & 10
13	Apr. 28-May 1	Faults & Earthquakes, Part II; Lab Evaluations	Exercise 13	Chapters 18 & 10
14	May 5-8	Plate Tectonics (<u>last lab classes</u>)	Exercise 14	Chapter 20
15	May 12-15	<u>No lab.</u> Prepare for final lecture exams. Lab grades posted by 5 PM, Friday, May 15.		
16	May 18-21	<u>Final Lecture Class Exams (Monday-Thursday)</u>		

ORIENTATION INFORMATION FOR GEOLOGY 1 LABORATORY

Attention Students: To help the lab run smoothly, please carefully read the following information during Week 1 of the semester, preferably before your first lab class meets. This part of the lab syllabus supplements the weekly activity schedule and list of required readings, which will be distributed in lab during the first week of the semester.

Welcome to the Geology Department and specifically to Geology 1 Laboratory (Natural Disasters and Earth Resources Lab). Our objective is to make the lab an interesting and worthwhile experience. The Geology Department is a small, friendly, and close-knit group; our staff enjoys working one-on-one with students in informal settings, both in the classroom and out-of-doors. We hope that this course will increase your awareness and excitement about the Earth that surrounds you--its rocks, water, energy and mineral resources, and its landscapes, formative processes, and on-going evolution. Geoscience knowledge is essential for living in harmony with our environment and for building a long-term, sustainable society. After some exposure to the subject, perhaps you might even consider a career in the Earth Sciences. It has happened before and could happen again! Let your instructor know if you are interested!

The lab experience is essential for Lower Division courses satisfying the GE Area B requirement ("Physical Universe and Its Life Forms"). Through hands-on activities, you will discover what Earth Scientists do and what they have learned about how the Earth works. You will find out more about the Environment--including the implications of a dynamic Earth for humankind's future. Specifically, you will

- Identify rocks and minerals and reconstruct their formative environment and the prevailing physical and chemical conditions,
- Learn about the useful properties of rocks and minerals and the importance of Earth resources in our lives,
- Piece together the dynamic events in central California's geologic history and discover the origin of Central Valley and Sierra Nevadan landscapes,
- Interpret contoured data, including earthquake damage and topographic and water-table elevation maps,
- Assess the availability and contamination of Fresno's ground water,
- Connect tectonic plate interactions with fault movements, earthquakes, volcanic eruptions, and mountain building activity,
- Understand the distribution of Earth hazards and the scientific basis for predicting their occurrence, and
- Better appreciate the nature of scientific inquiry, including the significance and limitations of scientific data, and the hypotheses, theories, and interpretations derived from them.

Field Trips

Everything we do in the Geosciences relates directly to our environment, the Earth. Earth Science is field-based, and, therefore, is best experienced out-of-doors. Unfortunately, logistics and cost prevent us from teaching Geology 1 in the field. Nevertheless, the Geology Department offers several field trips each semester that are designed for introductory students and complement the Geology 1 experience.

Geology 3 is a 4-day field trip, with destinations rotating over a 1-2 year cycle (e.g. Mother Lode gold country, Yosemite, Owens Valley and Mono Lake). This semester, the trip visits Death Valley. A descriptive flyer explaining enrollment and other requirements is available in the Geology Dept. Office and in week-one classes.

A one-day field trip examining "Fresno's Geologic Story" is also available on two weekends this semester (see Geology 1 lab schedule for dates). Students who participate fully in this

optional excursion will be excused from two Geology 1 labs (Fresno's Geologic Story, Parts 2 and 3). Signup and logistic procedures will be announced early in the semester.

Enrollment in Lab Sections

The lab is a required part of Geology 1. You have to enroll separately in **both** a lab and lecture section. You must come to the first lab meeting during the first week of class, so that your instructor knows that you are enrolled. If you miss the first lab your place may be taken by someone who wants to add the course. University procedures for adding and dropping students on the official class list will be explained during the first lab session.

Workbooks and Other Lab Materials

Each student must obtain this semester's Geology 1 Lab Workbook, and a three-ring binder to hold and organize the workbook, class notes, and other lab materials. Be sure to purchase new workbooks because significant changes have been made since last semester. As soon as your lecture and lab instructors announce that workbooks are available at Kennel Bookstore (probably by Friday of week 1), purchase your copy and bring it to the next class. **Note that Kennel Bookstore will not buy back lab workbooks.**

The lecture text and all lab materials must be brought to each class. The following will also be helpful to have with you in lab: (1) a pen and graphite pencils (regular or mechanical) with medium (No. 2.5) and medium soft (No. 2) lead; (2) several colored pencils or pens; (3) an eraser; (4) a ruler or scale (at least 6 inches long, preferably graduated in tenths of an inch); (5) a calculator, and (6) a hand lens (a compact 10x magnifier for examining rocks and minerals, available for about \$5 at the bookstore).

Grading

Lecture and lab instructors assign separate grades in Geology 1. At the end of the semester, lab instructors give their final lab grades to the lecture instructors, who calculate the final course grades for the semester, using a 25% weighting factor for the lab grades.

To pass Geology 1, students must receive passing grades in lab and lecture (D or better in both). Students who fail lecture but receive a final lab grade of C or better (minimum of 70%) do not have to take the lab again, as long as they retake and pass the lecture within two semesters of the original class. On re-enrolling in the course, it is the student's responsibility to ask his/her original lab instructor (or the lab coordinator, if the instructor is no longer at the University) to forward the passing lab grade to the new lecture instructor. A similar procedure is used for combining a lecture grade of C or better with a future, passing lab grade.

The lab grade is comprised of three components:

1. Attendance and Participation in Each Class (totaling 20% of the lab grade):

Students are required to attend and participate fully in all sessions of the class section in which they are enrolled. Attendance may be established by taking roll (usually at the beginning or end of class), or by determining who took evaluations or turned in completed exercises. In order to earn full credit for the Attendance and Participation grade component, you must participate fully. This means behaving as a professional, responsible adult, including arriving on time and staying to the end of class; completing the required readings and homework in a timely manner; seriously focusing on the assignment at hand during class; joining in discussions and group activities; being considerate and respectful of classmates; coming to order and listening quietly when the instructor is speaking; and generally cooperating.

2. Weekly In-Class and Take-Home Exercises (totaling 40% of the lab grade):

Exercises follow the common schedule for all lab sections (distributed in week 1). Instructors will explain the procedures for submitting exercises for credit and their grading methods. Students are responsible for required readings and what is covered in each class exercise. The lab content is cumulative; what has been covered will be used in subsequent classes.

3. Evaluations of Student Performance (totaling 40% of the lab grade):

A minimum of 8 student performance evaluations will be conducted during the semester. Lab instructors may eliminate one evaluation grade, if they choose. Evaluations will be held at the beginning of class and will not be repeated; they may cover required readings and/or previously completed labs. Before the first evaluation of the semester, your instructor will describe her/his procedures, including evaluation coverage, format, grading, and feedback. A variety of evaluation types may be employed, including quizzes, individual and group presentations, journaling, role-playing, white-boarding, etc.

Lab instructors will post overall grades in week 5 (as a letter and percentage of possible points to that point). Cumulative updates will be given periodically afterward. Instructors will inform students who are penalized for less than full participation.

What To Do Before Each Class

1. Prepare for announced or unannounced evaluations.
2. Complete regular or take-home exercises, according to your instructor's directions.
3. Scan the exercise that you will be doing in class to become familiar with the tasks and objectives. Learn any new concepts and vocabulary, because quizzes usually cover them.
4. Complete the required reading assignments (see separate list).
5. Make connections between what you are learning in lecture and lab.
6. Write down any questions you have for your classmates, study group, or instructor.

Performing the required readings before each class is essential to accomplishing the other items on the list. Finishing the readings in advance will also increase your enjoyment and understanding of the exercises and the likelihood that you will complete them within the limited, two-hour class period. Also note that, although lecture instructors are asked to coordinate their lectures as closely as possible with the lab schedule, some lab topics will not be covered in lecture. Just attending lecture will not prepare you for lab!

What To Do In Each Class

1. Arrive on time; evaluations will be held at the beginning of class and attendance may also be taken. Evaluations will not be repeated if you are late.
2. When you arrive, follow your instructor's directions; get ready either for the evaluation or the scheduled workbook exercise. To prepare for an exercise, remove the appropriate worksheet that you expect to fill out and review the materials and any questions you wrote down beforehand. You may begin to fill out the worksheet, according to the printed instructions, or as directed by your instructor.
3. Your instructor will give you specific instructions about which parts of the exercise are most important. She/he will also explain how credit will be assigned.
4. Stay focused and attentive for the entire class. Pace yourself to work at a deliberate, constant rate. Usually, the weekly exercises should be completed in class.
5. Unless you are told otherwise, plan to turn in the completed exercise or worksheet at the end of class. Final instructions are often given, so stay until the class is dismissed.

Excused Absences and Makeups

Makeups of in-class exercises are possible only for excused absences. In order to receive an excused absence, you must contact your instructor before class to explain the absence and arrange a makeup. (See "Contacting Your Instructor" below.) The only other excused absences are those that are documented by a written note from a coach, doctor, or Health/Counseling Services. Acceptable reasons for documented, excused absences include serious personal illness, death in the immediate family, participation in officially-sanctioned extracurricular activities, or other extraordinary circumstances. If your absence is an extended one, contact Health/Counseling Services (278-2734); they will notify your instructors in writing.

If your absence is excused, you are urged to attend another class during the week (see posted class schedule outside MCL 276), but this must be approved **in advance** by both your instructor and by the one whose class you attend. When you complete an exercise in another class, ask that instructor to initial your exercise. Then give it personally to your regular instructor ASAP. **Makeups must be accomplished during the week when the specific**

exercise is scheduled--that is, while the appropriate materials are set up in the lab room. Since the classroom is used by other courses, Geology 1 lab exercises will be set up early Tuesday morning and taken down Friday afternoon. Makeups will only be possible when a regularly scheduled Geology 1 lab is taking place during this weekly cycle. The lab room is only open when an instructor is present.

Academic Dishonesty (Plagiarism and Cheating)

Students are expected to be familiar with the official policies on academic dishonesty (plagiarism and cheating), stated in the University Catalog and Schedule of Courses. Unless you are given specific instructions to the contrary, all work you submit for a grade in Geology 1 must be your own. This includes performance evaluations, answers to in-class or take-home assignments, and your contributions to team efforts.

Academic dishonesty of any kind is unacceptable on moral, ethical, and legal grounds; it will not be tolerated. Such behavior threatens the climate of trust, open communications, and free inquiry on which the university is based. It infringes on the rights of fellow students. Individuals who share their answers orally or make their work available to be copied are participants in this unacceptable behavior.

Geology 1 Lab instructors will vigorously pursue alleged incidents of academic dishonesty, according to the guidelines given in the University's "Policy and Procedures on Cheating and Plagiarism" (May 1996). Instructors may not ignore instances supported by incriminating evidence. Instructors must file a report and may impose a grade of "0" or "F" on an assignment or in the course, and guilty students may be expelled or placed on probation by the University.

Office Hours and Contacting Your Lab Instructor

In the first class, the geology lab instructors will inform you of their office hours and acceptable ways to get in touch with them. Offices of geology faculty are along the same corridor as the lab classroom (MCL 276). Office hours are posted outside each office. Graduate student TAs have offices in MCL-282B (phone: 278-6457). If you cannot make the posted office hours, try to arrange an appointment. Since the content is common to all classes, questions may be referred to any lab instructor during office hours; it is not necessary that you pick your own lab instructor.

Anonymous Student Evaluations of Lab Instructors

At the end of the term you will have an opportunity to independently evaluate both your lab and lecture instructors. The instructors will not be present when evaluations are conducted and they will not see the results until after grades are turned in. This evaluation is very important to the Geology Department and to the individuals involved. Your feedback will help the instructors improve their teaching. We are particularly concerned about the lecture-lab coordination and how well lab exercises are working. Past student feedback has helped in designing the current activities and we expect to use your suggestions in developing more effective and relevant exercises in the future.

Please feel free to discuss lab matters, first with your lab instructor, and with me, if necessary. Have an enjoyable semester in Geology 1 lab!

Prof. Arthur H. Barabas
Geology 1 Lab Coordinator

Office: MCL 285
Phone: 278-2912 (voicemail), 278-3086 (Geol. Dept.)
E-mail: artb@csufresno.edu