Appendix B

GE Recertification

Program Review
Department of Geology
San José State University
Spring 2012
Overview of General Education Program in the Department of Geology

The GE courses offered by the Department of Geology constitute a large share of SJSU’s offerings in the areas related to science (B1, B3, and R). The courses are widely recognized for their excellence, with many students turned away from full sections each semester. Each semester roughly a thousand students enroll in the Department’s GE courses, roughly split evenly between lower-division and upper-division courses.

The goal of these courses is to facilitate the students’ understanding of the interactions between humans and the natural world, while at the same time providing a strong foundation in the earth sciences. The Santa Clara Valley, both because of its natural setting and because of its pivotal role in the nation’s economy, is exposed to a range of environmental and geologic hazards. To become well-informed citizens and make knowledgeable choices in their public and private lives, students need to be aware of the geologic processes that influence their surroundings, of the ways those processes can affect their lives, and of the effects that they can have on their physical surroundings.

These courses are taught with a variety of approaches, including extensive use of visual aids such as diagrams, photographs, maps, and videos. Many courses include field trips, hands-on exercises, and computer-based work. These varied approaches address the differing learning styles and abilities found among our students. Several of the courses (Geol 3, 105, 111, 171) have online offerings, which meet the needs of students with demanding schedules due to work, family, other issues, or relocation. Many additional courses are taught in mixed-mode, with components of the course taught online.

The GE courses in the Department serve a large number of K-12 teachers, either during their training or as in-service professional development. This coursework helps prepare them to communicate to their students the pleasures and importance of the earth sciences. This can help develop these students’ early scientific literacy in environmental and geologic issues. Several of the GE courses offered are required for teaching credential to attain competency in the geosciences.

The Department has carried out all regular assessments of its GE courses, through the various assessment reporting approaches determined by the University since the original extensive assessment plans were developed by the Department in 1998-2000.
Appendix B-1

GE-Recertification, 2012

GEOL 1

General Geology
San José State University  
Department of Geology  
Geol 1: General --Section 01  
Spring 2012

Instructor: LeAnne Teruya
Office Location: DH419
Telephone: (408) 924-5023
Email: leanne.teruya@sjsu.edu
Office Hours: Wednesdays, 1:30 – 2:30 p.m., or by appointment
Class Days/Time: M/W 9:00 a.m. – 10:15 a.m.
Classroom: DH306

Faculty Web Page and MYSJSU Messaging:
Copies of the course materials such as the syllabus and the course schedule, etc. may be found on my faculty web page (http://www.sjsu.edu/people/leanne.teruya/courses/geol1) accessible through the Quick Links>Faculty Web Page links on the SJSU home page. You are responsible for having a working email address registered with the MySJSU system and for regularly checking with the messaging system through MySJSU.

Course Description
Geol 1 covers the examination of geologic processes and materials, including volcanoes, earthquakes, rock formation, oceans, streams, and plate tectonics and their importance to society.

This course will change the way you look at the world.

Our planet is a grand and dynamic family of systems that provides us with the resources for life and enjoyment on Earth. Geology is provides the mountains we ski on, the rivers we raft down, the valley soil we grow food from, the sand we sunbathe on at the beach, and even the perfect wave we surf. In this class, you will learn about the materials and processes that have formed the earth, and how they continue to construct and reconstruct the environment around us. The emphasis will be on how geology impacts us in the practical manner of how we live our lives.
Course Goals and Student Learning Objectives

This class is tailored for students with diverse and commonly limited backgrounds in science. By the end of the course, you should be able to do the following:
1) use the methods of science and knowledge derived from current scientific inquiry to question existing explanations;
2) demonstrate ways in which science influences and is influenced by complex societies, including political and moral issues;
3) recognize methods of science, in which quantitative, analytical reasoning techniques are used;
4) understand the basic concepts essential to the study of the Earth; and
5) use your understanding of Earth processes to make informed decisions as a property owner and as an active participant in democratic processes.

Examples of how we will achieve the above Learning Objectives:
1) Beginning with the first class we will ask the following questions: What do we know about the earth? How do we know what we know? and What are the strengths and shortcomings of our current knowledge? These questions form the underlying theme and structure of the class. We will ask these same questions for each topic that we cover throughout the semester.
2) We will discuss the interaction between science and society, when we study faults, flood control, and erosion. We will discuss society's desire to both control nature and ignore it, and we will study the effects of our actions (or inaction).
3) In studying “how we know what we know,” you will learn the basic quantitative and analytical reasoning techniques used in the field of Geology.
4) You will be tested on your knowledge of the basic concepts essential to the study of the Earth. “Basic concepts” include: earth composition and structure, Plate Tectonics, basic rock groups and their formation, rock forming minerals, internal/external/surface processes that build mountains, form valleys, fill lakes, carve canyons, etc.
5) You will be asked to apply your geological knowledge to practical situations that impact your life, such as flood control projects, earthquake zoning, and landslide hazards. We will discuss how to find geological information about where you live and what to do with that information.

Required Textbook

Exploring Geology, 2nd Edition
By Reynolds, Steven J., Johnson, Julia K., Kelly, Michael M., Morin, Paul J., Carter, Charles M.
Publisher: McGraw-Hill Higher Education
Copyright: 2010.
ISBN: 978-0-07-337668-4

Other equipment / material requirements

• Online Access to the McGraw-Hill Connect Geology companion website for the textbook: (Make sure you are registering for the correct section) http://connect.mcgraw-hill.com/class/l_teruya_900_am_spring_2012_1
• Online completion assignments for each textbook chapter.
Class Format

- Class time will be used for lecture, hands-on activities, and group work in order to provide a variety of learning experiences with the topics covered in this course. We will also spend one day observing geology outdoors on a fieldtrip.
- Lectures will highlight and clarify the more complex and difficult concepts in each chapter. Students are still responsible for the remaining material in every chapter whether covered in class or not.

Classroom Protocol

Come prepared to focus on geology.

Class consists of a short period of time dedicated to the learning of geology. Visit with classmates, text, make phone calls, and take care of other business outside of class.

Course Requirements:

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>2 Midterm Exams</td>
<td>40%</td>
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<tr>
<td>1 Essay</td>
<td>15%</td>
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<tr>
<td>Homework, in-class work</td>
<td>10%</td>
</tr>
<tr>
<td>Fieldtrip</td>
<td>5%</td>
</tr>
<tr>
<td>Final Exam</td>
<td>30%</td>
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</tbody>
</table>

Course Guidelines:

Reading Assignments:

- All reading assignments are listed on the tentative course schedule.
- Readings should be completed by the dates they are listed for on the schedule.
- **Exams will include material from the reading assignments.**

Homework:

- Homework and class work is worth 10% of the overall course grade.
- Most homework will be completed online through the McGraw-Hill Connect Geology website. Refer to the attached instructions on how to register for Connect Geology.
- Registration at the Connect Geology website is required to have access to the online assignments. You must register in order to view and complete assignments.
- Enter the pre-paid access code that came with your textbook or purchase access online.
- For help with registering for the Connect Geology website, go to the McGraw-Hill Digital Products Support Center: [http://mpss.mhhe.com/student_connect_resources.php](http://mpss.mhhe.com/student_connect_resources.php). This webpage has video instructions on how to register for Connect Geology and shows how to register with an access code or register by purchasing access online.
- Most online assignments may be completed multiple times before submitting.
- Other homework assignments may be given out in class. Written homework assignments will be graded according to content, accuracy, and quality of presentation.
• **NO late assignments** will be accepted. Due dates are listed on the course schedule. Submit your assignments by the dates listed on the course schedule.
• Make certain that you have the most up to date schedule.
• **Do not email your homework.**
• Class work consists of assignments completed in class based on in-class activities. In general, these assignments cannot be made up if missed since they require the set up and use of equipment during class time.

**Exams:**
• There will be two midterm exams, each worth 20% of the overall course grade.
• Exams will cover lecture material, in-class work, the fieldtrip and reading assignments.
• Exam questions include: multiple choice, true/false, fill-in-the-blank, matching, identification, short answers, longer answers.
• The final exam is comprehensive and worth 30% of the overall course grade.

**Papers:**
• One essay, 5-7 pages in length, will be assigned.
• The essay is worth 15% of the overall course grade.
• The essay must be your own original work, written specifically for this class, and not previously submitted in another class.
• Essay topics are designed to pull together knowledge you have gained from lectures and reading assignments.
• Specific guidelines for writing the essays will be handed out with the topics.
• **An electronic copy Must be submitted to turnitin.com by the due date.**
• **A hard copy must be turned in class on the due date.**
• Writing will be assessed for substantive content and for correctness, clarity, organization, and conciseness. (See “Grading Criteria for Written Assignments” attached.)
• **NO essays accepted via email.**

**Fieldtrip:**
• Our class will go on a one day fieldtrip to observe local geology of the Bay Area.
• The fieldtrip assignment is worth 5% of the overall course grade.

**Dropping and Adding**
Students are responsible for understanding the policies and procedures about add/drop, grade forgiveness, etc. Refer to the current semester’s Catalog Policies section at http://info.sjsu.edu/static/catalog/policies.html. Add/drop deadlines can be found on the current academic calendar web page located at http://www.sjsu.edu/academic_programs/calendars/academic_calendar/. The Late Drop Policy is available at http://www.sjsu.edu/aars/policies/latedrops/policy/. Students should be aware of the current deadlines and penalties for dropping classes.
Information about the latest changes and news is available at the Advising Hub at http://www.sjsu.edu/advising/.

University Policies

Academic integrity

Students should know that the University’s Academic Integrity Policy and Processes is available at http://www.sjsu.edu/studentconduct/Students/Student_Academic_Integrity_Process/. Your own commitment to learning, as evidenced by your enrollment at San Jose State University and the University’s integrity policy, require you to be honest in all your academic course work. Faculty members are required to report all infractions to the office of Student Conduct and Ethical Development. The Student Conduct and Ethical Development website is available at http://www.sjsu.edu/studentconduct/.

Instances of academic dishonesty will not be tolerated. Cheating on exams or plagiarism (presenting the work of another as your own, or the use of another person’s ideas without giving proper credit) will result in a failing grade and sanctions by the University. For this class, all assignments are to be completed by the individual student unless otherwise specified. If you would like to include in your assignment any material you have submitted, or plan to submit for another class, please note that SJSU’s Academic Policy F06-1 requires approval of instructors.

Campus Policy in Compliance with the American Disabilities Act

If you need course adaptations or accommodations because of a disability, or if you need to make special arrangements in case the building must be evacuated, please make an appointment with me as soon as possible, or see me during office hours. Presidential Directive 97-03 requires that students with disabilities requesting accommodations must register with the Disability Resource Center (DRC) at http://www.drc.sjsu.edu/ to establish a record of their disability.
Grading Criteria for Written Assignments

All written assignments will be graded according to the rubric described below. As specified in the guidelines for general education courses, your essay has been assessed not only for its content but also the quality and clarity of your writing. Thus, your grade is the sum of scores on content and writing.

Content

<table>
<thead>
<tr>
<th>score</th>
<th>approx. grade</th>
<th>criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>A</td>
<td>Outstanding response with superior supporting examples or evidence; unusual insights, creative and original analysis, reasoning, and explanation; superior mastery of content; goes well beyond minimum required for the assignment.</td>
</tr>
<tr>
<td>9</td>
<td>B+</td>
<td>Good, solid response that uses excellent supporting examples or evidence; excellent reasoning and explanations; goes beyond the minimum required for the assignment.</td>
</tr>
<tr>
<td>8</td>
<td>B-/C+</td>
<td>Good, solid response that meets the minimum required by assignment. Reasoning and explanations are adequate.</td>
</tr>
<tr>
<td>7</td>
<td>C-</td>
<td>Response is accurate but cursory, and does not meet the minimum required for completeness; some inaccuracies or reasoning flaws; response is too general, lacks specific evidence.</td>
</tr>
<tr>
<td>6</td>
<td>D</td>
<td>Response doesn’t effectively address the question; response fails to support assertions with data or examples; major flaws in reasoning; explanations are unclear; displays inadequate understanding of content.</td>
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<tr>
<td>5</td>
<td>F</td>
<td>Response is not submitted or does not address the question.</td>
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Writing

<table>
<thead>
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<th>score</th>
<th>approx. grade</th>
<th>criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>A</td>
<td>Demonstrates superior grammatical correctness and sense of personal style. Effortlessly readable prose.</td>
</tr>
<tr>
<td>9</td>
<td>B+</td>
<td>Very effective organization of paragraphs and paper; interesting, varied sentences; good grammar (usage, punctuation, etc.); few spelling mistakes; does not read like a first draft.</td>
</tr>
<tr>
<td>8</td>
<td>B-/C+</td>
<td>Reasonably effective organization of paragraphs and paper; serviceable prose; numerous errors of grammar or spelling; reads like a first draft.</td>
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<tr>
<td>7</td>
<td>C-</td>
<td>Structurally disorganized; paragraphs lack topic sentences or are not developed effectively; awkward sentence structure; poor spelling.</td>
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<tr>
<td>6</td>
<td>D</td>
<td>Obstruction of ideas and meaning by: incoherent structure in paragraphs or essay in general; multiple grammatical errors in sentences; incomplete or run-on sentences; poor spelling, poor grasp of grammar.</td>
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</tbody>
</table>
Geol 1 – Spring 2012

Tentative Course Schedule for Section 1: 9:00 am

- All reading and homework assignments are due on the dates listed on the schedule.
- To avoid any problems, be sure to identify the assignment along with your name, Geol 1, and the instructor’s name on all homework turned in at class or the instructor’s office (DH419).
- All reading assignments listed below are from the textbook.
- Homework assignments listed are to be completed online at the Connect Geology companion website for the textbook. See attached handout with the link to the website and registration instructions.
- Additional homework assignments not listed on this sheet may be added or assigned in class.

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Topic/Reading:</th>
<th>Homework due:</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>Jan 25</td>
<td>Chapter 1: The Nature of Geology (1.0-1.2)</td>
<td>Register for online portion of the class: Connect Geology (see attached instructions)</td>
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<td>Chapter 1: Earth (1.3-1.6)</td>
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<td>Chapter 12:</td>
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<td></td>
<td>- Earth’s Interior (12.14);</td>
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<td></td>
<td></td>
<td>- Investigating Deep Processes (12.16)</td>
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<tr>
<td>2</td>
<td>10</td>
<td>Chapter 2: Investigating Geologic Questions</td>
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<td>- Investigating Geologic Questions (2.7-2.8)</td>
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<td>- Continental Drift (2.9)</td>
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<td>Feb 1 Chapter 11: Shifting Continents (11.11)</td>
<td>Ch. 3</td>
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<td>Chapter 3: Plate Tectonics</td>
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<td>3</td>
<td>6</td>
<td>Chapter 3: Plate Tectonics</td>
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<tr>
<td>8</td>
<td></td>
<td>Chapter 1:</td>
<td>Ch. 1 &amp; Last Day for late work</td>
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<td></td>
<td></td>
<td>- Rock Families (1.5);</td>
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<td></td>
<td></td>
<td>- The Rock Cycle (1.6)</td>
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<td>Chapter 4: Earth Materials</td>
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<td>13</td>
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<tr>
<td>15</td>
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<td>Chapter 5: Igneous Environments</td>
<td>Ch. 5</td>
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<tr>
<td>19</td>
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<td><strong>FIELDTRIP—SUNDAY FEB. 19</strong></td>
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<tr>
<td>5</td>
<td>20</td>
<td>Chapter 5: Igneous Environments</td>
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<td>22</td>
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<td>Chapter 6: Volcanoes and Volcanic Hazards</td>
<td>Ch. 6</td>
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<td>Chapter 6: Volcanoes and Volcanic Hazards</td>
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<tr>
<td>29</td>
<td></td>
<td><strong>Exam 1: Ch. 1-5, parts of Ch. 11 &amp; 12</strong></td>
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<tr>
<td>7</td>
<td>Mar 5</td>
<td>Chapter 7: Sedimentary Environments</td>
<td>Ch. 7</td>
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<td>Chapter 7: Sedimentary Environments</td>
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<tr>
<td>8</td>
<td>12</td>
<td>Chapter 8: Deformation and Metamorphism</td>
<td>Essay Due</td>
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<td>14</td>
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<td>Chapter 8: Deformation and Metamorphism</td>
<td>Ch. 8 &amp; 11</td>
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<td></td>
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<td>Chapter 11: Mountains, Basins, Continents</td>
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<tr>
<td>9</td>
<td>19</td>
<td>Chapter 9: Geologic Time</td>
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<tr>
<td>Date</td>
<td>Chapter</td>
<td>Title</td>
<td>Notes</td>
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<td>21</td>
<td>Chapter 9</td>
<td>Geologic Time</td>
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<tr>
<td>10</td>
<td>Apr 2</td>
<td>Chapter 12: Earthquakes and Earth’s Interior</td>
<td>Ch. 12</td>
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<tr>
<td>4</td>
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<td>Chapter 12: Earthquakes and Earth’s Interior</td>
<td></td>
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<tr>
<td>11</td>
<td>9</td>
<td>Chapter 14: Shorelines, Glaciers, and Changing Sea Levels</td>
<td>Ch. 14</td>
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<td></td>
<td>11</td>
<td><strong>Exam 2: Ch. 6-12</strong></td>
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<tr>
<td>12</td>
<td>16</td>
<td>Chapter 14: Shorelines, Glaciers, and Changing Sea Levels</td>
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<tr>
<td>18</td>
<td>18</td>
<td>Chapter 15: Weathering, Soil, and Unstable Slopes</td>
<td>Ch. 15</td>
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<tr>
<td>13</td>
<td>23</td>
<td>Chapter 15: Weathering, Soil, and Unstable Slopes</td>
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<tr>
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<td>25</td>
<td>Chapter 16: Rivers and Streams</td>
<td>Ch. 16</td>
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<td>14</td>
<td>30</td>
<td>Chapter 16: Rivers and Streams</td>
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<td>May 2</td>
<td>Chapter 17: Water Resources</td>
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<td>15</td>
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<td>Chapter 17: Water Resources</td>
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<tr>
<td>9</td>
<td></td>
<td>Chapter 18: Energy and Mineral Resources</td>
<td>Ch. 18</td>
</tr>
<tr>
<td>16</td>
<td>14</td>
<td><strong>Review for the Final Exam</strong></td>
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**Final Exam for 9:00 Section:** Monday, May 21, 2012 – 7:15 am – 9:30 am
Commentary on How Geology 01 Satisfies Its GE Student Learning Objectives

Underlying themes for Geology 01 are that students should be able to master sufficiently essential quantitative and qualitative skills that are necessary to understand scientific knowledge, methods, and inquiry, and students should also be able to incorporate scientific knowledge into the workplace and everyday life experiences. In the following, examples of how each of the Area B1 SLOs is met by Geology 01 are discussed.

Beginning with the first class the following questions are asked: (1) *What do we know about the Earth?* (2) *How do we know what we know?* (3) *What are the strengths and shortcomings of our current knowledge?*

These questions form the underlying theme and structure of the class. For each topic covered, the same questions are applied so that students evaluate and think critically about the science that is presented to them. Examples of how knowledge changes over time through improved methodology and technology are studied throughout the course. Examples include Plate Tectonics, and earthquake and volcanic eruption monitoring and prediction.

“How do we know what we know?” is the question that which leads into the discovery of techniques used to gather specific types of data and emphasis on the scientific process which builds, supersedes, or destroys theories (SLOs #1 and #3). Students learn the steps in scientific inquiry and learn to evaluate outcomes based upon the soundness of methodology and interpretation of data. For examples, students learn why the concept of Continental Drift was not widely accepted when first proposed and why Continental Drift was eventually superseded by the Plate Tectonic Theory.

1) For every major topic examined in class, the strengths and shortcomings of our current knowledge are discussed, as science is an ongoing process. Where current knowledge stands and where we need to go for more complete knowledge is acknowledged. An example of this would be the prediction of volcanic eruptions. Scientists can sometimes predict imminent eruptions within a range of days, but long-term predictions are more difficult to determine.

2) The interaction between science and society (SLO#2) are examined when students study faults, flood control, and erosion. We discuss society’s desire to both control nature and ignore it, and study the effects of our actions (or inaction). Students are asked to evaluate the decisions our government and we as citizens make. Students are asked to ponder the question of earthquake safety and risk: Is a setback of 50 ft. from a fault far enough for buildings? Would you like to live 50 ft. away from a fault? Is this safe—safe enough? Who decided on 50 ft.? To show students how science and society interacts and to get students involved in their own decision-making processes, essay topics require students to evaluate the risks of living on properties prone to earthquakes, landslides, coastal erosion, volcanic eruptions, and/or flooding.

Field trips reinforce understanding of the relationship between society and science. Trips to the beach emphasize the interaction between people building homes on beach cliffs and coastal erosion. A trip to New Almaden Quicksilver Mines illustrates the lingering effects of mercury mining on our water supply and the aquatic animals living in mercury tainted waters. A
walk along the Guadalupe River in downtown San Jose illustrates how floods are prevented through the control of the river by artificial channel construction.

3) Quantitative and analytical reasoning techniques used in general science and specifically the field of Geology are modeled and illustrated throughout the semester through inquiry-based activities done in class and by discussions of methodology and techniques used by geoscientists (SLO #1). One inquiry-based activity explores the validity of the critical angle of repose (the steepest angle that unconsolidated material can retain to remain stable) and the role of water in causing landslides. Students find and measure the angle of repose of a loose material called perlite. They then experiment to see what happens if the slope angle is changed by steepening the slope. A landslide occurs and the perlite hill readjusts itself to a stable slope with no intervention from the students. When the students measure the slope of the perlite again, they find that the slope is once again at the angle of repose. Next, students experiment with moisture content of the perlite to determine how water contributes to either the prevention or promotion of slope failures. Some water is necessary, but too much water is destructive. Students determine the effects of too little, too much, or just enough hillslope moisture. The application of the results for land-use planning is also emphasized (SLO#2).

4) “Basic concepts” include: Earth composition and structure, Plate Tectonics, basic rock groups and their formation, rock forming minerals, internal/external/surface processes that build mountains, form valleys, fill lakes, carve canyons, etc. Geol 01 focuses heavily on geologic processes as ongoing processes that continue to shape the Earth and influence our ability to live and thrive in different areas. Students learn the interdependency of geologic processes and how geologic systems are constantly reshaping and recycling Earth materials. For example, the hydrologic cycle plays an important role is creating the sediment that in the rock cycle provides the material for sedimentary rocks.

5) Students are asked to apply geological knowledge to practical situations that impact their lives (SLO#2). Geol 01 teaches students the pros and cons of flood control projects and earthquake zoning. Students are taught to identify faults, and landslide and volcanic hazards. We discuss how to find geological information about where one lives and what to do with that information. One assignment students complete requires them to look up information on specific websites about potential earthquake hazards in their hometown. They find their cities on fault maps and identify the closest fault to their homes. They investigate the potential damage of a greater than 6.6 magnitude earthquake by looking at shake maps and running scenarios for a 6.5 M earthquake on the closest fault. This is a direct application of geological knowledge to a situation that will impact students’ lives when the next big earthquake hits.

Another way geological concepts are made relevant and applicable to students is the focus on local Bay Area geology. Wherever possible, local examples of rocks, geologic formations, and geologic processes are used in class.
Assessment Report for Geology 01

Several changes have been made in the last 5 years to improve success with all course SLOs. In particular, emphasis has been placed on including more on local geology in lectures and class activities, and in the development of more in-class activities and discussion related to the GE SLOs.

Future Improvements

In several Geology Department faculty meetings, as part of our Program Plan, we evaluated our General Education classes and decided that Geology 01 would be more effective if combined with a required laboratory. This change was approved by the College of Science Curriculum Committee and Undergraduate Studies, and will take effect in Fall 2012. The addition of a laboratory should particularly help students meet SLO#3, improving their quantitative skills in handling and interpreting data, ability to classify materials (rocks and minerals), and skill at visualizing features in three dimensions.

The Department is fortunate that the primary long-term instructor (LeAnne Teruya) for this course is a dynamic teacher who is actively involved in assessing and modifying the class as needed. This is in part illustrated by how she has modified the class on the basis of evaluation of the course in the attached annual assessment reports.

As stated in the report for SLO#1:

“Chief vehicles for assessing student progress on this SLO were specific homework assignments and exam questions that formally addressed how the methods of science are used to construct testable hypotheses. Examples: (1) evidence for the nature and significance to humans of earthquake hazards in the South Bay; (2) inquiry-based data collection and hypotheses testing on scaled-down in-class models of larger-scale processes; (3) place-based (on field trips) evaluation of geologic history and the influence of human activities. Essay responses on homework and in-class activities indicate that 80% of students satisfactorily attained the SLO. Exam questions related to in-class inquiry-based activities and the place-based questions related to the field trip were more effective, with about 90% of students demonstrating satisfactory mastery.”

The proposed modification of the course was to give students “new assignments and activities to improve student knowledge of local geology and application.” This change has been made so that geological concepts are more relevant and relatable to students. Such emphasis on local geological examples is in accord with new initiatives at the national level by the National Science Foundation and Geological Society of America for increasing public appreciation of Earth Science. The primary instructor for this course gave an oral presentation (with published abstract) at the 2011 national meeting of the Geological Society of America in Minneapolis, which focused on using local geology to teach concepts. The title of this talk was: “Geology is everywhere: Using the familiar to teach the unfamiliar.”

The annual assessment report for SLO#2 included the following text.

“Assessing student progress in this SLO was achieved via homework assignments, in-class discussions/assignments, a term paper, and exam questions. In some sections, students wrote an
essay requiring application of knowledge of coastal erosion and prevention to buying beach property. 89% of students scored better than a C on this essay. Students were able to effectively weigh the desire and social status of owning beach-front property with their knowledge of geologic processes that affect the coast, and therefore, the quality and value of owning such property. In these sections, 53% of students scored better than a B on exams that included questions from class discussions about natural hazards, societal interaction with geological phenomena, and attempts to control nature. In other sections, students addressed questions, such as: 1) how do people assess where best to construct housing, industrial plants, etc., and how does geology affect this decision (i.e. hazards in an earthquake prone zone or near a volcano); and 2) what must individuals, industries and nations do to sustainably interact with the environment? Responses in homework assignments and term papers indicated that 90% of students satisfactorily attained the SLO. Exam answers were less effective, as 70% of students satisfied the learning objective. Class discussions of sustainability were very successful, as students were passionate about how they answered the topic.”

The proposed modifications of the course were to “rotate the essay topic to reflect a different geology related natural hazard—i.e. earthquakes, flooding, or landslides” and to provide “further in-class activities and discussions related to this SLO, as well as assigning take-home projects to be completed in a group with presentations to the class.” These changes have made, as in part described in the “Commentary on How Geology 01 Meets the GE SLOs. The primary instructor for this course also presented some of the exercises (e.g., landslide activity mentioned in “Commentary on How Geology 01 Satisfies SLOs”) done in Geology 01 in a second presentation at the 2011 national meeting of the Geological Society of America in Minneapolis. The title of this presentation with published abstract is: “Using stick figures and perlite hills to explore the causes and effects of mass wasting.”

As a result of discussions for this assessment report for Geology 01, several other future modifications are planned. These include:
1) Emphasis on incorporating current events from news media as real-time illustrations of geologic processes;
2) Development of new field-trip locations;
3) Use of real data from on-line sources, which students use in class – such as seismograph data to find the epicenter of an earthquake.
General Education Annual Course Assessment Form

Course Number/Title: Geology 1 -- General Geology
GE Area: B1 Results reported for AY: 09-10
# of sections: 2 # of instructors: 1
Course Coordinator: Robert Miller E-mail: rmiller@geosun.sjsu.edu
Department Chair: Richard Sedlock College: Science

Instructions: Each year, the department will prepare a brief (two page maximum) report that documents the assessment of the course during the year. This report will be electronically submitted, by the department chair, to the Office of Undergraduate Studies, with an electronic copy to the home college by September 1 of the following academic year.

Part 1
To be completed by the course coordinator:

1. What SLO(s) were assessed for the course during the AY?

SLO 1: Students can use the methods of science and knowledge derived from current scientific inquiry in life or physical science to question existing explanations.

2. What were the results of the assessment of this course? What were the lessons learned from the assessment?

Chief vehicles for assessing student progress on this SLO were specific homework assignments and exam questions that formally addressed how the methods of science are used to construct testable hypotheses. Examples: (1) evidence for the nature and significance to humans of earthquake hazards in the South Bay; (2) inquiry-based data collection and hypotheses testing on scaled-down in-class models of larger-scale processes; (3) place-based (on field trips) evaluation of geologic history and the influence of human activities.

Essay responses on homeworks and in-class activities indicate that 80% of students satisfactorily attained the SLO. Exam questions related to in-class inquiry-based activities and the place-based questions related to the field trip were more effective, with about 90% of students demonstrating satisfactory mastery.

3. What modifications to the course, or its assessment activities or schedule, are planned for the upcoming year? (If no modifications are planned, the course coordinator should indicate this.)

New assignments and activities that can improve student knowledge of local geology and application of course content to regional geology are always being developed and added to the course.

Part 2
To be completed by the department chair (with input from course coordinator as appropriate):

4. Are all sections of the course still aligned with the area Goals, Student Learning Objectives (SLOs), Content, Support, and Assessment? If they are not, what actions are planned?

Yes, the sections of GEOL 001 still are aligned with the GE requirements for Area B1.
General Education Annual Course Assessment Form

Course Number/Title: Geol 001, General Geology

Results reported for AY 2010-2011

# of sections: 5

# of instructors: 3

Course Coordinator: Robert Miller

E-mail: robert.b.miller@sjus.edu

Department Chair: Robert Miller

College: Science

Instructions: Each year, the department will prepare a brief (two page maximum) report that documents the assessment of the course during the year. This report will be electronically submitted, by the department chair, to the Office of Undergraduate Studies, with an electronic copy to the home college by September 1 of the following academic year.

Part 1

To be completed by the course coordinator:

(1) What SLO(s) were assessed for the course during the AY?

SLO#2: Students will be able to demonstrate ways in which science influences and is influenced by complex societies, including political and moral issues.

(2) What were the results of the assessment of this course? What were the lessons learned from the assessment?

Assessing student progress in this SLO was achieved via homework assignments, in-class discussions/assignments, a term paper, and exam questions. In some sections, students wrote an essay requiring application of knowledge of coastal erosion and prevention to buying beach property. 89% of students scored better than a C on this essay. Students were able to effectively weigh the desire and social status of owning beach-front property with their knowledge of geologic processes that affect the coast, and therefore, the quality and value of owning such property. In these sections, 53% of students scored better than a B on exams that included questions from class discussions about natural hazards, societal interaction with geological phenomena, and attempts to control nature. In other sections, students addressed questions, such as: 1) how do people assess where best to construct housing, industrial plants, etc., and how does geology affect this decision (i.e. hazards in an earthquake prone zone or near a volcano); and 2) what must individuals, industries and nations do to sustainably interact with the environment? Responses in homework assignments and term papers indicated that 90% of students satisfactorily attained the SLO. Exam answers were less effective, as 70% of students satisfied the learning objective. Class discussions of sustainability were very successful, as students were passionate about how they answered the topic.
(3) What modifications to the course, or its assessment activities or schedule, are planned for the upcoming year? (If no modifications are planned, the course coordinator should indicate this.)

One instructor will rotate the essay topic to reflect a different geology-related natural hazard—i.e., earthquakes, flooding, or landslides. The other instructor plans further in-class activities and discussions related to this SLO, as well as assigning take-home projects to be completed in a group with presentations to the class.

Yes, all sections of Geology 001 still meet the GE requirements for Area B1.

(4) Are all sections of the course still aligned with the Area Goals, Student Learning Objectives (SLOs), Content, Support, and Assessment? If they are not, what actions are planned?

To be completed by the department chair (with input from course coordinator) as appropriate:
Appendix B-2

GE-Recertification, 2012

GEOL 3

Planet Earth
Planet Earth

Geology 3, section 1

Spring, 2012

Instructor: Paula Jefferis

Office Location: Duncan Hall 419

Telephone: 408-924-5016

Email: paula.jefferis-nilsen@sjsu.edu

Office Hours: Monday/Wednesday: 9-10, 3:00-3:30
Tuesday/Thursday: 1:30-2:30 or by appointment

Class Days/Time: Tuesday/Thursday: 10:30-11:45

Classroom: Duncan Hall, 208

GE/SJSU Studies GE Area B1


Class material: will be available through desire2learn website. Assignments, movies, and power point slides will be uploaded to this website.

Course Description: Geology 3 is an integrated, interdisciplinary study of the Earth, with particular emphasis on the evolution and interactions of our planet’s physical systems. This course examines: (1) our current knowledge of geology, hydrology, meteorology, oceanography, and astronomy, (2) the mechanisms, techniques, and tools used in these fields, and (3) how scientific ideas develop.
Course Objectives

Geology 3 satisfies the SJSU requirements for GE Area B1. Here are some of the ways it addresses the student learning objectives of Area B:

In order to use the methods of science and knowledge derived from current scientific inquiry to question existing explanations; students will examine the scientific method in terms of the plate tectonic theory.

In order to demonstrate ways in which science influences and is influenced by, complex societies, including political and moral issues; students will evaluate their birthplace in terms of geological setting and issues related to the local population and natural resources.

In order to recognize methods of science, in which quantitative, analytical reasoning techniques are used, you will use skills such as observation, description, classification, data analysis, and data interpretation (offset of the San Andreas Fault exercise).

Classroom Protocol

Students are expected to be respectful to their classmates, instructor and themselves. Excessive talking, leaving early, arriving late are considered rude. All cell phones should be turned off during class. Absolutely no text messaging during class! Students using a lap top should stay in the last row if using the internet for non-class related use.

In general, students who attend regularly, arrive on time, read the text, and participate in class have better exam scores.

Course Logistics

- Class meets twice a week in Duncan Hall 208 for lecture, class exercises, discussion, and videos.
- Field trip to Alum Rock Park on February 18th
- Field trip to the Fijitsu Planetarium, De Anza College (TBA)
  - http://planetarium.deanza.edu/saturday.html
- You must be able to access desire2 learn through sjsu.edu (and other links) to complete some assignments. San Jose State University provides appropriate computing facilities if you do not have a home Web connection, http://slisweb.sjsu.edu/d2l/
- Complete: three exams, paper essay and oral report, field trips, term paper, homework, and class exercises (see page 11 of greensheet for due dates).
- Put effort into the assignments and class attendance as there is not any extra credit.

Dropping and Adding

Last date to drop course without an entry on permanent record: February 6th
Last date to add course: February 13th
Students are responsible for understanding the policies and procedures about add/drops, academic renewal, etc. Information is available at: http://sisweb.sjsu.edu/enrollment/lateadd.htm. Students should be aware of the current deadlines and penalties for adding and dropping classes.

Assignments and Grading Policy

The overall grade is based on the following:

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Three exams @ 18% each</td>
<td>54</td>
</tr>
<tr>
<td>National and state park oral report and essay</td>
<td>10</td>
</tr>
<tr>
<td>Birthplace term paper</td>
<td>15</td>
</tr>
<tr>
<td>Field trip to Alum Rock Park</td>
<td>6</td>
</tr>
<tr>
<td>Planetarium show (Fijitsu Planetarium, DeAnza College)</td>
<td>5</td>
</tr>
<tr>
<td>Homework quizzes and class exercises</td>
<td>10</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
</tr>
</tbody>
</table>

Grades are based on cumulative percentages of all graded assignments. Letter grades are assigned to approximately correlate with the following percentages:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-, A, A+</td>
<td>90-100</td>
</tr>
<tr>
<td>B-, B, B+</td>
<td>80-89</td>
</tr>
<tr>
<td>C-, C, C+</td>
<td>70-79</td>
</tr>
<tr>
<td>D-, D, D+</td>
<td>60-69</td>
</tr>
<tr>
<td>F</td>
<td>59 or below</td>
</tr>
</tbody>
</table>

Exams: Exams will consist of about 35 multiple choice questions at two points each and about 30 points of short answer or map questions. Material from the book, lecture, exercises, and movies will be used for questions. Each exam will include material previous to the exam. There are absolutely no make-up exams without a doctor's note or some type of pre-arrangement before the exam.

National and state park oral report due: February 21st. A park and group will be assigned on January 31st. Each group will present information relating to a specific park. The essay will be individually written and submitted for evaluation on February 21st. Focus will be on the classification and formation of rocks found at each particular location.

Alum Rock field trip: Class will meet at the entrance of Alum Rock Park on Saturday, February 18th, at 8:30 AM. There is space available for 8 students in a department vehicle to depart SJSU at 8AM and return to campus by 12 PM.

A two- three mile walk on pavement and gravel is required. Contact instructor if this in not physically possible for an alternative assignment.
**Various Class exercises**: Either completed in class or at home, assignments are intended to aid the student in further understanding a particular point.

**Term Paper**: Due on April 5th, the term paper consists of and evaluation of the student's birthplace in terms of population concentration, geologic setting, natural resources and hazards. Full directions may be found on the website.

**Class participation**: Each class period will include a chance to answer questions in order to collect a "ticket". Each ticket is worth 1 point for the following exam. Each student may use up to 5 tickets for each exam (half a grade).

The park essay and term paper must be submitted to turnitin.com before class on the due date. Papers may be submitted, reviewed and resubmitted before due date. May I suggest this if individuals sometimes cut and paste information from the original source. Any "surprise" lifted passages will count as plagiarism. **Please bring a hard copy to class**

**To submit a paper to turnitin.com**:  
Go to the home page: [www.turnitin.com](http://www.turnitin.com) Follow the directions on the turnitin.com website.  
Submit text only. No references.

<table>
<thead>
<tr>
<th>Section 1</th>
<th>Id #: 4690918</th>
<th>Password: planetearth (case sensitive)</th>
</tr>
</thead>
</table>

**College-Level Writing**  
The research paper for this course (as for any course) should NOT contain:  
(1) conversational passages such as "Have you ever wondered why xyz?"  
(2) casual references to "you" (the second person), as in "When you look at xyz..."  
(3) slang or other overly informal expressions:  
(4) filler words that can be omitted without loss of meaning; for example,  
"There are several factors that affect xyz" should be "Several factors affect xyz."

**Direct Quotes**  
**Avoid direct quotes wherever possible**, which should be in almost all cases. Direct quotes show no thought, analysis, or other higher-level skills on your part, and do nothing to convey your understanding of the content. The more direct quotes you use, the lower grade you will earn.

**Formatting**  
Your papers should be printed on a computer printer using the following standard format (see your instructor if your printer cannot handle these requirements):  
Do not use a folder or plastic cover.  
**Double-space** the entire manuscript, and leave 1-inch margins on all sides of the page.  
**Use a 12-pt font**, preferably Times New Roman (NOT Courier).
Number all pages, and staple the paper in the upper left corner.

Single-space your name, the date, and “Geology 3” in a header at the top of page 1. Follow this header with the title of your paper. Do not use a separate title page.

Grading Rubric for Written Assignments
Student papers will be graded according to the following rubric. As specified in the guidelines for GE courses, the final grade on an assignment is the sum of the content and writing scores.

<table>
<thead>
<tr>
<th>Score</th>
<th>~grade</th>
<th>Content criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>A+</td>
<td>Outstanding response with superior supporting examples or evidence; unusual insights, creative and original analysis, reasoning, and explanation; superior mastery of content; goes well beyond minimum required for the assignment.</td>
</tr>
<tr>
<td>4</td>
<td>B+</td>
<td>Good, solid response that uses excellent supporting examples or evidence; excellent reasoning and explanations; goes beyond the minimum required for the assignment.</td>
</tr>
<tr>
<td>3</td>
<td>B-</td>
<td>Good, solid response that meets minimum required by assignment. Reasoning and explanations are adequate.</td>
</tr>
<tr>
<td>2</td>
<td>C-</td>
<td>Response is accurate but cursory, and does not meet the minimum required for completeness; some inaccuracies or reasoning flaws; response is too general, lacks specific evidence.</td>
</tr>
<tr>
<td>1</td>
<td>D</td>
<td>Response doesn’t effectively address the question; response fails to support assertions with data or examples; major flaws in reasoning; explanations are unclear; displays inadequate understanding of content.</td>
</tr>
<tr>
<td>0</td>
<td>F</td>
<td>Response is missing or not submitted, or does not address the question.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Score</th>
<th>~grade</th>
<th>Writing criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>A+</td>
<td>Meets criteria for 4, plus demonstrates superior grammatical correctness and sense of personal style. Effortlessly readable prose.</td>
</tr>
<tr>
<td>4</td>
<td>B+</td>
<td>Very effective organization of paragraphs and paper; interesting, varied sentences; good grammar (usage, punctuation, etc.); few spelling mistakes; does not read like a first draft.</td>
</tr>
<tr>
<td>3</td>
<td>C+</td>
<td>Reasonably effective organization of paragraphs and paper; serviceable prose; numerous errors of grammar or spelling; reads like a first draft.</td>
</tr>
<tr>
<td>2</td>
<td>C-</td>
<td>Somewhat structurally disorganized; paragraphs lack topic sentences or are not developed effectively; awkward sentence structure; grammar and spelling errors are numerous, distracting, and serious.</td>
</tr>
<tr>
<td>1</td>
<td>D-</td>
<td>Similar to 2, but even harder to read.</td>
</tr>
<tr>
<td>0</td>
<td>F</td>
<td>Uncited, unattributed work (i.e., plagiarism) OR any content, in any form, from a pay-by-the-page service. In each of these circumstances, your paper will be forwarded to the appropriate SJSU office.</td>
</tr>
</tbody>
</table>
Academic Integrity

The university maintains a strongly worded policy regarding academic integrity. Plagiarism (presenting someone else’s work as your own) and cheating will earn you an F and endanger your chances of passing the course, of retaining any academic or athletic scholarship you currently receive, and of remaining enrolled at this university. Read SJSU’s policy on Academic Integrity at http://www.sjsu.edu/studentconduct/Students/Student_Academic_Integrity_Process/.

Students should know that the University’s Academic Integrity Policy is available on http://www.sjsu.edu/studentconduct/docs/Academic_Integrity_Policy_S07-2.pdf. Your own commitment to learning, as evidenced by your enrollment at San Jose State University and the University’s integrity policy, require you to be honest in all your academic course work. Faculty members are required to report all infractions to the office of Student Conduct and Ethical Development. The website for Student Conduct and Ethical Development is available at http://www.sjsu.edu/studentconduct/.

Instances of academic dishonesty will not be tolerated. Cheating on exams or plagiarism (presenting the work of another as your own, or the use of another person’s ideas without giving proper credit) will result in a failing grade and sanctions by the University. For this class, all assignments are to be completed by the individual student unless otherwise specified. If you would like to include in your assignment any material you have submitted, or plan to submit for another class, please note that SJSU’s Academic Policy F06-1 requires approval of instructors.

Campus Policy in Compliance with the American Disabilities Act

If you need course adaptations or accommodations because of a disability, or if you need to make special arrangements in case the building must be evacuated, please make an appointment with me as soon as possible, or see me during office hours. Presidential Directive 97-03 requires that students with disabilities requesting accommodations must register with the DRC (Disability Resource Center) to establish a record of their disability. http://www.drc.sjsu.edu/aboutUs/contactus.htm

Learning Assistance Resource Center

The Learning Assistance Resource Center (LARC) is located in Room 600 in the Student Services Center. It is designed to assist students in the development of their full academic potential and to motivate them to become self-directed learners. The center provides support services, such as skills assessment, individual or group tutorials, subject advising, learning assistance, summer academic preparation and basic skills development. The LARC website is located at http://www.sjsu.edu/larc/.

SJSU Writing Center

The SJSU Writing Center is located in Room 126 in Clark Hall. It is staffed by professional instructors and upper-division or graduate-level writing specialists from each of the seven
SJ State University (SJSU) colleges. Our writing specialists have met a rigorous GPA requirement, and they are well trained to assist all students at all levels within all disciplines to become better writers. The Writing Center website is located at [http://www.sjsu.edu/writingcenter/](http://www.sjsu.edu/writingcenter/).

**Peer Mentor Center**

The Peer Mentor Center is located on the 1st floor of Clark Hall in the Academic Success Center. The Peer Mentor Center is staffed with Peer Mentors who excel in helping students manage university life, tackling problems that range from academic challenges to interpersonal struggles. On the road to graduation, Peer Mentors are navigators, offering “roadside assistance” to peers who feel a bit lost or simply need help mapping out the locations of campus resources. Peer Mentor services are free and available on a drop-in basis, no reservation required. [http://www.sjsu.edu/muse/peermentor/](http://www.sjsu.edu/muse/peermentor/).
## Course Schedule

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Topics, Readings, Assignments, Deadlines</th>
<th>Chapter (pages)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1/26</td>
<td>- Introduction: Class expectations</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>1/31-2/2</td>
<td>- Earth science, people and the environment</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Continents versus ocean basins</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Convection exercise and meet a few of your classmates</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>Convection class exercise: 1/31</em></td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Geosphere: Matter and minerals: building blocks of rocks</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>National and State Park groups and locations assigned</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>2/7-9</td>
<td>Minerals continued</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rocks</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>handout</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>2/14-16</td>
<td>Field trip around town: 2/14</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Weathering</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Quiz #1 due 2/16</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Field trip: Alum Rock Park, Saturday, February 18th, 8-1200</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>2/21-23</td>
<td>Oral Reports and essay due 2/21</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>2/28</td>
<td>Exam #1: introductory chapter, minerals, igneous rocks, metamorphic rocks, sedimentary rocks</td>
<td>1, 2, 3, 4 and resource pages</td>
</tr>
<tr>
<td></td>
<td>3/1</td>
<td>Water</td>
<td>5</td>
</tr>
<tr>
<td>7</td>
<td>3/6-8</td>
<td>Water</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Quiz #2 due 3/6</td>
<td></td>
</tr>
<tr>
<td>Week</td>
<td>Date</td>
<td>Topics, Readings, Assignments, Deadlines</td>
<td>Chapter (pages)</td>
</tr>
<tr>
<td>------</td>
<td>-------------</td>
<td>--------------------------------------------------------------------------------------------------------</td>
<td>-----------------</td>
</tr>
</tbody>
</table>
| 8    | 3/13-15     | Plate tectonics  
Scientific method essay (class exercise): 3/15                                                   | 7               |
| 9    | 3/20-22     | Earthquakes: The San Andreas and Bay Area  
Faults, hazards, and earth materials  
Quiz #3 is due 3/20  
Earthquake exercise (class exercise): 3/22                                                               | 8               |
| 10   | 3/27-29     | Spring break                                                                                          |                 |
| 11   | 4/3-5       | Volcanoes  
Term paper due: 4/5                                                                               | 9               |
| 12   | 4/10        | Exam #2: water; plate tectonics;  
earthquakes and volcanoes  
Oceans                                                                                             | 13              |
|      | 4/12        |                                                                                                       |                 |
| 13   | 4/17-19     | Oceans  
Quiz #4 is due 4/17                                                                                      | 14, pages 426-432 |
|      |             | Atmosphere                                                                                             | 16              |
| 14   | 4/24-26     | Moisture and clouds  
Air pressure and winds  
Geologic time exercise due 4/26                                                                          | 17, 18          |
| 15   | 5/1-3       | Climate and climate change  
Origins of Modern Astronomy  
Quiz #5 is due 5/3                                                                                     | 20, 22          |
| 16   | 5/8-10      | Touring our solar system                                                                                   | 22              |
| 17   | 5/15-17     | Our Sun and beyond                                                                                    | 24              |
| 18   | 5/21        | Exam #3: oceans, meteorology, and astronomy                                                            |                 |
|      | 0945-1200   |                                                                                                       |                 |
## Assignments

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Due date</th>
<th>Percentage</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exam # 1</td>
<td>February 28&lt;sup&gt;th&lt;/sup&gt;</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>Exam # 2</td>
<td>April 10&lt;sup&gt;th&lt;/sup&gt;</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>Exam # 3</td>
<td>May 21&lt;sup&gt;st&lt;/sup&gt;</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>National and state park oral report and essay</td>
<td>February 21-23</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Alum Rock Field Trip</td>
<td>February 18&lt;sup&gt;th&lt;/sup&gt;</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Planetarium field trip: <a href="http://planetarium.deanza.edu/saturday.html">http://planetarium.deanza.edu/saturday.html</a></td>
<td>Choice of dates</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Birthplace evaluation term paper</td>
<td>April 5&lt;sup&gt;th&lt;/sup&gt;</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>Convection exercise</td>
<td>January 31&lt;sup&gt;st&lt;/sup&gt;</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Walk around town field trip</td>
<td>February 14&lt;sup&gt;th&lt;/sup&gt;</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Scientific method short essay (class exercise)</td>
<td>March 15&lt;sup&gt;th&lt;/sup&gt;</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Bay Area faults and hazards class exercise (begin on the 21&lt;sup&gt;st&lt;/sup&gt;)</td>
<td>March 22&lt;sup&gt;nd&lt;/sup&gt;</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Geologic time exercise</td>
<td>April 26&lt;sup&gt;th&lt;/sup&gt;</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Quiz #1: matter, minerals, rocks and weathering</td>
<td>February 1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Quiz #2: water</td>
<td>March 6&lt;sup&gt;th&lt;/sup&gt;</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Quiz #3: plate tectonics, earthquakes and volcanoes</td>
<td>March 20&lt;sup&gt;th&lt;/sup&gt;</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Quiz #4: Oceans and atmosphere</td>
<td>April 17&lt;sup&gt;th&lt;/sup&gt;</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Quiz #5: Astronomy</td>
<td>May 3&lt;sup&gt;rd&lt;/sup&gt;</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>100%</strong></td>
<td></td>
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</tbody>
</table>
GEOL 003  Planet Earth  &  The GE area B1 SLOs

Below are some examples of how Geology 3 addresses the student learning objectives for General Education Area B1. Students progress towards these objectives via homework assignments, in-class discussions and activities, written work, and exams.

A. In order to use methods of science and knowledge derived from current scientific inquiry in physical science to question existing explanations, students will:
   A1. investigate explanations for the origin of the universe and arrive at a conclusion, using critical thinking skills and analytical reasoning;
   A2. describe how the development of plate tectonic theory led to an understanding of the global distribution of volcanoes, earthquakes, and mineral deposits; and
   A3. analyze the technology developed to investigate the ocean floor and how it has revolutionized our understanding of tectonic processes.

b. In order to demonstrate ways in which science influences and is influenced by complex societies, including political and moral issues, students will:
   B1. investigate the reactions of scientists, politicians, and the media to the scientific consensus about climate change;
   B2. understand the causes of ozone depletion and how it affects society; and
   B3. evaluate risks to the Bay Area, California, U.S. and globe due to earthquake hazards.

c. In order to recognize methods of science, in which quantitative, analytical reasoning techniques are used, students will:
   C1. investigate techniques and tools that geophysicists and astronomers use to measure the physical properties of distant objects such as the seafloor and celestial bodies;
   C2. analyze evidence that current levels of atmospheric CO₂ and other greenhouse gases have been artificially elevated by human activities;
   C3. evaluate the current state of prediction in the earth sciences (hurricanes, volcanic eruptions, and earthquakes); and
   C4. use skills such as observation, description, classification, data analysis, and data interpretation to evaluate offset on the San Andreas fault.
Assessment Report for GEOL 003 Planet Earth

SJSU General Education area B1

GEOL 003 Planet Earth is a 3-unit course that satisfies GE area B1. Over the past four years, the department has offered an average of four sections of the course, serving about 165 SJSU students, per fall or spring semester. Most sections have been taught by lecturers, and share nearly identical greensheets, texts, content, and assignments. Course coordinator Richard Sedlock taught the course in an online format for the first time in Winter 2012, and is doing so again in Spring 2012. Though he is retiring later this year, his course materials will be available for other tenure-track or part-time faculty who wish to teach online.

GEOL 003 is assessed via a variety of graded assignments, including research papers, embedded questions on exams, and in-class activities and quizzes. Some examples are given below, tied to the relevant SLO.

**SLO #1 (use the methods of science and knowledge derived from current scientific inquiry to question existing explanations):** Essay questions on exams give students the opportunity to display their grasp of fundamental scientific principles and methods, and the application of these to controversial issues. Examples of the fundamentals include El Niño and La Niña events, the origin of the universe and the solar system, and the development of plate-tectonic theory. Instructors estimate that 50% to 70% of their students demonstrate good to excellent mastery on such questions.

GEOL 003 presents Earth as a complex system of interconnected processes that follow basic physical laws. Unfortunately, many students in this course do not appear to have the tools needed to intellectually grasp this challenging idea. Most students cannot or will not think critically or analyze complex problems independently, and many continue to struggle despite ample coaching or prompting. Also, their background in scientific fundamentals (methods, the periodic table, laws of physics, plate tectonics, etc.) varies from acceptable to negligible. However, see the discussion at the bottom of page 2.

**SLO #2 (ways in which science influences and is influenced by complex societies, including political and moral issues):** One of the chief vehicles for evaluating student mastery of SLO #1 in lecturer Paula Jeffers’ sections is a research paper in which students evaluate the demographics, natural resources, and geologic hazards of their hometown. Demographic variables are partly a function of geologic factors: Statistically, lower-income and marginalized groups live in areas that are more prone to geologic hazards and environmental degradation due to resource extraction. Ms. Jeffers reports very high levels of student performance on, and engagement with, this topic, apparently because of the “hometown” link: students have emotional attachments to the place and people who live there—many of them grew up within the lower-income or marginalized sectors that were more prone to geologic hazards and environmental degradation. Jeffers estimates that over 90% of her students demonstrate good or excellent understanding of the societal-geological connections that are the focus of this assignment.
SLO #3 (recognize methods of science, in which quantitative, analytical reasoning techniques are used): Many assignments and in-class activities in GEOL 003 provide us with data about student mastery of SLO #3. Typical of these is an in-class activity in which students measure offsets of geological features, calculate displacement rates, and reconstruct the slip history of the San Andreas fault. This activity requires students to obtain data from maps and geologic reports, to use straightforward mathematical operations, and to interpret results in a logically valid manner. Student performance is average, and only ~40% of the students receive full points (it’s a bit tricky to estimate this because students work in pairs, but summative questions help distinguish followers from leaders). This performance reflects a long-standing issue in Area B1 courses: Most students are unable, or unwilling, to apply high-school mathematics to solve simple word problems. This appears to a deep-seated pre-college preparation issue, because we also encounter it in our upper-division GE courses. Nevertheless, activities like these help students recognize that quantitative analysis can be applied in these ways, whether or not they are able to.

Future Modifications

Student performance on SLO #1 and SLO #3 is average, at best. We have concluded that this reflects shortcomings in pre-college preparation, but part of the problem may also be insufficient engagement of the student. When students are more intellectually and emotionally engaged, as they are for the “hometown” analysis described above for SLO #2, performance may be much improved—even excellent.

The online version of the course currently being taught by Sedlock replaces much of the “straight science” as taught by our lecturers with content that is highly relevant to these students and their future: climate change, the death of the world ocean, the ongoing mass extinction of species, the end of cheap oil, renewable energy resources, etc. Halfway through the spring 2012 semester, it is clear that student engagement is very high, and that the students are willing to try to integrate diverse concepts in order to understand the complex Earth system and complex Earth-human interactions. Their success in integrating the concepts requires further evaluation; mathematical tools still appear to be poorly developed in many students, but at least it appears that we can clear the hurdle of student engagement through this modification of course content.

The tenure-track faculty of the Department will evaluate student performance this semester and determine whether, and how, to formally revise the course’s focus for Fall 2012 and beyond.
General Education Annual Course Assessment Form

Course Number/Title: GEOL 003 -- Planet Earth
GE Area: B1 Results reported for AY 09-10
# of sections: 6 # of instructors: 2
Course Coordinator: Richard Sedlock E-mail: richard.sedlock@sjsu.edu
Department Chair: Richard Sedlock College: Science

Instructions: Each year, the department will prepare a brief (two page maximum) report that documents the assessment of the course during the year. This report will be electronically submitted, by the department chair, to the Office of Undergraduate Studies, with an electronic copy to the home college by September 1 of the following academic year.

Part 1
To be completed by the course coordinator:

(1) What SLO(s) were assessed for the course during the AY?

SLO 1: Students can use the methods of science and knowledge derived from current scientific inquiry in life or physical science to question existing explanations.

(2) What were the results of the assessment of this course? What were the lessons learned from the assessment?

The chief vehicle for assessing student outcomes of SLO #1 was a set of exam questions (multiple-choice and short essay) that address hypothesis development and testing (e.g., the nebula hypothesis, plate tectonics, earthquake prediction) and the intersection of the natural environment and human choice-making (climate change, development of energy resources, the commons, pollution).

On the multiple-choice questions, correct response rates per question ranged from 78% to 85%. On the essay questions, average grades assigned by the instructors ranged from 74% to 86%, and the instructors report being quite satisfied with the depth and breadth of student responses vis-à-vis SLO #2. Although essay questions have a slightly wider range of average grades, instructors think they are more trustworthy indicators of student understanding.

(3) What modifications to the course, or its assessment activities or schedule, are planned for the upcoming year? (If no modifications are planned, the course coordinator should indicate this.)

None are planned.

Part 2
To be completed by the department chair (with input from course coordinator as appropriate):

(4) Are all sections of the course still aligned with the area Goals, Student Learning Objectives (SLOs), Content, Support, and Assessment? If they are not, what actions are planned?

Yes, the sections of GEOL 003 still are aligned with the GE requirements for Area B1.
General Education Annual Course Assessment Form

Course Number/Title:  Geol 003, General Geology  
GE Area: B1

Results reported for AY 2010-2011  # of sections: 6  # of instructors: 2

Course Coordinator: Robert Miller  E-mail: robert.b.miller@sjsu.edu

Department Chair: Robert Miller  College: Science

Instructions: Each year, the department will prepare a brief (two page maximum) report that documents the assessment of the course during the year. This report will be electronically submitted, by the department chair, to the Office of Undergraduate Studies, with an electronic copy to the home college by September 1 of the following academic year.

Part 1

To be completed by the course coordinator:

(1) What SLO(s) were assessed for the course during the AY?

SLO#2: Students will be able to demonstrate ways in which science influences and is influenced by complex societies, including political and moral issues.

(2) What were the results of the assessment of this course? What were the lessons learned from the assessment?

One of the instructors utilized a written exercise in which students are asked whether the U.S. government should allow drilling for crude oil in the Arctic National Wildlife Refuge (ANWR). Students do a series of calculations (based on data on website from the U.S. Department of Energy) to determine how long we can sustain domestic oil production if we only use oil pumped from U.S. soil? They then do further calculations to answer the following question: “If ANWR oil was the sole supply of petroleum available to the U.S., how long could it satisfy the current level of consumption?”

Finally, in view of these calculations, students are asked to make a value judgment on whether the U.S. should drill in the ANWR area and explain their answer. A score of 80% was judged to show that the student had mastered this GE requirement, and 78% of the students earned this score or higher. A problem was that some students failed to adequately cite their sources, and among these, many failed to discuss why they thought their sources were valid.

A second instructor assessed student progress in this SLO through a 5-6 page (~1500-1800 words) term paper in which students evaluated their birthplace in terms of geological setting and issues related to the local population, including geologic hazards and natural resources. Approximately 85% of the students successfully made the connection between the specific locale and the geologic issues. The 15% who did not, probably did not put in sufficient effort and/or did not have appropriate skills (library/scholarly searches) to find the necessary information.
(3) What modifications to the course, or its assessment activities or schedule, are planned for the upcoming year? (If no modifications are planned, the course coordinator should indicate this.)

A change that will be made for the oil consumption assignment is to make it clearer that students must critically assess the validity of their sources. For the term paper on birthplace and geology, the instructor plans to provide more guidance for the students to meet this objective, in part through a “library tour” with the library liaison to the Geology Department.

Part 2

To be completed by the department chair (with input from course coordinator as appropriate):

(4) Are all sections of the course still aligned with the area Goals, Student Learning Objectives (SLOs), Content, Support, and Assessment? If they are not, what actions are planned?

Yes, all sections of Geology 003 still meet the GE requirements for Area B1.
Appendix B-3

GE-Recertification, 2012

GEOL 4L

Planet Earth: The Lab
SJSU Geology 4L   Spring 2012
Section 05     Tuesday, 1730-2000

Instructor: Susan Gervais
408 924-5050   Dept of Geology, SJSU, San José, CA 95192-0102
DH 301     Office hours: T 1430-1630  e-mail: susan.gervais@sjsu.edu
Course Web site: http://geosun.sjsu.edu/~sedlock/4L/4L.html (bookmark this)

Scope of course
The broad goal of the course is to familiarize students with the Earth system and its materials, processes, and history. The course supplements a general lecture course with hands-on science experiments and applications that will enrich your general knowledge of astronomy, geology, meteorology, and oceanography. You will develop a better awareness of your relationship to Earth, and you will learn how natural earth processes affect you and society.

Nature of Course
This class meets once a week on Tuesdays at 5:30 pm in room DH 216. One class meeting will include outdoor work.

Prerequisite or corequisite: None.

Required text
Planet Earth: The Lab   Richard Sedlock. Available from Maple Press, 481 E. San Carlos Street (between 10th and 11th). You MUST bring this text to each class meeting. If you do not have the text, you will not be permitted to participate in the class meeting.

Learning objectives
Here are some of the ways in which Geology 4L addresses the particular student learning objectives specified by the GE Guidelines for Area B3 courses.

In order to use the methods of science and knowledge derived from current scientific inquiry to question existing explanations, you will evaluate the impacts of humans on land-use patterns in the last 300 years (Web assignment 4), use complex global data sets to formulate the basic precepts of plate tectonic theory (Lab 11), and investigate the nature of the transform plate boundary in the Bay Area (Lab 12).

In order to demonstrate ways in which science influences and is influenced by complex societies, including political and moral issues, you will investigate how different socioeconomic and cultural groups will be affected by abrupt or gradual environmental changes such as increased scarcity and cost of fossil fuels (Web assignment 1), destruction of stratospheric ozone (Lab 3), and volcanic eruptions (Lab 13).

In order to recognize methods of science, in which quantities analytical reasoning techniques are used, you will collect, classify, graph, or interpret data in every lab, e.g., classifying rocks and minerals using a dichotomous key (Lab 7), and interpreting graphical and tabular precipitation data for California (Lab 9).
Grading
Your lab grade will be based on a total of **1000 points**, distributed as follows:

<table>
<thead>
<tr>
<th>Class #</th>
<th>In-Class</th>
<th>Web-based</th>
<th>Exam</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>30</td>
<td>20</td>
<td></td>
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<td>3</td>
<td></td>
<td>40</td>
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<tr>
<td>4</td>
<td>40</td>
<td>20</td>
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<td>40</td>
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<tr>
<td>9</td>
<td>40</td>
<td>20</td>
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<tr>
<td>10</td>
<td>40</td>
<td></td>
<td>125</td>
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<tr>
<td>11</td>
<td>40</td>
<td>20</td>
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<tr>
<td>12</td>
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<td>40</td>
<td></td>
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<tr>
<td>13</td>
<td></td>
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<tr>
<td>14</td>
<td></td>
<td></td>
<td>180</td>
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<tr>
<td><strong>Totals</strong></td>
<td><strong>430</strong></td>
<td><strong>140</strong></td>
<td><strong>430</strong></td>
</tr>
</tbody>
</table>

A: 920-1000 points; B: 840-919 points; C: 760-839 points; D: 680-759 points; F: <680 points OR missing 3 or more of classes #2–#13.

No extra credit.

Late policy: Regular lab assignments are due at the end of the class meeting. Web-based assignments are due at the beginning of the next class meeting.

If you miss a lab or exam, you can make it up only in extraordinary circumstances.

If you know you will miss a lab and a Web assignment is due, arrange to deliver or e-mail the assignment to the instructor in advance.
# Geol 4L Schedule Spring 2012

<table>
<thead>
<tr>
<th>Class #</th>
<th>Date</th>
<th>In-Class Component</th>
<th>Web-based Component</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Jan 31</td>
<td>Intro, logistics, pre-survey, book sales</td>
<td>Web: Global Peak Oil</td>
</tr>
<tr>
<td>2</td>
<td>Feb 7</td>
<td>Lab 2: Space Science</td>
<td>Web: Virtual Tour of Solar System</td>
</tr>
<tr>
<td>3</td>
<td>Feb 14</td>
<td>—</td>
<td>Web: Ozone</td>
</tr>
<tr>
<td>4</td>
<td>Feb 21</td>
<td>Lab 4: Climate Change? / CO₂</td>
<td>Web: Land Use Changes</td>
</tr>
<tr>
<td>5</td>
<td>Feb 28</td>
<td>Lab 5: Topography 1</td>
<td>—</td>
</tr>
<tr>
<td>6</td>
<td>Mar 6</td>
<td>Exam #1</td>
<td>—</td>
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<tr>
<td></td>
<td></td>
<td>Lab 6: Topography 2</td>
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<tr>
<td>7</td>
<td>Mar 13</td>
<td>Lab 7: Minerals &amp; Rocks</td>
<td>—</td>
</tr>
<tr>
<td>8</td>
<td>Mar 20</td>
<td>Lab 8: Rocks in Downtown San José</td>
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</tr>
<tr>
<td>9</td>
<td>Apr 3</td>
<td>Lab 9: California Water</td>
<td>Web: Climate &amp; Sea Level Change</td>
</tr>
<tr>
<td>10</td>
<td>Apr 10</td>
<td>Exam #2</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lab 10: Effects of Sea-Level Rise</td>
<td>—</td>
</tr>
<tr>
<td>11</td>
<td>Apr 17</td>
<td>Lab 11: Plate Boundaries</td>
<td>Web: Earthquakes &amp; plate boundaries</td>
</tr>
<tr>
<td>12</td>
<td>Apr 24</td>
<td>Lab 12: California Has Its Faults</td>
<td>—</td>
</tr>
<tr>
<td>13</td>
<td>May 1</td>
<td>Lab 13: Volcanic Hazards</td>
<td>—</td>
</tr>
<tr>
<td>14</td>
<td>May 8</td>
<td>Exam #3</td>
<td>—</td>
</tr>
</tbody>
</table>

**Compliance with Americans with Disabilities Act:** If you need course adaptations or accommodations because of a disability, please contact me ASAP. Presidential Directive 97-03 requires that students with disabilities requesting accommodations must register with the Disability Resource Center (http://www.drc.sjsu.edu/) to establish a record of their disability.

**Academic Integrity:** Your commitment as a student to learning is evidenced by your enrollment at San Jose State University. The [University’s Academic Integrity policy](http://www.sjsu.edu/senate/S07-2.htm), located at http://www.sjsu.edu/senate/S07-2.htm, requires you to be honest in all your academic coursework. Faculty members are required to report all infractions to the Office of Student Conduct and Ethical Development (http://www.sjsu.edu/studentconduct/). The [Student Conduct and Ethical Development website](http://www.sjsu.edu/senate/S07-2.htm) is available at http://www.sjsu.edu/senate/S07-2.htm.

Plagiarism or submitting work in your name that you, personally, did not perform will earn you an F and endanger your chances of passing the course, of retaining any academic or athletic
scholarship you currently receive, and of remaining enrolled at this university. SJSU offers a tutorial on plagiarism here: http://tutorials.sjlibrary.org/tutorial/plagiarism/index.htm.
Assessment Report for GEOL 004L Planet Earth: The Lab

Area B3 (laboratory experience; uses Area B1 SLOs)

GEOL 004L Planet Earth: The Lab is a one-unit, stand-alone laboratory course that satisfies GE Area B3 (laboratory experience). Over the last four years, the department has offered an average of 10 sections of the course, serving about 240 SJSU Students, per fall or spring semester. All sections are taught by graduate students in the Department of Geology, who are advised by the course coordinator (currently, Professor Richard Sedlock). All sections of the course use the custom laboratory manual developed and written by Sedlock, which includes in-class, outdoor, and online assignments.

Area B3 does not have separate Student Learning Objectives (SLOs), so GEOL 004L uses the SLOs developed for Area B1 (Physical Science).

SLOs are assessed using two main vehicles. First, identical multiple-choice content surveys are administered to students in each section on the first and last days of class. Each SLO is addressed by at least three questions. In AY 2009-2010 and 2010-2011, student scores on these surveys have improved by an average of 20% between the beginning and end of the course:

<table>
<thead>
<tr>
<th>SLO</th>
<th>Pre-survey</th>
<th>Post-survey</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td>55%</td>
<td>80%</td>
</tr>
<tr>
<td>#2</td>
<td>58%</td>
<td>78%</td>
</tr>
<tr>
<td>#3</td>
<td>66%</td>
<td>81%</td>
</tr>
<tr>
<td>Overall</td>
<td>58%</td>
<td>79%</td>
</tr>
<tr>
<td>(n = 1039)</td>
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</tr>
</tbody>
</table>

Note: some questions address more than one SLO; some questions formally address no SLO.

The survey results suggest that GEOL 004L strongly supports attainment of the SLOs. However, surveys are imperfect tools: questions are quite general, students know they don’t “count” and thus don’t necessarily give full effort, etc. A second way of evaluating the SLOs is to discuss student performance with the instructors. Although this yields no statistical data, it helps the course coordinator gauge the degree to which students are engaged in a given topic, and enables the course coordinator to identify stumbling blocks to mastery of a particular SLO. Over the past four years, the course has been tweaked several times in response to these discussions, with the goal of enhancing student engagement and, we infer, student performance.

Sedlock will revise the entire lab manual in early summer 2012, based in part on the discussions with instructors described above, and in part on discussions among the department faculty about content goals. Future assessment of the course will retain use of content surveys and will continue to include formative discussions with instructors.
General Education Annual Course Assessment Form

Course Number/Title: GEOL 004L -- Planet Earth Lab
GE Area: B3
Results reported for AY: 09-10
# of sections: 16
# of instructors: 14
Course Coordinator: Richard Sedlock
E-mail: richard.sedlock@sjsu.edu
Department Chair: Richard Sedlock
College: Science

Instructions: Each year, the department will prepare a brief (two page maximum) report that documents the assessment of the course during the year. This report will be electronically submitted, by the department chair, to the Office of Undergraduate Studies, with an electronic copy to the home college by September 1 of the following academic year.

Part 1
To be completed by the course coordinator:

(1) What SLO(s) were assessed for the course during the AY?

SLO 1: Students can use the methods of science and knowledge derived from current scientific inquiry in life or physical science to question existing explanations.

(2) What were the results of the assessment of this course? What were the lessons learned from the assessment?

The chief vehicles for assessing student outcomes of SLO #1 were (1) pre- and post-course surveys and (2) qualitative performance on two specific lab assignments.

Identical multiple-choice content surveys were administered to students in each lab section on the first day of class and at the end of the last day of the semester. Student performance on a suite of six questions (relevant to SLO #1) improved from 3.3/6 (55%) to 4.8/6 (80%) (n = 281).

Student performance on two lab assignments that specifically target SLO #1 (CO₂ and climate change; California water resources) averaged about 80% across all sections. Interviews of the instructors by the course coordinator revealed that ~40% of the students were stumbling on a particular part of the CA water lab, and that revision of the lab in that area could improve student performance.

(3) What modifications to the course, or its assessment activities or schedule, are planned for the upcoming year? (If no modifications are planned, the course coordinator should indicate this.)

Minor modification to part of Lab 9 (California Water Resources) to address comprehension roadblock (see above).

Part 2
To be completed by the department chair (with input from course coordinator as appropriate):

(4) Are all sections of the course still aligned with the area Goals, Student Learning Objectives (SLOs), Content, Support, and Assessment? If they are not, what actions are planned?

Yes, the sections of GEOL 004L still are aligned with the GE requirements for Area B3.
General Education Annual Course Assessment Form

Course Number/Title: GEOL 004L, Planet Earth Laboratory  GE Area: B3

Results reported for AY: 2010-2011  # of sections: 20  # of instructors: 18

Course Coordinator: Richard Sedlock  E-mail: richard.sedlock@sjus.edu

Department Chair: Robert Miller  College: Science

**Instructions:** Each year, the department will prepare a brief (two page maximum) report that documents the assessment of the course during the year. This report will be **electronically submitted**, by the department chair, to the Office of Undergraduate Studies, with an electronic copy to the home college by September 1 of the following academic year.

**Part 1**

To be completed by the course coordinator:

(1) What SLO(s) were assessed for the course during the AY?

SLO #2: Students can demonstrate ways in which science influences and is influenced by complex societies, including political and moral issues

(2) What were the results of the assessment of this course? What were the lessons learned from the assessment?

Assessment of this SLO is based on student performance on embedded questions in pre- and post-surveys. The questions evaluate student understanding of human-Earth interactions that are the subject of the following: (1) Web-based assignment on Peak Oil; (2) in-class lab #3, Ozone; (3) in-class lab #4, Climate Change & CO2; (4) in-class lab #9, California Water; and (5) in-class lab #10, Sea Level Change.

Scores rose from 5.3/8.0 on pre-surveys to 6.5/8.0 on post-surveys, suggesting that the assignments are effective ways of improving student understanding of human-Earth interactions. However, surveys are imperfect tools: questions are necessarily very general, students know they don’t “count” and thus may not give full effort, some instructors forget to administer the surveys, etc.

A second way of evaluating this SLO is by discussing student performance with the instructors (all of whom are graduates students in the Department of Geology). Although this yields no statistical data, it helps the course designer/coordinator gauge the degree to which students are engaged in a given topic. Over the past three years, the course has been tweaked several times in response to these discussions, with the goal of enhancing student engagement and, we infer, student mastery of this SLO.

(3) What modifications to the course, or its assessment activities or schedule, are planned for the upcoming year? (If no modifications are planned, the course coordinator should indicate this.)

Course coordinator Sedlock will revise the entire lab manual on his Difference-in-Pay leave in Fall 2011.
Based in part on the discussions with instructors described above, this new edition will replace several labs with new ones that directly address ways in which science influences and is influenced by complex societies, including energy resources and climate change. We will retain the pre- and post-survey approach (revising the survey where appropriate) and continue to have discussions with individual instructors, especially regarding the new labs.

**Part 2**

To be completed by the department chair (with input from course coordinator as appropriate):

(4) Are all sections of the course still aligned with the area Goals, Student Learning Objectives (SLOs), Content, Support, and Assessment? If they are not, what actions are planned?

All sections of Geology 004L still meet the GE requirements for Area B3.
Appendix B-4

GE-Recertification, 2012

GEOL 6

Geology of California
San José State University
Geology Department
Geol 6, California Geology, Spring 2012

Instructor: Emmanuel Gabet
Office Location: Duncan Hall 223
Telephone: (408) 924-5035
Email: manny.gabet@sjsu.edu
Office Hours: Thursday, 10:00 – 11:00 or by appointment
Class Days/Time: Lecture: T/Th 1:30 – 2:45
Classroom: 208 Duncan Hall

Course Description
This course is designed to help the student understand geologic features of California, and to understand the earth processes that produced these features. As a result, students will be able to make more informed personal and political decisions concerning geologic hazards such as landslides, flooding, earthquakes, and volcanoes, and environmental issues such as water quality and quantity, climate change, land use, and resource management.

Course Goals and Student Learning Objectives
Geology 6 satisfies the SJSU requirements for GE Area B1. Here are some of the ways it addresses the student learning objectives of Area B:

In order to use the methods of science and knowledge derived from current scientific inquiry to question existing explanations, you will explain how the development of plate tectonic theory led to an understanding of the distribution of earthquakes and volcanoes not only in California, but also globally.

In order to demonstrate ways in which science influences and is influenced by complex societies, including political and moral issues, you will explore how issues of fresh-water availability and distribution are viewed by scientists, politicians, agribusiness, and others stakeholders.

In order to recognize methods of science, in which quantitative, analytical reasoning techniques are used, you will use skills such as observation, description, classification, data analysis, and graphing in the classroom, and on exams.
Required Texts/Readings

Textbook

Assembling California by John McPhee

Classroom Protocol

Once you have made the commitment to take this class, I expect you to honor that commitment by regularly attending lecture. However, life happens and you may be forced to miss a class. If that situation should arise, notify me in advance that you will be missing class and I will allow you to make up any exercise or quiz that you missed that day. If I am not notified in advance, I will consider your absence to be unexcused. There is a direct correlation between class attendance and course grade; in my experience, students who miss more than a third of the classes do not pass the course.

Classroom Courtesy: Most students want to get a good grade. To maintain an environment in which these students can do well, classroom distractions must be kept to a minimum.

Cell phones: Turned off.
Texting: Checking and writing messages during class will NOT be tolerated. Each time that I see you texting, your final grade will be reduced by 5 percentage points. A signature sheet will be passed around on the first day of class to ensure that you understand this policy.

Laptop computers: I do not encourage the use of computers for taking notes. I draw many pictures during class to illustrate critical concepts and these are impossible to reproduce with a computer. In addition, the temptation to surf the web, check email, play video games, etc. during class is difficult to resist. Because this is distracting for others, students who insist on using their laptops to take notes must sit in the back row of the classroom.

Dropping and Adding

Students are responsible for understanding the policies and procedures about add/drop, grade forgiveness, etc. Refer to the current semester’s Catalog Policies section at http://info.sjsu.edu/static/catalog/policies.html. Add/drop deadlines can be found on the current academic calendar web page located at http://www.sjsu.edu/academic_programs/calendars/academic_calendar/. The Late Drop Policy is available at http://www.sjsu.edu/aars/policies/latedrops/policy/. Students should be aware of the current deadlines and penalties for dropping classes.

Information about the latest changes and news is available at the Advising Hub at http://www.sjsu.edu/advising/.
Assignments and Grading Policy

Your final grade will be based on the following assignments:

Two exams 45%
Term paper 30%
Exercises 15%
Up to 4 pop quizzes 10%
- these are based on the previous day’s lecture

Letter grades will correspond to the following percentages:

A-, A 90-100
B-, B, B+ 80-89
C-, C, C+ 70-79
D-, D, D+ 60-69
F <60

Extra Credit: You can garner extra credit points by delivering a 5-7 minute presentation to the class near the end of the semester (see syllabus for exact date). The topic must be on some aspect of California geology and must be cleared by the professor beforehand. Presentations will be worth up to 5 points that will be applied to your final class grade. For example, if your final class grade is 89% (B+) and you get 2 extra credit points, your final class grade will be bumped up to 91% (A-). You will gain maximum points if your presentation: is delivered clearly, is not read from a sheet of paper, includes pictures and/or illustrations, and is informative. Only the best presentations will receive the full 5 points. DO NOT print the text from Wikipedia and read it to the class. DO NOT include videos downloaded from the Internet. Questions derived from these presentations may be included on the final. Your topic must be turned in on a sheet of paper on the due date (see syllabus) for you to be eligible for the extra credit.

Other ways to affect your grade: I highly value class participation. Depending on your level of participation, your final grade can get 1/3 to a full grade boost. An easy way to participate in the class is by asking questions when you don’t understand what I’m saying or when you want to know more about a certain topic. Another way is to answer questions that I ask the class. Moving the class from being a lecture to a discussion is more interesting and benefits everybody.

Exams cover the material presented through lectures, reading, movies, and class activities. The tests will be "two-part cooperative exams" and require 2 scantron sheets. Part 1 is a 25 question multiple choice scantron test. After 30 minutes, you hand in your first scantron sheet. Part 2 is the same 25 questions plus 5 additional (slightly tougher, more in depth) questions that you will answer on your second scantron sheet. For the second part, you can confer with anybody in the room but you may NOT consult your notes, books, etc. You will not be allowed to organize into groups larger than 3 students for the cooperative section. Part 1 counts for 75% of the exam grade, Part 2 counts for 25% of the grade.
If you miss an exam (or quiz) because of an unforeseen event, you must produce valid evidence (e.g., police report, hospital admission receipt, etc). If you know that you will be unable to take an exam, you must notify me ahead of time. There will be no make-up exams; if you miss one for a valid reason, I will simply double the score of the other.

Contact me early in the semester if there is a scheduling problem.

**University Policies**

**Academic integrity**

Students should know that the University’s [Academic Integrity Policy](http://sa.sjsu.edu/judicial_affairs/faculty_and_staff/academic_integrity/index.html) is available at http://sa.sjsu.edu/judicial_affairs/faculty_and_staff/academic_integrity/index.html. Your own commitment to learning, as evidenced by your enrollment at San Jose State University and the University’s integrity policy, require you to be honest in all your academic course work. Faculty members are required to report all infractions to the office of Student Conduct and Ethical Development. The Student Conduct and Ethical Development website is available at http://www.sa.sjsu.edu/judicial_affairs/index.html.

Instances of academic dishonesty will not be tolerated. Cheating on exams or plagiarism (presenting the work of another as your own, or the use of another person’s ideas without giving proper credit) will result in a failing grade and sanctions by the University. For this class, all assignments are to be completed by the individual student unless otherwise specified. If you would like to include in your assignment any material you have submitted, or plan to submit for another class, please note that SJSU’s Academic Policy F06-1 requires approval of instructors.

**Campus Policy in Compliance with the American Disabilities Act**

If you need course adaptations or accommodations because of a disability, or if you need to make special arrangements in case the building must be evacuated, please make an appointment with me as soon as possible, or see me during office hours. Presidential Directive 97-03 requires that students with disabilities requesting accommodations must register with the [Disability Resource Center](http://www.drc.sjsu.edu/) (DRC) at http://www.drc.sjsu.edu/ to establish a record of their disability.

**SJSU Writing Center**

The SJSU Writing Center is located in Room 126 in Clark Hall. It is staffed by professional instructors and upper-division or graduate-level writing specialists from each of the seven SJSU colleges. Our writing specialists have met a rigorous GPA requirement, and they are well trained to assist all students at all levels within all disciplines to become better writers. The [Writing Center website](http://www.sjsu.edu/writingcenter/about/staff/) is located at http://www.sjsu.edu/writingcenter/about/staff/.
## Geol 6 / California Geology

### Table 1 Course Schedule: Lectures

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Topics &amp; Readings</th>
<th>Chap</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Jan 26</td>
<td>Introduction to course, expectations, organization</td>
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<td></td>
<td>Jan 31</td>
<td>The Big Bang; Earth and the Moon</td>
<td>1</td>
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<tr>
<td>2</td>
<td>Feb 2</td>
<td>Rocks and Minerals I, <em>Rock Description</em></td>
<td>2</td>
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<td></td>
<td>Feb 7</td>
<td>Rocks and Minerals II, <em>Sedimentation Exercise</em></td>
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<tr>
<td>3</td>
<td>Feb 9</td>
<td>Plate Tectonics</td>
<td>3</td>
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<td></td>
<td>Feb 14</td>
<td>Structure, <em>Structure Exercise</em></td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>Feb 16</td>
<td>Origin of Sierra Nevada, <em>SN Exercise</em></td>
<td>5</td>
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<tr>
<td></td>
<td>Feb 21</td>
<td>Glaciers and Gold in the Sierras</td>
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<tr>
<td>5</td>
<td>Feb 23</td>
<td>Volcanoes</td>
<td>6</td>
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<tr>
<td></td>
<td>Feb 28</td>
<td>Volcanoes in California</td>
<td>7</td>
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<tr>
<td>6</td>
<td>Mar 1</td>
<td>Weathering and Soils; <em>Weathering Video</em></td>
<td>8</td>
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<tr>
<td></td>
<td>Mar 6</td>
<td>Central Valley; <em>Mima Mound Exercise</em></td>
<td></td>
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<tr>
<td>7</td>
<td>Mar 8</td>
<td>California Climate, El Nino, Air Pollution</td>
<td>9</td>
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<tr>
<td></td>
<td>Mar 13</td>
<td>Fire and Erosion, Debris Flows, <em>Debris Flow video</em></td>
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<tr>
<td>8</td>
<td>Mar 15</td>
<td>Review for Exam</td>
<td>10</td>
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<tr>
<td></td>
<td>Mar 20</td>
<td>Exam #1 – BRING 2 SCANTRON SHEETS</td>
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<tr>
<td>9</td>
<td>Mar 22</td>
<td>Test recap; Rivers and Society, <em>100 Yr Flood Exercise</em></td>
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<tr>
<td></td>
<td>Mar 27</td>
<td>Spring Break</td>
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<tr>
<td>10</td>
<td>Mar 29</td>
<td>Spring Break</td>
<td>11</td>
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<tr>
<td></td>
<td>Apr 3</td>
<td>San Andreas Fault; <em>Wallace Creek Exercise</em>; <strong>Term paper topic due</strong></td>
<td></td>
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<tr>
<td>11</td>
<td>Apr 5</td>
<td>Earthquakes, <em>Epicenter Exercise</em></td>
<td>12</td>
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<td>Apr 10</td>
<td>Geologic Time, Dating</td>
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<tr>
<td>12</td>
<td>Apr 12</td>
<td>Basin and Range, <em>Basin and Range Exercise</em></td>
<td>13</td>
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<td></td>
<td>Apr 17</td>
<td>Global Warming and Freezing; <strong>Brief outline for term paper and reference list due</strong></td>
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<tr>
<td>13</td>
<td>Apr 19</td>
<td>Coast Ranges; <strong>Extra credit project topic due</strong></td>
<td>14</td>
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<td>Apr 24</td>
<td>California Coastline</td>
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<tr>
<td>14</td>
<td>Apr 27</td>
<td><em>Inconvenient Truth</em>; <strong>Detailed outline of paper due</strong></td>
<td>15</td>
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<tr>
<td></td>
<td>May 1</td>
<td>Finish <em>Inconvenient Truth</em>; Geologic Resources</td>
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<tr>
<td>15</td>
<td>May 3</td>
<td>Geologic Resources</td>
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<td></td>
<td>May 8</td>
<td>Class presentations; Earthquake Preparedness (if time)</td>
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<tr>
<td>Week</td>
<td>Date</td>
<td>Topics &amp; Readings</td>
<td>Chap</td>
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<tr>
<td>16</td>
<td>May 10</td>
<td>Geologic History of California: A summary</td>
<td>16</td>
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<tr>
<td></td>
<td>May 15</td>
<td>Review for Final</td>
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<td></td>
<td></td>
<td>** Term Paper Due **</td>
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<tr>
<td><strong>Final Exam</strong></td>
<td><strong>May 22</strong></td>
<td><strong>Final Exam (bring 2 scantron sheets)</strong></td>
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<td></td>
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<td>12:15 – 2:30 (make sure to double-check date/time)</td>
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</table>
Term paper (due last day of class)

A hard copy of the term paper is due at the beginning of the last class of the semester. An electronic copy of the term paper must be uploaded to turnitin.com before the start of the last class of the semester. No late papers will be accepted.

Term paper topic
The topic for the paper is ‘The Effects of Global Warming in California.’ There are many different ways of approaching this issue. You can write about: the climatic effects (e.g., higher temperatures), the effects on fire, the effects on pollution, sea level rise, health hazards, policy implications, the impacts on vegetation, etc. Whatever angle you choose, it must be related to California.

Requirements for papers
1. Total of 6 pages: 1 cover sheet, 3 pages of text, 1 page of illustrations (see below), 1 page with reference list. Any pages of text in excess of 3 will be ignored.
2. One page contains at least two illustrations, graphs, or charts, cited within text.
3. Use at least four references, excluding wikipedia.com and including at least one non-Web source.
4. Use internal citations (any standard format is fine).
5. Each paper must be an original for this course.
6. Upload your paper to turnitin.com for analysis (account number to be distributed) before class begins.

Suggestions for papers
1. I encourage you to use the King Library for your research. If you need assistance, you can ask a librarian at the reference desk in the library or contact them via the library website (www.sjsulibrary.org/gateway/academic) or by phone at (408) 808-2100. Don’t wait until a few days before the paper is due.

2. I will be most impressed by (and likely to grade highly) a paper in which you demonstrate independent thought, analysis, or activity.

3. Avoid reproducing information from the book or course materials (see #2 for reason).

4. Papers consisting of many long passages in quotation marks are very ineffective, and will earn you a very low grade (again, see #2).

5. Rephrasing an entry from wikipedia.com will earn you a very, very low grade (#2 yet again).

Formatting the papers
Print on a computer printer or a typewriter.
Do not use a folder or plastic cover.
Do use a cover sheet with topic, your name, date and course.

Double-space the entire manuscript, and leave 1-inch margins on all sides of the page.
Use a 12-point font, preferably Helvetica or Times.
Number pages and staple the paper in the upper left corner.
Citations:
All sources (including interviews) should be fully referenced using a reference list keyed to internal citations (e.g., Lee, 1995, p. 34). Consult a style manual for the appropriate format and procedures. You must use internal citations for (1) direct quotes (shown in quotation marks) and (2) data, ideas, and interpretations from other sources, even though you have rewritten them. Material covered in class can be considered common knowledge, so you do not need a citation.

When citing a Web source, try to include all of the following:
* Specific author or source (e.g. Mary Lee, U.S. Geological Survey).
* Date information was posted on the Web (look for this site was last updated on).
* Title of the text or image (may not always be present).
* Complete URL (e.g. http://marylee/usgs/page.html).
* Date accessed by you.

Each instance of plagiarism will drop your score by 20 points. If you have 3 or more instances of plagiarism, you will receive an F in the course and you will be reported to the Office of Student Conduct. All of the following are considered plagiarism:
* turning in someone else's work as your own
* copying words or ideas from someone else without giving credit
* failing to put a quotation in quotation marks
* copying a sentence or sentences from a source while changing just a few words, even if you give credit
* giving incorrect information about the source of a quotation
* changing words but copying the sentence structure of a source without giving credit
* copying so many words or ideas from a source that it makes up the majority of your work, whether you give credit or not (see our section on "fair use" rules)

Most cases of plagiarism can be avoided by citing sources. Simply acknowledging that certain material has been borrowed, and providing your audience with the information necessary to find that source, is usually enough to prevent plagiarism.

Grading Rubric for all Written Work
All written assignments will be graded according to the rubric described below.

Content Criteria (50% of grade)

Grade
A, A- Student objectives are stated. Answers the objectives with superior examples or evidence; unusual insights, creative and original analysis, reasoning and explanation: superior mastery of content, including logical flow of ideas.

B+, B Student objectives are stated. Good solid response that uses excellent supporting evidence or examples; excellent reasoning and explanations with a mastery of content with a logical flow of ideas.

C, C- Student objective is not clearly stated. Good, solid response that meets minimum requirement of the assignment. Reasoning and explanations are adequate. Not enough depth.
D   Student objective is not distinguishable. Response is unclear and does not address the question; response fails to support assertions with data or examples; major flaws in reasoning; explanations are unclear; displays inadequate understanding of content.

F   Response is missing or not submitted, or does not address the question.

Writing Criteria (50% of grade)

Grade
A, A-  Demonstrates superior correctness and sense of personal style. Logical flow of information is evident throughout writing. Interesting. Grammar and spelling are perfect.

B+, B   Very effective organization of paragraphs and paper: interesting, varied sentences; good grammar (usage, punctuation, spelling); does not read like a first draft or book report.

B-, C+  Reasonably effective organization of paragraphs, numerous errors in grammar or spelling, reads like a first draft or book report.

C, C-   Structurally disorganized; paragraphs lack topic sentences or are not developed effectively; awkward sentence structure; poor grammar or spelling.

D       Similar to above, but even more difficult to read.

F       Unintelligible, plagiarized, or not submitted.

Turnitin.com
For each paper, (1) turn in a printed copy to me at the beginning of class on the due date, and (2) submit an electronic copy to turnitin.com for evaluation before the beginning of class on the due date. For each day that it is uploaded and/or turned in late, you will lose 10% of the grade.

To submit a paper to turnitin.com: Go to the home page: www.turnitin.com

Click “create a new user profile” on the homepage.

Follow the on-screen instructions. The system suggests using the wizard to enroll in your class. If you choose this, the next steps can be bypassed and you can skip to the “submitting a paper” section.

Instructions are found on the home page of turnitin.com (icon below the Login).
Click: training materials
Click: student user guide for detailed instructions

You may submit a paper only one time from the registered email address. I will supply the password and course number at a later date.
GEOLOGY 6: CALIFORNIA GEOLOGY

1) How the course accomplishes its GE SLOs.

*SLO 1: Students can use the methods of science and knowledge derived from current scientific inquiry in life or physical science to question existing explanations.*

The processes that formed the Mima mounds in the Central Valley of California is a mystery. One explanation is that they are formed by biological processes. In class, I show several pictures of the Mima mounds and describe how we think they may have formed. I then ask the students to break up into research teams and write a 'proposal' to investigate how these mounds were formed. The proposal must include 3 sections: (1) describe 2 methods that would test the biological origins hypothesis, (2) propose a different hypothesis, and (3) describe 2 methods that would test their new hypothesis. The proposals are then discussed in class and turned in for grading.

*SLO 2: Students will be able to demonstrate ways in which science influences and is influenced by complex societies, including political and moral issues.*

SLO 2: The students developed flood-frequency curves to estimate the discharge of a 100-yr flood for a stream that runs through an urbanized area in Palo Alto. This exercise led to a discussion of how science can drive public policy (in this case, zoning and flood insurance costs) and the students learned how uncertainty in scientific conclusions can have important social consequences.

*SLO 3: Students will be able to recognize methods of science, in which quantitative, analytical reasoning techniques are used.*

SLO 3: The students were asked to locate the epicenter of an earthquake based on data from a seismograph and seismic wave travel times. The students learned how quantitative techniques are important in scientific inquiries. This exercise pushes some of the students out of their mathematical comfort zone but gives them insight into how math can be used to solve real-world problems.

2a) Assessment report: Evaluation of the course  
Judging from the tests and numerous exercises completed by the students, as well as their course evaluations, this class appears to help them appreciate the role of geological processes in their daily lives. This is a particularly easy connection to make in California where the threats of earthquakes, volcanoes, tsunamis, and droughts are omnipresent. I am fairly certain that students
who take this class have a heightened sense of awareness of geological hazards and may even, at some point, be able to use what they learned to protect themselves or their property. In addition, the subject for the term paper is "The Effects of Global Warming In California", an important topic that helps them explore the oftentimes difficult and uneasy relationships between scientific inquiry and public policy.

Because the class focuses on issues that are relevant to local students, this course manages to pique the interest of those who might not otherwise consider Geology as a major. I have managed to recruit students to our department with this class and I consider that as a good measure of a success.

2b & c) Changes that the department has made

I have added (and continue to add) more in-class exercises to give students hands-on experience and to reduce the total amount of time that I spend lecturing.
General Education Annual Course Assessment Form

Course Number/Title: Geol 6 -- California Geology
GE Area: B1 Results reported for AY: 2009-2010
# of sections: 2 # of instructors: 1
Course Coordinator: Emmanuel Gabet E-mail: manny.gabet@sjsu.edu
Department Chair: Richard Sedlock College: Science

Instructions: Each year, the department will prepare a brief (two page maximum) report that documents the assessment of the course during the year. This report will be electronically submitted, by the department chair, to the Office of Undergraduate Studies, with an electronic copy to the home college by September 1 of the following academic year.

Part 1
To be completed by the course coordinator:

(1) What SLO(s) were assessed for the course during the AY?

SLO #1: Students can use the methods of science and knowledge derived from current scientific inquiry in life or physical science to question existing explanations.

The processes that formed the Mima mounds in the Central Valley of California is a mystery. One explanation is that they are formed by biological processes. In class, I show several pictures of the Mima mounds and describe how we think they may have formed. I then ask the students to break up into research teams and write a 'proposal' to investigate how these mounds were formed. The proposal must include 3 sections: (1) describe two methods that would test the biological origins hypothesis, (2) propose a different hypothesis, and (3) describe two methods that would test their new hypothesis. The proposals are then discussed in class and turned in for grading.

(2) What were the results of the assessment of this course? What were the lessons learned from the assessment?

Each proposal is graded on the basis of whether the methods described would actually test the hypotheses. I encourage the students to be as creative as possible in both proposing tests and hypotheses but I emphasize that the tests must directly address the hypotheses. This exercise teaches the students how to formulate a hypothesis and how to link data collection with hypothesis testing. About 90% of the students satisfactorily demonstrate their understanding via this exercise.

(3) What modifications to the course, or its assessment activities or schedule, are planned for the upcoming year? (If no modifications are planned, the course coordinator should indicate this.)

No modifications are planned.

Part 2
To be completed by the department chair (with input from course coordinator as appropriate):

(4) Are all sections of the course still aligned with the area Goals, Student Learning Objectives (SLOs), Content, Support, and Assessment? If they are not, what actions are planned?

Yes, the sections of GEOL 006 still are aligned with the GE requirements for Area B1
General Education Annual Course Assessment Form

Course Number/Title: Geology 006, California Geology      GE Area: B1

Results reported for AY: 2010-2011    # of sections: 2    # of instructors: 1

Course Coordinator: Emmanuel Gabet    E-mail: manny.gabet@sjsu.edu

Department Chair: Robert Miller    College: Science

Instructions: Each year, the department will prepare a brief (two page maximum) report that documents the assessment of the course during the year. This report will be electronically submitted, by the department chair, to the Office of Undergraduate Studies, with an electronic copy to the home college by September 1 of the following academic year.

Part 1

To be completed by the course coordinator:

1) What SLO(s) were assessed for the course during the AY?

SLO #2: Students can demonstrate ways in which science influences and is influenced by complex societies, including political and moral issues.

2) What were the results of the assessment of this course? What were the lessons learned from the assessment?

The concept of the 100-year flood underpins financially and socially relevant decisions regarding flood hazards, insurance premiums, and zoning laws yet, in the absence of centuries-long datasets, it is a statistical construct with no real meaning. As a class exercise, students create a flood-frequency curve with discharge data from a creek in the San Francisco Bay Area. Because the data set (like most in the U.S.) is too short, the instructor shows the students how to use their flood frequency curve to extrapolate the discharge for the 100-yr flood. The students are then asked to give a discharge value for the 1-year flood. Extrapolation of “noisy data” is inherently imprecise, and there are a wide range of answers. The instructor then emphasizes that there is no right answer because, until we have 100 year’s worth of data, we have no idea what the 100-yr flood is. This leads to a discussion of the difficulties of predicting and preparing for natural hazards and the responsibilities of those living in geologically dangerous environments.

The students turn in their flood frequency curves and that is graded. Most of the students (~80%) manage to do this correctly with minimal help from the instructor in making several mathematical operations that need to be done to transform the raw data. Only a handful of students participate in the discussion, but most of the others seem attentive.

3) What modifications to the course, or its assessment activities or schedule, are planned for the upcoming year? (If no modifications are planned, the course coordinator should indicate this.)
No modifications are planned.

**Part 2**

To be completed by the department chair (with input from course coordinator as appropriate):

**(4)** Are all sections of the course still aligned with the area Goals, Student Learning Objectives (SLOs), Content, Support, and Assessment? If they are not, what actions are planned? Yes, all sections of Geology 006 still meet the GE requirements for Area B1.
Appendix B-5

GE Re-certification, 2012

GEOL 7

Earth, Time, and Life
San José State University  
Geology 7: Earth, Time, and Life (Sec. 1; 21263), Spring 2012

Instructor: Dr. Jonathan Hendricks
Office Location: 307 Duncan Hall
Telephone: (408) 924-5279
Email: jonathan.hendricks@sjsu.edu (best way to reach me)
Office Hours: Mondays 3:00-5:00PM & by appointment; short meetings immediately after class will typically be possible.
Class Days/Time: Mondays and Wednesdays, 10:30AM–11:45 AM
Classroom: 351 Duncan Hall
Prerequisites: None.
GE/SJSU Studies Category: Area B1+B3: Science Physical Science & Lab Science

Course Description
Earth’s geosphere: processes that act on it and materials that comprise it; how rocks and fossils are used to interpret the history of Earth’s geosphere, atmosphere, oceans, and life forms.

GE/SJSU Studies Learning Objectives
Upon successful completion of this course, students should be able to:
1) Use the methods of science and knowledge derived from current scientific inquiry to question existing explanations.
2) Demonstrate ways in which science influences and is influenced by complex societies, including political and moral issues.
3) Use the methods of science, in which quantitative, analytical reasoning techniques are used.
Course Content Learning Objectives

Upon successful completion of this course, students will be able to:

1) Explain how the development of plate tectonic theory led to an understanding of the global distribution of earthquakes and volcanoes.

2) Examine the ways in which scientists, politicians, governments, communities, and individuals approach issues associated with teaching science and the nature of scientific inquiry, energy and natural resources.

3) Use lab skills such as observation, description, classification, map reading, data analysis, and graphing in order to understand how such data are acquired and applied in the physical sciences.

Textbooks


Additional readings will be accessible through the San Jose State University Library by using Electronic Course Reserves (ECR), which may be accessed here: http://library.sjsu.edu/course-reserves/course-reserves.

Desire 2 Learn (D2L)

Important announcements and critical materials for this course (including lecture slides and study guide questions) will be distributed electronically using Desire 2 Learn (D2L), which may be accessed online at http://sjsu.desire2learn.com. Students may also use D2L to check their grades throughout the semester. See the following website for details on how to access D2L: http://www.sjsu.edu/ecampus/students/.

Lectures

PDF copies of the lecture slides and associated study guide questions will typically be posted to D2L by the evening before class. Feel free to print these materials and bring them with you to class (copies will not generally be provided to you in class).
Classroom Protocol
All students are expected to act civilly and respectfully during class time. This means: no excessive talking/whispering during lecture, no talking on cell phones or sending text messages (turn OFF and put away cell phones before class starts; texting during class is rude—don’t do it), no use of laptops for purposes other than taking notes, etc. If you use a laptop during lecture (for Geology 7 related activities, not email, social networks, games, web surfing, etc.), please sit at the back of the classroom so that you do not distract students sitting behind you; cords may not be extended across walking spaces. If you are caught using a laptop, cell phone, or other portable electronic devise during a quiz or exam, it will be assumed that you are using it to cheat and you will receive a score of zero and will be reported to the University for academic misconduct. If you have to arrive late or leave early, be as quiet and considerate as possible – DO NOT make this a regular habit. Any activities deemed disruptive will be met with appropriate disciplinary action, including expulsion from the classroom. Students are welcome to raise their hands and ask me questions when called upon. I expect e-mails to me to be respectful and professional; I will do my best to respond to such e-mails within 24 hours.

Dropping and Adding
Students are responsible for understanding the policies and procedures about add/drops, academic renewal, etc. Information about late drop is available at http://www.sjsu.edu/aars/policies/latedrops/policy/. Students are responsible for being aware of the current deadlines and penalties for adding and dropping classes.

Assignments and Grading Policy
There will be a total of 1600 points available in the course (see details below):
- Exams: 700 pts. (~44%)
- Quizzes: 300 pts. (~19%)
- Laboratory Exercises & Practical: 400 pts. (25%)
- Writing Assignment: 200 pts. (~13%)

Final grades—based upon percentages of the total points available—will be calculated using the following distribution:
- 99% to 100% A+
- 93% to <99% A (excellent)
- 90% to <93% A-
- 87% to <90% B+
- 83% to <87% B (good)
- 80% to <83% B-
- 77% to <80% C+
- 73% to <77% C (adequate)
- 70% to <73% C-
- 65% to <70% D+
60% to <65% D (poor)
50% to <60% D-
<50% F (failure)
It is possible that a downward adjustment, to a maximum of 10 percentage points, may be made to this scale at the end of the semester if the final overall median point total for all work turned in by all students is less than 80%. In such a case, the grade scale will be shifted downward by the difference between the median score and 80%. For example, if the final median grade percent is 75%, attaining 85% of the total points will earn you an A- in the course. The grade scale will not be shifted upwards (if you earn at least 93% of the total points, you are guaranteed an A in the class). An unadjusted score of 99% (or higher) will be required to attain a final grade of A+. Students will be able to track their scores throughout the semester by using the online software Desire 2 Learn.

Exams (700 pts.)
There will be a total of four exams: three in-class midterms (February 22, March 21, and April 25) and a final exam (May 18). Each exam will feature a combination of short-answer (several words to several sentences; some questions may require you to produce simple drawings), multiple-choice, and/or true false questions. Exam questions will be based on material covered in lecture and also in the readings; while studying, focus your attention on material highlighted by the study guide questions. Nevertheless, all material covered in the lectures—whether it appears on a lecture slide or not—is considered “fair game” for exam questions. The three midterm exams (Exams 1-3; 200 points each) will successively cover approximately one-quarter of the course material; the final exam (300 points) will focus on material covered during the last forth of the course, but will also contain questions regarding material covered earlier in the course. Your single lowest midterm score (Exam 1, 2, or 3) will be dropped when computing final grades; however, you must take the final exam in order to pass the class (failure to take the final exam will result in a grade of “F” or “WU” in the course).

Quizzes (300 pts.)
A total of 13 quizzes, worth 25 points each, will be administered throughout the course of the semester. These will consist primarily of quizzes that will be completed outside of class using Desire 2 Learn, but will also include some pop-quizzes given during lecture. You will be quizzed on material covered in lecture and also in the readings; focus your attention on material highlighted by the study guide questions. Nevertheless, all material covered in the lectures—whether it appears on a PowerPoint slide or not—is considered “fair game” for quiz questions. Frequently, quizzes will be assigned on Wednesday and will be due online at the start of class time the following Monday. Your single lowest quiz score will be dropped when computing final grades.
Labs (400 pts.)
There will be a total of 13 laboratory exercises, each of which will be worth 25 points. While you will be able to work on many of the labs in small groups, the work that you turn in must be your own (i.e., presented in your own words). Labs exercises are due at the end of the lab period. The single lowest lab score will be dropped when calculating final grades. There will also be a laboratory practical (worth 100 points) during the final lab period.

Writing Assignment (200 pts.)
There will be one major writing assignment (~5 pages in length) which will be worth a total of 200 points. Details on this writing assignment will be provided later. See the syllabus for due date.

Make-Ups
Except in documented cases of serious illness (i.e., supported by a doctor’s note) or the death of a loved one, make-ups of exams, labs, and quizzes WILL NOT be permitted.

Extra Credit
Besides the possibility of one to several extra credit questions on each of the exams, no extra credit work will be given or accepted.

University Policies
Academic integrity
Students should know that the University’s Academic Integrity Policy is available at http://www.sjsu.edu/senate/S07-2.pdf. Your own commitment to learning, as evidenced by your enrollment at San Jose State University and the University’s integrity policy, require you to be honest in all your academic course work. Faculty members are required to report all infractions to the office of Student Conduct and Ethical Development. The website for Student Conduct and Ethical Development is available at http://dev.sjsu.edu/studentconduct/.

Instances of academic dishonesty will not be tolerated. Cheating on exams or plagiarism (presenting the work of another as your own, or the use of another person’s ideas without giving proper credit) will result in a failing grade and sanctions by the University. For this class, all assignments are to be completed by the individual student unless otherwise specified. If you would like to include in your assignment any material you have submitted, or plan to submit for another class, please note that SJSU’s Academic Policy F06-1 requires approval of instructors.
Campus Policy in Compliance with the American Disabilities Act

If you need course adaptations or accommodations because of a disability, or if you need to make special arrangements in case the building must be evacuated, please make an appointment with me as soon as possible, or see me during office hours. Presidential Directive 97-03 requires that students with disabilities requesting accommodations must register with the DRC (Disability Resource Center) to establish a record of their disability.

Student Technology Resources

Computer labs for student use are available in the Academic Success Center located on the 1st floor of Clark Hall and on the 2nd floor of the Student Union. Additional computer labs may be available in your department/college. Computers are also available in the Martin Luther King Library.

Learning Assistance Resource Center

The Learning Assistance Resource Center (LARC) is located in Room 600 in the Student Services Center. It is designed to assist students in the development of their full academic potential and to motivate them to become self-directed learners. The center provides support services, such as skills assessment, individual or group tutorials, subject advising, learning assistance, summer academic preparation and basic skills development. The LARC website is located at http://www.sjsu.edu/larc/.

SJSU Writing Center

The SJSU Writing Center is located in Room 126 in Clark Hall. It is staffed by professional instructors and upper-division or graduate-level writing specialists from each of the seven SJSU colleges. Our writing specialists have met a rigorous GPA requirement, and they are well trained to assist all students at all levels within all disciplines to become better writers. The Writing Center website is located at http://www.sjsu.edu/writingcenter/.

Peer Mentor Center

The Peer Mentor Center is located on the 1st floor of Clark Hall in the Academic Success Center. The Peer Mentor Center is staffed with Peer Mentors who excel in helping students manage university life, tackling problems that range from academic challenges to interpersonal struggles. On the road to graduation, Peer Mentors are navigators, offering “roadside assistance” to peers who feel a bit lost or simply need help mapping out the locations of campus resources. Peer Mentor services are free and available on a drop-in basis, no reservation required. The Peer Mentor Center website is located at http://www.sjsu.edu/muse/peermentor/.
# Course Schedule (as of January 24, 2012)

Note that this schedule is subject to change; any changes will be presented to the class during the regular lecture period. **M&W** = Mathez and Webster textbook; **P** = Prothero textbook (most of these chapters are on ECR); other readings are available as electronic course reserves (ECR) as indicated. Readings should be done prior to attending the corresponding lecture.

<table>
<thead>
<tr>
<th>Date</th>
<th>Lectures, Exams, and Assignments</th>
<th>Readings</th>
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<tbody>
<tr>
<td><strong>Week 1</strong></td>
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<tr>
<td>Jan. 25</td>
<td>L1: Introduction to the Course</td>
<td>None</td>
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<td></td>
<td><strong>No Lab.</strong></td>
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<tr>
<td><strong>Week 2</strong></td>
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<tr>
<td>Jan. 30</td>
<td>L2: Science as a Process</td>
<td><strong>P</strong>: Ch. 1; <strong>ECR</strong>: Sagan (1996, Ch. 1, 2)</td>
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<tr>
<td>Feb. 1</td>
<td>L3: Science in Action: The Discovery of Plate Tectonics</td>
<td><strong>M&amp;W</strong>: Ch. 6, 7 (p. 84-93)</td>
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<td><strong>Lab 1: Hypothesis Testing.</strong></td>
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<td><strong>Week 3</strong></td>
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<tr>
<td>Feb. 6</td>
<td>L4: Consequences of Plate Tectonics</td>
<td><strong>M&amp;W</strong>: Ch. 7 (p. 93-98), Ch. 10, Ch. 11 (p. 156-160)</td>
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<tr>
<td>Feb. 8</td>
<td>L5: Earthly Materials 1: Minerals</td>
<td><strong>M&amp;W</strong>: Ch. 1, 3</td>
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<td><strong>Lab 2: Plate Tectonics.</strong></td>
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<tr>
<td><strong>Week 4</strong></td>
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<tr>
<td>Feb. 13</td>
<td>L6: Earthly Materials 2: The Rock Cycle</td>
<td><strong>M&amp;W</strong>: Ch. 3</td>
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<tr>
<td>Feb. 15</td>
<td>L7: Igneous Rocks</td>
<td><strong>M&amp;W</strong>: Ch. 8, 9</td>
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<td><strong>Lab 3: Minerals.</strong></td>
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<td><strong>Week 5</strong></td>
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<tr>
<td>Feb. 20</td>
<td>L8: Surface Processes 1: Atmosphere; Review session</td>
<td><strong>M&amp;W</strong>: Ch. 13</td>
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<tr>
<td>Feb. 22</td>
<td><strong>Exam 1 (Covers Lectures 2-7).</strong></td>
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<td><strong>Lab 4: Intrusive Igneous Rocks</strong></td>
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<td><strong>Week 6</strong></td>
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<tr>
<td>Feb. 27</td>
<td>L9: Surface Processes 2: Oceans; Sedimentary Rocks 1</td>
<td><strong>M&amp;W</strong>: Ch. 14; Ch. 11 (p. 160-162)</td>
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<tr>
<td>Feb. 29</td>
<td>L10: Sedimentary Rocks 2; <strong>Distribution of Writing Assignment</strong></td>
<td><strong>M&amp;W</strong>: Ch. 16 (p. 233-241), Ch. 18 (p. 256-257)</td>
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<tr>
<td>Date</td>
<td>Lectures, Exams, and Assignments</td>
<td>Readings</td>
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<tr>
<td>Mar. 5</td>
<td>L11: Metamorphism and Deformation</td>
<td>M&amp;W: Ch. 11 (p. 162-171), Ch. 12</td>
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<tr>
<td>Mar. 7</td>
<td>L12: Relative geological time; principles of stratigraphy</td>
<td>M&amp;W: Ch. 2</td>
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<td><strong>Lab 6: Sedimentary Rocks</strong></td>
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<tr>
<td>Mar. 12</td>
<td>L13: The geological time scale</td>
<td>Memorize the time scale!; M&amp;W: Ch. 5</td>
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<td>Mar. 14</td>
<td>L14: Absolute geological time</td>
<td>ECR: Bryson (2003, Ch. 5)</td>
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<td><strong>Lab 7: Metamorphic Rocks</strong></td>
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<tr>
<td>Mar. 19</td>
<td>L15: Stratigraphic correlation; review session</td>
<td>ECR: Bryson (2003, Ch. 10); P.: Ch. 3</td>
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<tr>
<td>Mar. 21</td>
<td><strong>Exam 2 (Covers Lectures 8-14)</strong></td>
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<td><strong>Lab 8: Geological Time; Topographic Maps</strong></td>
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<td><strong>Week 10 (Mar. 26-30) – Spring Break – No Lectures or Labs</strong></td>
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<td><strong>Week 11</strong></td>
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<td><strong>Lab 9: Stratigraphic Correlation and Geological Structures</strong></td>
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<tr>
<td>Apr. 9</td>
<td>L18: Nature of the Fossil Record; <em>Writing Assignment Due</em></td>
<td>P.: Ch. 3</td>
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<tr>
<td>Apr. 11</td>
<td>L19: Origin and Early History of the Earth</td>
<td>M&amp;W: Ch. 1, 3</td>
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<td><strong>Lab 10: Geological Maps</strong></td>
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<tr>
<td>Apr. 16</td>
<td>L20: Earth and Life in the Archean;</td>
<td>M&amp;W: Ch. 4, p. 36-46; P.: Ch. 6</td>
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<tr>
<td>Apr. 18</td>
<td>L21: Earth and Life in the Proterozoic</td>
<td>P.: Ch. 7, p. 161-165</td>
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<td><strong>Lab 11: Introduction to Fossils</strong></td>
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<tr>
<td>Date</td>
<td>Lectures, Exams, and Assignments</td>
<td>Readings</td>
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<td><strong>Week 14</strong></td>
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<tr>
<td>Apr. 23</td>
<td>L22: Early Paleozoic Earth and Life; Review session</td>
<td>M&amp;W: Ch. 4, p. 46-48; P.: Ch. 7, p. 165-171</td>
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<tr>
<td>Apr. 25</td>
<td><strong>Exam 3 (Covers Lectures 15-21)</strong></td>
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<td>Lab 12: Fossil Diversity</td>
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<td><strong>Week 15</strong></td>
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<tr>
<td>Apr. 30</td>
<td>L23: Late Paleozoic Earth and Life</td>
<td>P.: Ch. 10; ECR.: Carroll (2009, Ch. 10)</td>
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<td>May 2</td>
<td>L24: Early Mesozoic Earth and Life</td>
<td>P.: Ch. 11</td>
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<td>Lab 13: Lab Practical Review</td>
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<td><strong>Week 16</strong></td>
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<tr>
<td>May 7</td>
<td>L25: Late Mesozoic Earth and Life</td>
<td>P.: Ch. 12</td>
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<tr>
<td>May 9</td>
<td>L26: Cenozoic Earth and Life</td>
<td>M&amp;W: Ch. 15</td>
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<td>Lab: <strong>Laboratory Practical Exam</strong></td>
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<td><strong>Week 17</strong></td>
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<tr>
<td>May 14</td>
<td>L27: Epilogue; review session</td>
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<td><strong>Final Exam</strong></td>
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<tr>
<td>May 18</td>
<td><strong>Final Exam: 9:45AM-Noon (Covers Lectures 22-27; Cumulative).</strong></td>
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Assessment Report for Geology 7: Earth, Time, and Life (March 2012)

Satisfaction of Learning Objectives (SLO's)

Three SJSU GE learning objectives are associated with Geology 7; these are satisfied in the following ways:

1) *Use the methods of science and knowledge derived from current scientific inquiry to question existing explanations.* An entire lecture is devoted to how science works, including discussion of the limits of scientific inquiry and the differences between science and pseudoscience. Additionally, an entire "Hypothesis Testing" lab is devoted to an interactive exercise whereby students are presented with a claim (e.g., "Some minerals/crystals have healing powers") and need to evaluate whether the claim is scientifically testable, and—if so—then develop an experiment by which it could be tested. Finally, the writing assignment for the class requires students to debunk a pseudoscientific (creationist) claim related to geology using scientifically collected evidence.

2) *Demonstrate ways in which science influences and is influenced by complex societies, including political and moral issues.* Geology 7 focuses on the physical properties of the Earth and its geological history. Thus, this learning objective is the most difficult to incorporate and assess within the Geology 7 curriculum. Nevertheless, one major theme woven throughout the course is that knowledge of the Earth's past allows predictions to be made about the near future, especially the consequences of human-caused global climate change. For example, geology provides the only tangible evidence for understanding the impacts of climate change on sea-level as well as the ecological responses of species to climate change (including extinction).

3) *Use the methods of science, in which quantitative, analytical reasoning techniques are used.* Methodologically, the scientific process is much more than simply the application of "quantitative, analytical reasoning techniques"; as such, Geology 7 stresses that science is a process of hypothesis testing wherein scientists develop direct or indirect experiments that have the potential to reject hypotheses (when hypotheses are not rejected, they become better supported). Nevertheless, Geology 7 students utilize quantitative, analytical reasoning techniques in lab to calculate rock density and the absolute ages of hypothetical rock samples. Further, graphs of quantitative scientific data are utilized throughout the course in order to present and understand geological patterns and processes.

Three course content learning objectives are associated with Geology 7; these are satisfied in the following ways:

1) *Explain how the development of plate tectonic theory led to an understanding of the global distribution of earthquakes and volcanoes.* Two lectures are devoted to plate tectonics. The first of these lectures highlights the development of the theory of plate tectonics in a hypothesis testing framework (see above). The second lecture focuses on
the consequences of plate tectonics, including earthquakes and volcanoes. Finally, an entire lab is devoted to plate tectonics wherein students combine data from a variety of sources (e.g., global distributions of earthquakes and volcanoes printed on maps) in order to identify the locations of plate boundaries.

2) Examine the ways in which scientists, politicians, governments, communities, and individuals approach issues associated with teaching science and the nature of scientific inquiry, energy and natural resources. In Geology 7, this learning objective overlaps considerably with SJSU GE learning objective #1 (see above). Additionally, lecture content in Geology 7 focuses on how natural fossil fuel resources such as coal form, and also the consequences of burning coal for global climate change.

3) Use lab skills such as observation, description, classification, map reading, data analysis, and graphing in order to understand how such data are acquired and applied in the physical sciences. Almost all of the Geology 7 labs focus on development of these skills. Seven labs focus on observation, description, and classification of different types of minerals, rocks, and fossils. Students also interpret rock and fossil samples to reconstruct ancient environments; for example, one exercise involves interpretation of actual sedimentary rock samples to determine (and graph) how sea level fluctuated in a hypothetical location over time. Three additional labs focus development of skills to interpret geological maps, which are then used to generate geological cross sections.

Changes Made to Improve Student Success with Respect to the GE SLO's

Professor Hendrick's "inherited" Geology 7 in Fall of 2011. It became immediately apparent that the course—conceived in its previous iteration as a combined physical and historical geology course—covered far too much information in too little depth. In collaboration with Dept. of Geology faculty, Professor Hendrick spearheaded a reorganization of the introductory geology curriculum within the department. The most significant consequence of this structural change is that approximately five lectures and three or four labs worth of "physical geology" material will be transferred to Geology 1, which will now (with Geology 7) be part of the core undergraduate geology program at SJSU. This will give Geology 7 new "breathing room", which will permit greater attention to be given to the GE SLO's, particularly #2 (see above), which currently does not receive enough consideration (due to lack of time). These changes will not go into effect until Fall 2012, so it will not be possible to begin evaluating their success until after that time.

Future Plans for Course Modifications, If Applicable

See paragraph immediately above. The most important consequence of the structural reorganization of the core lower division geology curriculum for Geology 7 is that much more attention will be given to the history of the Earth and life. Further, increased attention in lab will be devoted to interpretation of geological maps and structures, as well as to the study of fossils, which are important for resolving temporal geological problems, reconstructing paleoenvironments, and understanding evolution.