Introduction to Earth Science

SYLLABUS FOR INTRODUCTION TO EARTH SCIENCE (EES9)

<table>
<thead>
<tr>
<th>Fall 2014</th>
<th>California State University, Fresno</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Introduction to earth science emphasizing K-6 teacher preparation.</strong></td>
<td>Instructor: Dr. Mara Brady</td>
</tr>
<tr>
<td>3 Units</td>
<td>Office: Science 2 Building, Room 128</td>
</tr>
<tr>
<td>Lecture: Wednesday 2-3:50pm</td>
<td>E-mail: <a href="mailto:mebrady@csufresno.edu">mebrady@csufresno.edu</a></td>
</tr>
<tr>
<td>Lecture: Peters Business Bldg Room 013</td>
<td>Telephone: 559-278-2948</td>
</tr>
<tr>
<td>Lab: Science 2 Building, Room 125</td>
<td>Office Hours: Tuesday 2-3pm</td>
</tr>
</tbody>
</table>

Course Information

**Description:** This course presents an introduction to the dynamic field of earth science, emphasizing concepts and activities relevant to future K-6 educators. We will explore geologic processes, products, and resources and examine the interaction among earth’s surface, earth’s interior, the atmosphere, water, and life. Throughout the course, we will discuss how earth science affects our lives and is important in our modern world. For liberal studies majors only. (2 lecture, 2 lab hours) (Course fee, $10)

From your textbook: “Geology has many expressions in our world. Geologic processes reshape Earth’s interior and sculpt its surface. They determine the distribution of metals and petroleum and control which places are most susceptible to volcanoes, floods, and other natural disasters. Geology encompasses factors, such as climate and the availability of water, that are critical to ecosystems.” (p. 2)

**Email Correspondence:** *Students are expected to regularly access their Fresno State email* account, as this is the account used for all official university correspondence and Blackboard communications. You can expect a reply from me within 48 hours. If that does not happen, email me again.

**Website:** To access the course, login to Blackboard (http://blackboard.csufresno.edu) using your Fresno State username and password. For help with Blackboard, contact Technology Innovations for Learning and Teaching at 559-278-7373 or send an email to tiltsupport@csufresno.edu.

**Study Expectations:** It is usually expected that students will spend approximately 2 hours of study time outside of class for every one hour in class. Since this is a 3-unit class, you should expect to study an average of 6 hours outside of class each week. Some students may need more outside study time and some less.
For free tutoring on campus, contact the Learning Center (http://www.fresnostate.edu/studentaffairs/lrc/) in the Collection Level (basement level) of the Henry Madden Library. You can reach them by phone at 278-3052.

Our campus has developed SupportNet (http://www.fresnostate.edu/studentaffairs/supportnet/) to connect students with specific campus resources promoting academic success. I have agreed to participate in this program and may refer you to it if I believe you need the services provided by SupportNet to succeed in this course.

**Required Textbooks and Materials**

- Lab Manual Course Packet can be purchased from the Kennel Bookstore
- Next Generation Science Standards (NGSS): free download from www.nextgenscience.org
- Additional readings posted on Blackboard throughout the semester

**Course Goals and Primary Learning Outcomes**

**Course Goals:**

My goal in this course is for students to engage in scientific practices, approaches and thinking, while fostering their enthusiasm for teaching Earth Science content in the context of Next Generation Science Standards.

**Primary Learning Outcomes:**

- Observe and interpret landscapes and other aspects of their surroundings
- Understand the relevance of earth science to their lives
- Understand how to read graphs of scientific information and to measure, calculate, and compile scientific data
- Engage in the process of **scientific inquiry**
- Integrate Scientific Practices and Cross-Cutting Concepts into a teaching demonstration that addresses a discipline specific performance expectation (NGSS)

**Assessments**

You will have many opportunities and several different ways to demonstrate your engagement with course material and achievement of learning objectives. **It is your responsibility to complete assessments by the scheduled due date** and to check on announcements made when you are
absent from class and on Blackboard. Please read the assessment guidelines carefully and be sure that you understand what you need to do to get the grade you desire.

**Quizzes & Exam (40%)**

There will be two quizzes during the semester and one final exam, which will consist of a third quiz plus a comprehensive course exam. The quizzes and exam will consist of multiple-choice questions, with some short answer questions. The quizzes and final exam will emphasize major ideas and topics and will test your comprehension and ability to apply what you have learned during lecture and lab sessions. The quizzes and final exam will take place in the Fresno State Academic Testing Center. It is your responsibility to take the test during the assigned time frame.

**Lab Activities & Assignments (25%)**

Lab attendance is mandatory to receive credit for the activity. Labs are due at the end of the lab period unless prior arrangements are made with the instructor. Most labs will include a pre-lab assignment that will be due at the beginning of the lab period. Late labs will not be accepted and labs may not be made up except under extreme circumstances, at the discretion of the lab and lecture Instructors. Documentation of family or medical emergencies may be required for such exceptions.

**Group Project (15%)**

In groups of 3-4 assigned in your labs, you will plan and execute a lesson address an NGSS Earth & Space Science Disciplinary Core Idea. The project will be completed in multiple parts throughout the semester. Each student will submit an individual reflection paper related to the assignment. Detailed guidelines will be handed out early in the semester.

**e-quizzes and i-clicker participation (10%)**

These assessments allow you to check your understanding on a weekly basis. Each week an e-quiz on reading material will be due on Wednesday at 12 noon. You will submit the e-quiz on Blackboard. During most class periods, I will pose questions or surveys to which you can respond using your i-clicker. You must be present in class for the entire class period to receive credit.

**Learning Log Entries (10%)**

These short written responses (~200-300 words) provide an opportunity for students to reflect on how course topics affect their lives and to demonstrate an understanding of key organizing frameworks that are built upon throughout the course. Each entry will be a response to specific questions provided by the Instructor. Responses are submitted on Blackboard by Friday at 5pm the week they are due (except for the last entry due at the end of the semester). Entries will be checked for completeness and assessed for content at unannounced times during the semester.
Estimated Grade Scale: Cut-offs may be dropped slightly at the end of the semester.

A ≥ 90%
B ≥ 80%
C ≥ 70%
D ≥ 60%
F < 60%

Important Note: You must receive a passing grade on the lab portion of the course to pass the course.

Course Policies

- Students should attend each class period, arrive on time, and stay for the entire class period.
- Students are expected to have regular access to email and a computer. I will send out regular emails, announcements, and updates through Blackboard (to your Fresno State email account) and it is your responsibility to read and respond accordingly to email communications. Many assignments will also require the use of a computer and access to a reliable internet source.
- To receive credit for this class, you must personally engage in scientific readings, written responses, data collection and interpretation, and provide proper citations where appropriate. Collaboration and discussion are encouraged (except on exams and when explicitly noted on an assignment), but you may not turn in an assignment that is identical to another student’s, even if you worked on the assignment with that student. Please review the official Cheating & Plagiarism guidelines below and make sure you do not represent another person’s work as your own.
- Bring your textbook or reading assignment to class.
- In this course, we may discuss topics and issues about which different people may have different opinions. Please note the school policy on Disruptive Classroom Behavior below.
- Questions related to course material, assessments, and exams should be posted on the course discussion board on Blackboard. Before you submit a question, please read the FAQ’s posted in the discussion board and any other posted questions.
- Policies agreed upon by the entire class may be added/changed within the first two weeks.

Late/Missed Work Policy

- Late assignments will be deducted 10% per day after the due date. Late assignments will not be accepted more than one week after the due date.
- If you plan to be absent, you need to make arrangements before your absence to turn in assignments due that day.
- For unplanned absences due to medical reasons, emergencies, etc., please contact the Instructor as soon as possible to make up missed work. Also see ‘Special Accommodations’ below. If you do not contact the instructor within 24 hours of the missed class period, make up assignments will not be accepted.
- It is your responsibility to arrange to make up any missed work and check on announcements made while you were absent.
- Make-up quizzes and exams will not be given except in extreme or emergency cases. Documentation of family or medical emergencies may be required. Please contact me as soon as possible if you miss an exam due to an emergency or special circumstances.
Special Accommodations & Students with Disabilities

I want everyone to succeed in this class. If you have a medical concern, disability, or unexpected life event that inhibits your ability to complete assignments and/or participate in class activities, please contact me as soon as possible to address the issue before it becomes a major problem. Please be aware of the official Policy on Students with Disabilities.

Plagiarism Detection:

The campus subscribes to the SafeAssign.com plagiarism prevention service through Blackboard, and you will need to submit written assignments to SafeAssign.com. Your work will be used by SafeAssign.com for plagiarism detection and for no other purpose. The student may indicate in writing to the instructor that he/she refuses to participate in the SafeAssign.com process, in which case the instructor can use other electronic means to verify the originality of their work. SafeAssign.com Originality Reports will be available for your viewing.

Subject to Change Statement

This syllabus and the following schedule are subject to change in the event of extenuating circumstances. If you are absent from class, it is your responsibility to check on announcements made while you were absent.

Assessment, Reading, and Examination Schedule

<table>
<thead>
<tr>
<th>Week</th>
<th>Dates</th>
<th>Topic</th>
<th>NGSS Alignment</th>
<th>Reading</th>
<th>Assessment</th>
<th>Lab</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>8/27</td>
<td>Introduction &amp; Nature of Science</td>
<td>Dimensions, DCI</td>
<td>Ch 1, Readings on Bb</td>
<td>e-quiz due Wed;</td>
<td>Topographic Maps</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>LL #1 due Fri</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>9/3</td>
<td>Investigating Earth Science</td>
<td>SP, ESS2.B</td>
<td>Ch 2, SP on Bb</td>
<td>e-quiz due Wed;</td>
<td>Earth Materials &amp; Minerals (Ch 4)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>LL #1 due Fri</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>9/10</td>
<td>Dynamic Earth Systems</td>
<td>CCC, ESS2.A</td>
<td>Ch 1, CCC Narrative</td>
<td>e-quiz due Wed</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>9/24</td>
<td>Plate Tectonics</td>
<td>ESS2.B</td>
<td>Ch 3</td>
<td>e-quiz due Wed;</td>
<td>Sed. &amp; Meta. Rocks</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>LL #2 due Fri</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>10/1</td>
<td>Plate Tectonics: Large Scale Interactions</td>
<td>ESS2.B</td>
<td>Ch 3</td>
<td>e-quiz due Wed;</td>
<td>Earthquakes, Plate Tectonics &amp; Seafloor</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>LL #2 due Fri</td>
<td></td>
</tr>
<tr>
<td>Week</td>
<td>Date</td>
<td>Topic</td>
<td>DCI</td>
<td>CCC</td>
<td>SP</td>
<td>LL</td>
</tr>
<tr>
<td>------</td>
<td>------</td>
<td>-------</td>
<td>-----</td>
<td>-----</td>
<td>----</td>
<td>----</td>
</tr>
<tr>
<td>7</td>
<td>10/8</td>
<td>Geologic Time &amp; Dating</td>
<td>ESS1.C</td>
<td>Ch 9</td>
<td>e-quiz due Wed</td>
<td>Quiz 1</td>
</tr>
<tr>
<td>8</td>
<td>10/15</td>
<td>History of Planet Earth</td>
<td>ESS1.C</td>
<td>Ch 9</td>
<td>e-quiz due Wed</td>
<td>Relative &amp; Absolute Dating</td>
</tr>
<tr>
<td>9</td>
<td>10/22</td>
<td>Earth &amp; the Solar System</td>
<td>ESS1.B</td>
<td>Reading on Bb</td>
<td>e-quiz due Wed; LL #3 due Fri</td>
<td>Sunlight &amp; Seasons</td>
</tr>
<tr>
<td>10</td>
<td>10/29</td>
<td>Atmosphere &amp; Weather</td>
<td>ESS2.D</td>
<td>Ch 13</td>
<td>e-quiz due Wed</td>
<td>Group Presentations</td>
</tr>
<tr>
<td>11</td>
<td>11/5</td>
<td>Climate, Landscape &amp; Life</td>
<td>ESS2.C, D &amp; E</td>
<td>Ch 13</td>
<td>e-quiz due Wed; LL #4 due Fri</td>
<td>Group Presentations</td>
</tr>
<tr>
<td>12</td>
<td>11/12</td>
<td>Local &amp; Global Climate Change</td>
<td>ESS3.C &amp; D</td>
<td>Ch 14</td>
<td>e-quiz due Wed; Quiz 2</td>
<td>No lab</td>
</tr>
<tr>
<td>13</td>
<td>11/19</td>
<td>Water Cycle</td>
<td>ESS2.C</td>
<td>Ch 15, 16</td>
<td>e-quiz due Wed</td>
<td>Ice Cover &amp; Climate</td>
</tr>
<tr>
<td></td>
<td>11/26</td>
<td>No Class</td>
<td></td>
<td></td>
<td>Thanksgiving Break</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>12/3</td>
<td>Water Use &amp; Resources</td>
<td>ESS3.A, B, &amp; C</td>
<td>Ch 17</td>
<td>LL #5 due Fri</td>
<td>Water Cycle</td>
</tr>
<tr>
<td>15</td>
<td>12/10</td>
<td>Energy &amp; Natural Resources</td>
<td>ESS3.A</td>
<td>Ch 18</td>
<td>Groundwater &amp; Natural Resources</td>
<td></td>
</tr>
<tr>
<td></td>
<td>12/17</td>
<td>Wednesday 12/15 3:30-5:30pm</td>
<td></td>
<td></td>
<td>Quiz 3 &amp; Cumulative Exam</td>
<td></td>
</tr>
</tbody>
</table>

**Abbreviations:**

NGSS = Next Generation Science Standards  
DCI = NGSS Disciplinary Core Idea  
SP = NGSS Scientific Practices  
CCC = NGSS Cross-cutting Concepts  
LL = Learning Log entry  
ESS = Earth and Space Sciences content area of NGSS. Numbers refer to ESS DCI’s

**University Policies:**

These important policies may be found in the online version of the syllabus.
University Policies

Students with Disabilities:

Upon identifying themselves to the instructor and the university, students with disabilities will receive reasonable accommodation for learning and evaluation. For more information, contact Services to Students with Disabilities in the Henry Madden Library, Room 1202 (278-2811).

Honor Code:

“Members of the CSU Fresno academic community adhere to principles of academic integrity and mutual respect while engaged in university work and related activities.” You should:

a) understand or seek clarification about expectations for academic integrity in this course (including no cheating, plagiarism and inappropriate collaboration)

b) neither give nor receive unauthorized aid on examinations or other course work that is used by the instructor as the basis of grading.

c) take responsibility to monitor academic dishonesty in any form and to report it to the instructor or other appropriate official for action.

Instructors may require students to sign a statement at the end of all exams and assignments that “I have done my own work and have neither given nor received unauthorized assistance on this work.” If you are going to use this statement, include it here.

Cheating and Plagiarism:

"Cheating is the actual or attempted practice of fraudulent or deceptive acts for the purpose of improving one's grade or obtaining course credit; such acts also include assisting another student to do so. Typically, such acts occur in relation to examinations. However, it is the intent of this definition that the term 'cheating' not be limited to examination situations only, but that it include any and all actions by a student that are intended to gain an unearned academic advantage by fraudulent or deceptive means. Plagiarism is a specific form of cheating which consists of the misuse of the published and/or unpublished works of others by misrepresenting the material (i.e., their intellectual property) so used as one's own work." Penalties for cheating and plagiarism range from a 0 or F on a particular assignment, through an F for the course, to expulsion from the university. For more information on the University's policy regarding cheating and plagiarism, refer to the Class Schedule (Legal Notices on Cheating and Plagiarism) or the University Catalog (Policies and Regulations).

Computers:

"At California State University, Fresno, computers and communications links to remote resources are recognized as being integral to the education and research experience. Every student is required to have his/her own computer or have other personal access to a workstation
(including a modem and a printer) with all the recommended software. The minimum and recommended standards for the workstations and software, which may vary by academic major, are updated periodically and are available from Information Technology Services or the University Bookstore (http://www.kennelbookstore.com). In the curriculum and class assignments, students are presumed to have 24-hour access to a computer workstation and the necessary communication links to the University's information resources."

**Disruptive Classroom Behavior:**

"The classroom is a special environment in which students and faculty come together to promote learning and growth. It is essential to this learning environment that respect for the rights of others seeking to learn, respect for the professionalism of the instructor, and the general goals of academic freedom are maintained. ... Differences of viewpoint or concerns should be expressed in terms which are supportive of the learning process, creating an environment in which students and faculty may learn to reason with clarity and compassion, to share of themselves without losing their identities, and to develop and understanding of the community in which they live . . . Student conduct which disrupts the learning process shall not be tolerated and may lead to disciplinary action and/or removal from class."

**Copyright Policy:**

Copyright laws and fair use policies protect the rights of those who have produced the material. The copy in this course has been provided for private study, scholarship, or research. Other uses may require permission from the copyright holder. The user of this work is responsible for adhering to copyright law of the U.S. (Title 17, U.S. Code). To help you familiarize yourself with copyright and fair use policies, the University encourages you to visit its Copyright Web Page (http://libguides.csufresno.edu/copyright).

Technology Innovations for Learning & Teaching (TILT) course web sites contain material protected by copyrights held by the instructor, other individuals or institutions. Such material is used for educational purposes in accord with copyright law and/or with permission given by the owners of the original material. You may download one copy of the materials on any single computer for non-commercial, personal, or educational purposes only, provided that you (1) do not modify it, (2) use it only for the duration of this course, and (3) include both this notice and any copyright notice originally included with the material. Beyond this use, no material from the course web site may be copied, reproduced, re-published, uploaded, posted, transmitted, or distributed in any way without the permission of the original copyright holder. The instructor assumes no responsibility for individuals who improperly use copyrighted material placed on the web site.