



**From:** Tracey Brown  
**Sent:** Monday, May 02, 2016 2:19 PM  
**To:** Yvonne Meulemans; Greig Guthey; Edward Price  
**Cc:** Jocelyn Ahlers; Virginia Mann; Regina Eisenbach  
**Subject:** RE: GEOG 110

Hello,

After learning of Chemistry's support for the request, Biology is also supportive.

TKB

\*\*\*\*\*  
Tracey K. Brown, Ph.D.  
Professor and Chair  
Dept. of Biological Sciences  
California State University, San Marcos  
San Marcos, California 92096  
(760) 750-8017 [traceyb@csusm.edu](mailto:traceyb@csusm.edu)  
\*\*\*\*\*

**From:** Yvonne Meulemans  
**Sent:** Monday, May 02, 2016 11:50 AM  
**To:** Greig Guthey <gguthey@csusm.edu>; Tracey Brown <traceyb@csusm.edu>; Edward Price <eprice@csusm.edu>  
**Cc:** Jocelyn Ahlers <jahlers@csusm.edu>; Virginia Mann <vmann@csusm.edu>; Regina Eisenbach <regina@csusm.edu>  
**Subject:** Re: GEOG 110

Hi Tracey and Ed:

I know we in the midst of the tornado that is the end of the semester. If possible, a response to my request below would be appreciated before GEC's last meeting on Thursday, May 5 at 10am.

Thank you,  
Yvonne  
GEC Chair-2015-16

Yvonne Nalani Meulemans  
Director, Information Literacy Program  
Library Faculty  
Kellogg 3422  
California State University at San Marcos  
760-750-4375

Subject: FW: GEOG 110

From: Edward Price  
Sent: Tuesday, May 03, 2016 1:54 PM  
To: Tracey Brown <traceyb@csusm.edu>  
Cc: Yvonne Meulemans <ymeulema@csusm.edu>; Greig Guthey <gguthey@csusm.edu>; Jocelyn Ahlers <jahlers@csusm.edu>; Virginia Mann <vmann@csusm.edu>; Regina Eisenbach <regina@csusm.edu>  
Subject: Re: GEOG 110

Physics also supports this request.

Ed

--

Edward Price  
Associate Professor  
Physics Department Chair  
CSU San Marcos

<http://faculty.csusm.edu/price/>

On May 2, 2016, at 2:18 PM, Tracey Brown <[traceyb@csusm.edu](mailto:traceyb@csusm.edu)> wrote:

Hello,

After learning of Chemistry's support for the request, Biology is also supportive.

TKB

\*\*\*\*\*  
Tracey K. Brown, Ph.D.  
Professor and Chair  
Dept. of Biological Sciences  
California State University, San Marcos  
San Marcos, California 92096  
(760) 750-8017 [traceyb@csusm.edu](mailto:traceyb@csusm.edu)  
\*\*\*\*\*



Virginia Mann

Library  
support

**From:** Melanie Chu  
**Sent:** Tuesday, March 22, 2016 11:00 AM  
**To:** Greig Guthey  
**Cc:** Virginia Mann  
**Subject:** Re: NEw Course GE Designation

Hi Greig and Virginia,

Thank you for the opportunity to review GEOG 110 Introduction to Physical Geography. I look forward to collaborating with GEOG faculty as needed, to support the student learning outcome: "find, evaluate, and use information appropriate to the course and discipline."

Please consider this email my approval for the GEOG 110 course.

Melanie Chu

Outreach Librarian, Library Faculty  
California State University San Marcos  
[mchu@csusm.edu](mailto:mchu@csusm.edu) | KEL 3306 | 760.750.4378

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**From:** Greig Guthey <[gguthey@csusm.edu](mailto:gguthey@csusm.edu)>  
**Date:** Wednesday, March 16, 2016 at 2:02 PM  
**To:** Melanie Chu <[mchu@csusm.edu](mailto:mchu@csusm.edu)>  
**Subject:** NEw Course GE Designation

Hi Melanie

As the geography librarian, I think you are the person to review this GE form. I know that the time is late but I am trying to get this review completed quickly so that we can have our new faculty member teaching this course next fall. LEt me know if you have any questions.

Thanks

Greig Tor Guthey  
Associate Professor of Public Policy and Planning & Geography Coordinator  
Department of Liberal Studies  
homepage: [http://www.csusm.edu/liberalstudies/faculty/greig\\_guthey.html](http://www.csusm.edu/liberalstudies/faculty/greig_guthey.html)  
geography: <http://www.csusm.edu/liberalstudies/geography.html>  
food project: [http://www.csusm.edu/liberalstudies/Food\\_Project.html](http://www.csusm.edu/liberalstudies/Food_Project.html)

*LBST Chau sign.*

Reply all | Delete Junk | ...



# Re: GEC Form for Geog 110

JA **Jocelyn Ahlers**  
To:  Greig Guthey;

Reply all |

Wed 3/16/2016 12:49 PM

Inbox

GEOG 110 LDGE B1 form..   
46 KB

Show all 1 attachment (46 KB) Download Save to OneDrive - California State University San Marcos

**Dear Greig,**  
**I have added my name to the signature page, and please accept this email as a further signature on this form.**  
**Best,**  
**Jocelyn**

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**California State University, San Marcos General Education Program  
GENERAL EDUCATION NEW COURSE CERTIFICATION REQUEST**

**• AREA B1: Physical Science – No Lab Component**

*See GE Handbook for information on each section of this form*

Course Coordinator: Greig Tor Guthey Phone: 760-750-8015 Email: gguthey@csusm.edu

**Part A: B1 Physical Science General Education Learning Outcomes (GELOs) related to course content.  
[Please type responses into the tables.]**

<b>Physical Science GELOs this course will address:</b>	<b>Course content that addresses each GELO.</b>	<b>How will these GELOs be assessed?</b>
B1.1 Students will explain accepted modern physical or chemical principles and theories, their areas of application, and their limitations.	This is an introductory class in physical geography, using systems theory, and physical science principles (e.g., thermodynamics) and models (e.g., geologic cycle, energy budget model) to understand how energy from the sun and from within the earth cycles through and affects the Lithosphere, Atmosphere, Hydrosphere, and Biosphere. Topics may include: (1) Geomorphology (e.g., Earth's Structure, Plate Tectonics and Volcanism, etc.) (2) The Hydrologic Cycle, Weather, and Landscapes (3) the Carbon Cycle and Climate Change (4) Energy Balances (5) Earth System Feedbacks (6) Spatial Distribution of Environments	Student understanding will be assessed through questions on two exams that focus on physical geography, its application and limitations as well as through in-class problem sets and projects. For example, students will be asked to explain how changing phases of water drive the general circulation of the atmosphere that in turn shapes daily weather.
B1.2 Students will apply the discipline's customary methods to solve problems through data collection, critical evaluation of evidence, the application of quantitatively rich models, and /or employment of mathematical and computer analysis.	Spatial analysis is the main method of geographers. Physical geography involves spatial analysis of the elements, processes and systems that make up the environment, and the interactions between them and with humans.	Students will be assessed through questions on exams and through exercises in class. For example, students are asked to assess the increase in atmospheric CO <sub>2</sub> at Mauna Loa and explain why it appears to increase with each passing year?
B1.3 Students will be able to articulate what makes a good scientific theory, incorporating values of parsimony, agreement with experimental or observational evidence, and coherence with other mathematical or physical theories.	Introduction to the Scientific Method, hypothesis making and testing, and scientific theories.	Quizzes, assignments and tests contain questions which will assess students' ability to make hypotheses and understand that good scientific theory is based on verification through repeated experiments. For example, students will learn about and examine the multiple forms of climate change data (tree ring, atmospheric data, ice cores, etc).
B1.4 Students will be able to identify areas in which ethics either (1) directs or limits physical science research or (2) is informed by the products of this research	Human impacts on the Earth System. There are a variety of topics explored in the course that concern ethics directing physical science research and physical science research	Students will be assessed through exam questions, in-class work, reading, and writing assignments on how people shape or can shape the

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	<p>informing ethics. Ethics may be defined as the actions people should take in light of evidence concerning human impacts on the environment. Three potential examples (there are others) are:</p> <ol style="list-style-type: none"> <li>1) urban heat island effect,</li> <li>2) climate change,</li> <li>3) shale gas/fracking.</li> </ol>	<p>environment. 1) For urban heat island effect, students will discuss the scientific evidence about urban heat island effect and whether urban land use policy could mitigate its effects. 2) For climate change, they will discuss how the public concern about climate change has directed scientists to determine why the climate is changing and they will discuss what should be done to mitigate the effects of climate change given that the data shows that humans are the primary cause. They will write a reflective essay that considers their position on climate policy. 3) For shale gas/fracking, students will demonstrate knowledge of what shale gas is, how it is accessed, and where it is located in the United States. This provides an arena for discussing the environmental impacts of fracking and opportunities for students to reflect in writing on energy policy and consider alternative sources of power in lieu of shale gas.</p>
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**Part B: General Education Learning Outcomes required of all GE courses related to course content:**

<b>GE Outcomes required of <u>all</u> Courses</b>	<b>Course content that addresses each GE outcome?</b>	<b>How will these GELOs be assessed?</b>
Students will communicate effectively in writing to various audiences. (writing)	Students are required to complete reflective critical writing assignments and maintain journals of their work in the course.	Students are assessed on their ability to write clearly and effectively articulate concepts discussed during lecture.
Students will think critically and analytically about an issue, idea or problem. (critical thinking)	Quizzes, tests and exam problems will require students to integrate course material and critical thinking.	Students are assessed on their ability to answer questions that require them to integrate course material and critical thinking skills.
Students will find, evaluate and use information appropriate to the course and discipline. (Faculty are strongly encouraged to collaborate with their library faculty.)	Reading assignments, in-class activities and additional material	Students are assessed on their ability to find and use appropriate information in Physical Geography. For example, students will be asked to find articles in physical geography related to climate change, biogeography, erosion and other topics.



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**Part C: GE Programmatic Goals: The GE program aligns with CSUSM specific and LEAP Goals. All B1 courses must meet at least one of the LEAP Goals.**

<b>GE Programmatic Goals</b>	<b>Course addresses this LEAP Goal:</b>
LEAP 1: Knowledge of Human Cultures and the Physical and Natural World.	<input type="checkbox"/> No <input checked="" type="checkbox"/> Yes
LEAP 2: Intellectual and Practical Skills	<input type="checkbox"/> No <input checked="" type="checkbox"/> Yes
LEAP 3: Personal and Social Responsibility	<input type="checkbox"/> No <input checked="" type="checkbox"/> Yes
LEAP 4: Integrative Learning	<input type="checkbox"/> No <input checked="" type="checkbox"/> Yes
<b>CSUSM Specific Programmatic Goals</b>	<b>Course content that addresses the following CSUSM goals. Please explain, if applicable.</b>
CSUSM 1: Exposure to and critical thinking about issues of diversity.	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes (please describe): <i>This course addresses the complexity of the earth system in terms of its various components systems and how humans live in different regions and at different times, but it does not address human diversity with respect to race, ethnicity, sexuality, gender, etc.</i>
CSUSM 2: Exposure to and critical thinking about the interrelatedness of peoples in local, national, and global contexts.	<input type="checkbox"/> No <input checked="" type="checkbox"/> Yes (please describe): <i>This course addresses human impacts on the environment and seeks to develop understanding of human influence on physical geography at various scales.</i>

**Part D: Course requirements to be met by the instructor.**

<b>Course Requirements:</b>	<b>How will this requirement be met by the instructor?</b>
Course meets the All-University Writing requirement: A minimum of 2500 words of writing shall be required for 3+ unit courses.	In this class, the All-University Writing Requirement is met through the combined writing requirements of several aspects of the course. Key among them are in-class lab exercises and related questions assigned in class for this purpose and tracked through online writing. Also, both the midterm and final exam include questions which require analytic writing in response. Together, these requirements will meet or exceed the 2500-word minimum.
Courses shall include an evaluation of written work which assesses both content and writing proficiency, using a writing style and use of language that is appropriate for the sciences.	This course includes assignments that will be graded on students' writing proficiency and content. For example, students will be asked summarize the scientific evidence for anthropogenic forcing of climate as part of the section on climate change.
Courses should demonstrate to students that the applications of physical science principles and theories can lead to lifelong learning in science and to productive and satisfying life choices.	This course endeavors to develop among those who take it a life-long interest in earth systems, illustrate continuing research questions and avenues of inquiry, and show potential career opportunities in geography and the earth sciences. For example, students will learn about the work of physical geographers and the interesting tools that they use including maps, GIS, GPS and Remote Sensing tools (drones and airphotos, satellite photos, and other tools).
Courses should demonstrate to students the ways in which science influences and is influenced by societies in both the past and the present.	This course includes content covering the development of scientific knowledge about the planet in the past as well as the development of scientific knowledge of the planet now and in the future.

**California State University, San Marcos General Education Program**

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<p>Courses should empower students to communicate effectively to others about scientific principles and their application to real-world problems.</p>	<p>This course introduces students to a systems perspective on the earth system and promotes earth science literacy by preparing them to communicate effectively about the earth system and ongoing changes to the system based in scientific principles, models, and evidence.</p>
<p>Courses shall build the students' information literacy in a way that is appropriate to the field and level of the course.</p>	<p>The course introduces students to a broad range of data and sources of data concerning the earth system (NASA, Satellite Imagery, GIS, etc.)</p>
<p>Courses shall require students to think critically so that they are able to distinguish scientific arguments from pseudo-scientific myths or opinions.</p>	<p>The course addresses human impacts on the environment while also seeking to understand geosystems. For example, students examine climate change from a science and systems perspective and exams and in-class work will ask students to reflect on opinions about climate change vs. the existing science of climate change both in terms of theory and/or principles and evidence.</p>

### 3) Dr. Elizabeth Ridder's Syllabus from University of Iowa

#### **GEOG:1020:0001 The Global Environment**

Spring 2016: 3:30 – 4:45 TTh, 106 GILH

Instructor:	Elizabeth (Liz) Ridder	Office:	309 JH
Email:	elizabeth-ridder@uiowa.edu	Phone:	335-0540
Office hours:	2:30 – 4:00 W, 1:30 – 3:00 F, or by appointment		

#### **Course Description and General Objectives**

This course introduces you to current global environmental topics that range from local (e.g., soil conditions and characteristics) to global. Earth Sciences and Physical Geography are the study and synthesis of selected areas within the natural sciences and address the Earth's four major environments: the atmosphere, the lithosphere, the hydrosphere, and the biosphere. We will focus on the connections between these environments, how phenomena at the global scale influence events locally (and vice-versa), and the use of the scientific tools of observation, analysis, and inference as a means of understanding the world around us. By the end of the semester, you are expected to demonstrate the following objectives through the completion of assignments, quizzes, and exams:

- Describe the major concepts of earth systems science
- Develop a vocabulary to understand and discuss course material and related content
- Recognize, describe, and provide examples of interrelated system processes
- Explain and exemplify human-environmental interactions
- Apply the scientific method to develop questions, generate data, and derive conclusions

#### **Text and Resources**

**Highly recommended** Book: *Geosystems: An Introduction to Physical Geography*, 9<sup>th</sup> Edition. Authors: Robert W. Christopherson and Ginger H. Birkeland. The text is available at the UI book store (Iowa Hawk Shop in the Iowa Memorial Union) and online.

Reading and understanding basic concepts will be important in the course. The textbook introduces considerable detail on the topics in an accessible manner.

ICON: Lecture outlines and study guides will be posted under the Content area of the course page. For those taking the lab, a syllabus with the lab schedule, policies, and procedures will be posted on ICON.

#### **Grades**

Plus/minus grading will be used. For students enrolled in GEOG:1021 (lab), you will receive a separate grade for the lab course.

Mid-term Exam I	20%
Mid-term Exam II	20%
Comprehensive Final Exam	25%
Assignments, Quizzes, & Attendance	15%
Written Assignments	20%

Exams: Two mid-term exams will be given during the semester. The first exam covers approximately the first 6 weeks of course material and the second exam covers the following 6 weeks. A comprehensive final exam will be given during final exam week.

Written assignments: This course satisfies a General Education requirement; thus you must receive >50% of the points in the written assignments category to pass the course regardless of your exam scores. You will complete a total of **four** written assignments over the semester (combination of options below). These assignments are individual efforts (with the possible exception of Story Maps, instructor approval required) and each are worth 5% of your final grade.

***Details for each assignment are posted on ICON***, but the following is a general overview of each assignment:

*Twitter Posts:* Over the course of the semester, you will create a *minimum* of **ten** original posts (not re-tweets or replies) that include an original (belongs to you) image/photo of a course-related phenomenon. Your post should *explain* what is happening in the picture (not just a description of the picture).

*Geography in the News:* You will find **one** recent news article of interest to you, from a reliable source of your choice, which features a topic related to the course content. You are expected to utilize course and outside resources to craft a write-up that summarizes the article, explains the relationship of this article to concepts we've discussed in class, a discussion of why this article is newsworthy, and a discussion of why this article is broadly relevant to society and/or science. You will post your write-up and link to your chosen article to a Discussion on Icon. Examples are provided on ICON.

*Research & Writing Project:* You will expand upon **one or two** of your Twitter posts to create your Research & Writing Projects. For each project, you are expected to use outside resources to craft a write-up that further explains the phenomenon in your photo/image. You will describe the study area, a description of the process/topic, a discussion of how the process/topic relates to the course, and a discussion of why the process/topic is more broadly relevant to society and/or science. You will post your write-up and image to a Discussion on ICON.

*Story Maps:* Story maps are a means to display geographic information, images, videos, and explanatory text for a common theme. You may take your story map in any direction you decide, but a common theme tying together each tab/post is recommended. The written information required for the story map is the same as the research & writing project, without the requirement of using your original images/videos/art work as examples of the processes you're describing.

Attendance: Attendance in lecture is randomly monitored, and much of the evaluation will be based upon material covered in class. You are responsible for any material covered in lecture regardless of inclusion of that information in the notes posted to ICON. You are also responsible for any announcements made in class. Please also keep in mind that the dates for in-class quizzes and assignments will not be announced in advance and it is not possible to make-up quizzes or assignments without being cleared in advance or for medical reasons.

Collaboration: In this class, students are not allowed to collaborate with others on any exam or the individual written assignments, with the possible exception of the Story Maps (instructor approval required). Do not share your work with others or ask others to see their completed work since both are considered academic misconduct. Unless otherwise instructed, collaboration is also not allowed on in-class quizzes and assignments. In the case of group projects, in-class assignments, or quizzes that allow collaboration, each student is expected to complete a similar amount of work and to contribute equally. Students who misrepresent themselves as equal partners but who are actually letting others do the bulk of the work will be reported to the College for academic dishonesty. If you have questions regarding this policy, it is your responsibility to ask them.

### **Lab (GEOG:1021)**

The lab is intended to complement the lecture material, providing reviews and hands-on applications of the material covered, as well as additional material to enhance discussions and applications. When taken in conjunction with GEOG:1020, The Global Environment satisfies the General Education requirement Nat Sci with Lab and is required of all Geography Majors. A lab syllabus explaining lab schedule, policies, and procedures will be given out in your lab section. Lab assignments, consisting of lab write-ups due each week, are required. You must pass the lab with >50% of the points in order to pass the lab. Attendance in lab **is required**.

### **Your Responsibilities**

This syllabus details specific expectations the instructor may have about attendance and participation. You have a responsibility to help create a classroom environment where all may learn. At the most basic level, this means you will respect the other members of the class and the instructor and you will treat them with the courtesy you expect to receive in return. This policy applies to all forms of communication in this course. Any email correspondence will be conducted via your uiowa email address, thus you are expected to check this email address regularly or forward email from this account to one you regularly use. For each semester hour of credit that assigned to a Geography course, you should expect to spend approximately two to three hours per week preparing for class sessions (six to nine hours per week outside of class time in preparation).

### **Absences**

Students who are absent for medical or personal reasons are expected to present evidence to verify the reason. Students may report absences from class of five days or less by completing a “Reason for Absence from Class” form, available at the Registration Center and online through the Registrar’s Office. Students who are absent for more than five days may ask the Registration Center to send notification of absence to each instructor. Students should not expect instructors to make adjustments to the class attendance policy, nor to provide make-up exams, so that students can leave campus before the beginning of a scheduled vacation or at the end of the semester, or to accommodate family or employment activities.

Make-up & Late Work: If you have filed the “Explanatory Statement of Absence from Class” form with the Registrar’s Office, absences may be excused and exams and assignments made up (College of Liberal Arts and Sciences attendance policies).

### **Departmental and College of Liberal Arts and Sciences Policies and Procedures**

Department Information: If you have any questions, concerns or administrative needs, please contact me or if I am unable to assist you, you may contact the Department office or Department Chair:

Departmental Admin:	Angela Bellew	Office:	316 JH
Email:	angela-bellew@uiowa.edu	Phone:	335-0150
Department Chair:	David Bennett	Office:	306 JH
Email:	david-bennett@uiowa.edu	Phone:	335-0158

### Administrative Home

The College of Liberal Arts and Sciences is the administrative home of this course and governs matters such as the add/drop deadlines, the second-grade-only option, and other related issues. Different colleges may have different policies. Questions may be addressed to 120 Schaeffer Hall, or see the CLAS Academic Policies Handbook at <http://clas.uiowa.edu/students/handbook>.

### Electronic Communication

University policy specifies that students are responsible for all official correspondences sent to their University of Iowa e-mail address (@uiowa.edu). Faculty and students should use this account for correspondences ([Operations Manual, III.15.2, k.11](#)).

#### Accommodations for Disabilities

A student seeking academic accommodations should first register with Student Disability Services and then meet with the course instructor privately in the instructor's office to make particular arrangements. See <http://sds.studentlife.uiowa.edu> for more information.

#### Academic Honesty

All CLAS students or students taking classes offered by CLAS have, in essence, agreed to the College's [Code of Academic Honesty](#): "I pledge to do my own academic work and to excel to the best of my abilities, upholding the [IOWA Challenge](#). I promise not to lie about my academic work, to cheat, or to steal the words or ideas of others; nor will I help fellow students to violate the Code of Academic Honesty." Any student committing academic misconduct is reported to the College and placed on disciplinary probation or may be suspended or expelled ([CLAS Academic Policies Handbook](#)).

#### CLAS Final Examination Policies

The final examination schedule for each class is announced by the Registrar generally by the fifth week of classes. Final exams are offered only during the official final examination period. **No exams of any kind are allowed during the last week of classes.** All students should plan on being at the UI through the final examination period. Once the Registrar has announced the date, time, and location of each final exam, the complete schedule will be published on the Registrar's web site and will be shared with instructors and students. It is the student's responsibility to know the date, time, and place of a final exam.

#### Making a Suggestion or a Complaint

Students with a suggestion or complaint should first visit with the instructor (and the course supervisor), and then with the departmental DEO. Complaints must be made within six months of the incident ([CLAS Academic Policies Handbook](#)).

#### Understanding Sexual Harassment

Sexual harassment subverts the mission of the University and threatens the well-being of students, faculty, and staff. All members of the UI community have a responsibility to uphold this mission and to contribute to a safe environment that enhances learning. Incidents of sexual harassment should be reported immediately. See the UI [Office of the Sexual Misconduct Response Coordinator](#) for assistance, definitions, and the full University policy.

#### Reacting Safely to Severe Weather

In severe weather, class members should seek appropriate shelter immediately, leaving the classroom if necessary. The class will continue if possible when the event is over. For more information on Hawk Alert and the siren warning system, visit the [Department of Public Safety website](#).

#### **Tentative Course Schedule:**

<b>Week</b>	<b>Topic</b>	<b>Chapters</b>
<b>1</b>	<b>History, principles, and tools of earth science</b>	<b>1</b>
1/19 1/21	A brief history of the science related to the earth system is introduced. The systems approach and the basic forms, patterns, and processes of systems are introduced.	
<b>2</b>	<b>Lithosphere: Starting with the Earth's surface</b>	<b>12</b>
1/26 1/28	The Earth's structure and plate tectonics are introduced.	

<b>3</b>	<b>Tectonics, earthquakes, volcanism: Geological surface processes &amp; landforms</b>	<b>13</b>
2/2 2/4	The processes that create volcanic and tectonic landforms are studied. Types of volcanic features and faults are described. Introduction to interactions of rocks and weathering are introduced.	
<b>4</b>	<b>Hydrology: Water and landscapes</b>	<b>14 &amp; 15</b>
2/9 2/11	The interactions between lithosphere, atmosphere, and hydrosphere are examined. The process and landforms of fluvial geomorphology are introduced.	
<b>5</b>	<b>Coastal systems and eolian processes</b>	<b>16</b>
2/16 2/18	Other processes of geomorphology are examined and resulting landforms described. The dependence of sediment budgets on hydrology and vegetation are stressed. Arid lands are used as an example of the specific links between climate, vegetation, and geomorphology.	
<b>6</b>	<b>Glaciation</b>	<b>17</b>
2/23	The processes that create glaciers and the mechanism and landforms of glacial erosion, transport, and deposition are studied. Climatic influence is examined.	
2/25	<b>MID-TERM EXAM 1: 2/25</b>	
<b>7</b>	<b>The atmosphere and solar inputs</b>	<b>2 &amp; 3</b>
3/1 3/3	The fundamentals of earth and solar systems are examined. The Earth's atmospheric composition and solar energy inputs are emphasized.	
<b>8</b>	<b>Energy balances</b>	<b>4 &amp; 5</b>
3/8 3/10	Global processes are largely dictated by inputs of energy from the sun. The resulting patterns and processes will be studied in relation to the energy budget model. A system with input, output, and storage is also used as a model.	
<b>9</b>	<b>No classes – Spring Break</b>	
3/15 3/17		
<b>10</b>	<b>Circulations</b>	<b>6</b>
3/22 3/24	Energy is distributed by the circulation of air and water. The influence of energy balances on atmospheric circulation and ocean currents will be examined.	
<b>11</b>	<b>Precipitation</b>	<b>7</b>
3/29 3/31	The relationship between energy and atmospheric water will be examined with particular focus on the importance of the links between atmospheric moisture, energy balance, and weather.	
<b>12</b>	<b>Weather &amp; water</b>	<b>8 &amp; 9</b>
4/5 4/7	Energy circulation drives the processes commonly called weather. The results of energy, circulation, and the movement of water in the earth system is examined at scales ranging from molecules to hurricanes.	
<b>13</b>	<b>Global environments</b>	<b>10 &amp; 11</b>
4/12 4/14	The differences in environments created by the interaction of the atmosphere, biosphere, hydrosphere, and lithosphere are reviewed. Climate change is introduced.  <b>MID-TERM EXAM 2: 4/14</b>	

<b>14</b>	<b>Biosphere: Soils &amp; functions</b>	<b>18</b>
4/19 4/21	Distribution of soils in relation to the climate system is examined. How soils serve as a resource for the biosphere and the connection to ecosystem processes is described.	
<b>15</b>	<b>Earth system feedbacks</b>	<b>19</b>
4/26 4/28	We consider how the Earth's lithosphere, hydrosphere, biosphere, and atmosphere are connected in relation to the question of climate change. The role of humans in the earth system is reviewed with examples such as influences on land use and biodiversity.	
<b>16</b>	<b>Biosphere: Functions &amp; diversity</b>	<b>20</b>
5/3 5/5	Ecosystem processes and patterns are examined. The connection to the climate system is stressed. The geographic pattern of biodiversity and how it can be influenced by people is investigated. Responses to climatic change, land use patterns, and the management of natural areas are considered.	
<b>FINAL EXAM DATE/TIME TBA</b>		

**Key dates:**

**Friday, February 12** by 11:59 PM: Writing assignment #1 submitted to ICON dropbox

**Thursday, February 25: Mid-term Exam 1**

**Friday, March 4** by 11:59 PM: Writing assignment #2 submitted to ICON dropbox

**Friday, April 8** by 11:59 PM: Writing assignment #3 submitted to ICON dropbox

**Thursday, April 14: Mid-term Exam 2**

**Friday, April 29** by 11:59 PM: Twitter posts complete and twitter handle posted as "submission" to ICON dropbox or Writing assignment #4 submitted to ICON dropbox



April 26, 2016

Dear GEC,

I am writing in response to the additional feedback I received about my request for GE Area B1 designation for Geography 110: Introduction to Physical Geography. I appreciate the committee's careful review of the form, and hope that my remarks here, coupled with the edits to the GE form (attached), and my previous email (attached) regarding additional information about section B1.4 of the GE form will address the comments forwarded to me by the Chair of GEC and result in approval of this request.

I can see that there are important curricular questions at stake here. As I understand them, these questions appear to stem from concerns that the subject matter covered in the course does not permit students to acquire an understanding of physical science principles; this concern arises in no small part from the assumption that Physical Geography is an *application* of physical science, rather than a field of physical science in and of itself. It is my hope that the information I provide below will overturn that assumption. After speaking with Ed Price, I have also gone back and revised the GE form in order to more clearly show that physical geography, as a field, addresses the core concerns of an LDGE B1 course; please note that different fields within the physical sciences may use slightly different terminology and strategies to teach about the physical world. Physical Geography takes a systems approach rooted nevertheless in scientific principles. I tried to clarify these issues in my revisions.

Before addressing the specific comments that I have received from the chair of GEC, I want to take this opportunity to point out a few key facts that are important to include in your consideration as you review my request for GE B1 designation.

First, the course will be taught by Dr. Elizabeth Ridder, a physical geographer who will become a new tenure track assistant professor on this campus in the fall and who is well versed in physical science. She was a Fulbright Scholar and held a special NSF scholarship for teaching this course; she is currently a visiting assistant professor at University of Iowa. I attach an example of the syllabus she currently uses at Iowa where the course is part of their general education program.

Second, it is typical within the academy for an introductory physical geography course to be accepted for physical science credit. This can clearly be seen in a review of geography curriculum within the CSU, where we find that there are very few campuses that have geography programs that don't use a version of physical geography in their general education program for fulfilling area B1 of the GE program (please see Appendix 1, which lists CSU campuses on which physical geography is offered for B1 credit). In fact, as we pointed out in conversations with members of the College of Science last year when the question arose whether Geography could even offer a physical science course, Physical Geography is a well-

established field of scientific research and education generally, and is understood not only within the field of Geography, but in disciplines such as Physics, Chemistry, and Earth Science, to be a discipline of physical science. The fact that Physical Geography fulfills Area B1 on other CSU campuses reflects this recognition.

In addition, The CSU Chancellor's General Education Advisory Committee publishes a report titled "Guiding Notes for General Education Course Reviewers" (available at <http://www.calstate.edu/app/geac/documents/ge-reviewers-guiding-notes.pdf> -- Read the top of page 26) which states that physical geography courses "almost always" fulfill Area B1. It is worth pointing out that this publication indicates that this is not the case for other geography courses which often deal with more human related topics. But it is the case for physical geography specifically. Thus, we are not making the case, now or for the future, that Geography as a whole is a physical science discipline – only that those geography courses which focus on physical geography fall within that designation. Given this philosophy and recommendation at the system level, it is not surprising to find that lower division physical geography courses satisfy GE B1 Physical Science on 17 campuses in the Cal State System. Within our service area, both Palomar and Mount San Jacinto College teach physical geography with the B1 attribute; this means, among other things, that our transfer students can and do take physical geography to satisfy this requirement.

Physical Geography is, in its entirety, part of Earth Sciences research and education. In 2012, The National Council for Geographic Education defined an "essential element" of geography to be physical systems. In the Geosystems text, which will be used in this course, Physical Geography is defined as:

"...the spatial analysis of all the physical elements, processes, and systems that make up the environment: energy, air, water, weather, climate, landforms, soils, animals, plants, microorganisms and Earth itself. Today in addition to its place in the geographic continuum, physical geography also forms part of the broad field of Earth systems science, the area of study that seeks to understand Earth as a complete entity, an interacting set of physical, chemical and biological systems."

And many of the "Big Ideas" associated with the Earth Science Literacy Initiative are quite clearly part of this curriculum (The guide is available at <http://www.earthscienceliteracy.org>). This document discusses these ideas as "principles." Funded by the National Science Foundation, the initiative sought to define key learning goals for earth science curriculum given the complexity of discerning information from multiple sources and the need for citizens literate about the Earth's systems and interactions between them. The report provides in easy to read format key material that students should be taught in K-16 education and is based on surveys with scientists and educators across the country. Physical Geography courses fulfill many of these dimensions of earth science literacy.

In short, it seems that the concerns are more about language and phrasing, and knowledge of physical geography, than about the question of scientific

fundamentals. And to that point, I would ask GEC members to consider that the language used to describe physical geography courses varies widely from campus to campus. I have found very general descriptions in course catalogs. For example, at Palomar College, where the course carries B1 credit, the description is as follows:

“GEOG 100 Physical Geography (3)  
3 hours lecture  
Transfer acceptability: CSU; UC  
C-ID GEOG 110  
A study of earth’s physical environment with emphasis on weather, climate, landform, soils, and natural vegetation and the interrelationship between these elements within unique physical landscapes.”

At SDSU, where the course is also included in the general education program for physical science, the description is as follows:

“GEOG 101. Earth’s Physical Environment (3) [GE] Earth systems and the global environment to include weather and climate, water, landforms, soils, and ecosystems. Distribution of physical features on Earth’s surface and interactions between humans and environment, especially those involving global change. Note: Cannot be used for General Education in combination with Anthropology 101.”

Chico State has perhaps the most closely matched description to what the GEC would like to see in the GE form, in the description of their course GEOG 101: Physical Geography (Chico State also use the same text in their course as the one proposed for the course on our campus, though their text is an earlier edition):

“This course is a survey of the basic processes that determine flows of energy through the atmosphere and examines the subsequent interactions among water, landforms, soil, and vegetation that create and modify the surface of the earth. Students develop a recognition of landscape patterns, as well as an understanding of the physical, chemical, and biological principles and functions that create those patterns, in order to understand the natural environment in which we live and the role of humans affecting that environment. 2 hours lecture, 2 hours activity. This is an approved Writing Intensive course. This is an approved General Education course.”

At the University of Iowa, the course description is as follows:

“Climate change and interactions between atmosphere and geological, hydrological, and biological systems; response of these systems to climate change and how such responses affect atmospheric processes through feedbacks (e.g., flows of energy, cycles of carbon and water); how geographic differences in such interactions create ecological patterns around the world (e.g., rainforests, prairies). GE: Natural Sciences without Lab.”

And here is the way the course description appears in a Spring 2016 syllabus from the University of Iowa written and taught by Dr. Ridder, who starts this fall in our department:

“This course introduces you to current global environmental topics that range from local (e.g., soil conditions and characteristics) to global. Earth Sciences and Physical Geography are the study and synthesis of selected areas within the natural sciences and address the Earth’s four major environments: the atmosphere, the lithosphere, the hydrosphere, and the biosphere. We will focus on the connections between these environments, how phenomena at the global scale influence events locally (and vice-versa), and the use of the scientific tools of observation, analysis, and inference as a means of understanding the world around us. By the end of the semester, you are expected to demonstrate the following objectives through the completion of assignments, quizzes, and exams:

- \* Describe the major concepts of earth systems science
- \* Develop a vocabulary to understand and discuss course material and related content
- \* Recognize, describe, and provide examples of interrelated system processes
- \* Explain and exemplify human-environmental interactions
- \* Apply the scientific method to develop questions, generate data, and derive conclusions”

While these courses may use different textbooks and are taught by different professors and instructors, they all fulfill the same introductory physical science requirement. And they each cover topics such as how energy flows through the earth system, how and why carbon cycles through different parts of the earth system, and how water cycles through the system, among other topics. This is exactly the sort of course that will benefit not only liberal studies students, but many others on the campus. And I would argue that this course can also help build earth science curriculum on the campus in part because it is part of the earth sciences.

Below are my responses to the specific questions sent to the GEC Chair and forwarded to me at my request. Prior to developing this response, I took the opportunity to meet with both Ed Price (Chair of Physics) and Jose Mendoza (Chair of Chemistry) to ensure my understanding of their departments’ concerns. At the end of our conversations, it appeared to me that, presuming the amended GE form addressed these concerns, this course would move forward with the B1 designation, in alignment with more general CSUSM practice.

1) Comment: *“I think the answer for B1.1 is problematic. I would imagine that “Earth as an Open and Closed System” involves principles of matter conservation and thermodynamics, but I would be much happier seeing “conservation of matter” and “thermodynamics” as the principles and theories being discussed and assessed. I’m not*

*sure the sorting of the Earth's contents into Geosphere, Atmosphere, Biosphere and Hydrosphere really constitute a "modern physical or chemical principle or theory;" it is a convenient interpretive framework but not really a physical principle or theory. The "Role of the Sun's Energy in Shaping the Earth System," once again, sounds like an application of thermodynamics, but I see no assessment of students' understanding of basic thermodynamic principles. The example given for assessment, of asking students to differentiate between component systems of the Earth system and to explain their role in the carbon cycle, doesn't satisfy me that the students' understanding of the physical or chemical principles underlying the carbon cycle are being assessed.*

*I have some reservations about the other responses as well, but I think B1.1 is the one I'd be most concerned about. "*

Response: I have changed that answer in the GE form to try and address this issue of physical science fundamentals. I would disagree a bit about exactly what these fundamentals are given that physical geography has its own approach and course content, is not a physics course, and is a physical science in its own right, but I see their concerns, have done my best to address them and I think the input from GEC improves the GE form. I would also point out that Dr. Ridder's syllabus addresses this issue in her description of the text providing basic concepts in an accessible manner.

2) Comment: *"If you look at the courses currently approved for B1, they are courses that aren't constrained by a focus on a particular **application** of the physical sciences. Faculty in the non-science-major courses are free to apply the fundamentals to whatever applications they think are appropriate, but I would worry that a course that has particular SLOs related to a particular application, such as geography, may not have sufficient time devoted to the fundamentals. I guess I would like to see that the SLOs for the course address the understanding of physical science fundamentals."*

Response: Physical geography is not an application of physical science, nor is it a non-science major. It is a physical science. The lack of recognition on this campus of Physical Geography as part of the earth sciences is a reflection of a broader lack of understanding about geography. On other campuses, this has not come up because geography is already a recognized part of the curriculum. A foundational program of the CSU, Geography is a discipline that includes both social and physical sciences; physical geography rests on the physical sciences side of the discipline. Moreover, this course has already been approved. We are only asking for GE B1 because that is what is the standard across the CSU system and in other universities across the country. I believe that, in consultation with Dr. Ridder, an SLO could be added to the syllabus regarding fundamentals.

3) Comment: *For perspective: Last year we signed off on having GEOG 110 count for Earth Science credit for LBST majors. Our department has been offering Earth Science 100 (ES 100) to fill this niche for over a decade, but we have never asked for B1 credit for this course.*

Response: Geography 110 is used for Earth Science credit at SDSU as well. At the same time, it is included among the courses that are part of the Area B1 list from which SDSU students choose their general education classes. That the Chemistry Department has not seen fit to apply for B1 credit has no bearing on whether Physical Geography on this campus does have this credit. (We note that our transfer students are already able to take the equivalent of ES 100 at Palomar, with LDGE B1 credit.) Again, on 17 campuses across the CSU, Physical Geography is used as one of the courses that fulfill the Area B1 requirement.

4) Comment: *My concern is that GEOG 110 is not sufficiently broad to count for B1.*

Response: It is unclear to me exactly what is meant here by “not sufficiently broad”. That said, Physical Geography courses (which cover the same material as the course proposed here and even use the same text) typically count for LDGE B1 credit across the CSU system and physical geography courses in the community colleges do so as well. In fact, we have numbered our course GEOG 110 to align with the community colleges’ transfer packages.

5) Comment: *For me, critical principles for physical science include the relationship between force and motion (newton’s laws), conservation of energy, waves/light/EM, and molecular-kinetic theory.*

Response: As stated earlier in this document, as with all disciplines that fall under a broad heading such as physical science, there may be issues and theories that are specific to one discipline or preferred by certain researchers, but not another, or that are approached differently in different subdisciplines.

6) Comment: *GEOG applies some of these [principles] in understanding earth and earth systems, but I’m not sure how thoroughly they treat the fundamentals. I’m not saying to vote against it, necessarily, but these are the concerns I would have in reviewing.*

Response: I completely agree with this comment that physical geography applies fundamentals perhaps differently or in different ways in its curriculum but this does not suggest or mean that it does not cover the fundamentals. I would recommend voting in favor of the GE request because this version of GEOG 110 is no different from physical geography courses offered at regional community colleges and at many other CSU campuses across the state.

7) Comment: *Incidentally, since there’s a lab, wouldn’t they want B4 credit too?*

Response: In the curriculum review process, a committee suggested removing the lab and we agreed. It will be added in at a later date once our new faculty member has settled in and become part of the curriculum development process. After the deletion of the lab component, the review committee did not notice that the title

also needed to be changed. We are working on this issue. But I think the proper designation for a lab in the Mathematics and Natural Sciences (Area B) section of GE is B3. B4 concerns mathematics and quantitative reasoning.

8) Comment: *I would check with Mike Schmidt too, he's very familiar with the course and was involved when we reviewed the C form*

Yvonne Meulemans suggested contacting Jose Mendoza in lieu of Mike Schmidt. I will contact him as well.

I hope this email answers the questions that GEC has raised in their prior communications and provides the necessary context for evaluating how physical geography fits into the CSU General Education Program from both a local and systemwide perspective. I am as always happy to respond to any questions that members may have. I do recognize that GEC is completing their agenda for the semester and I would be happy to attend Thursday's meeting if that would be helpful. We are keen to have GEC approve this course for our new faculty member.

Thank you for your consideration and help in improving the GE form for GEOG 110. I hope you can accept GEOG 110 into the General Education Program on our campus.

Sincerely,

Greig Tor Guthey

### ***Appendices:***

Below is a list of data from the CSU, updated forms, and communication with GEC Chair Yvonne Meulemans. Also included is a syllabus from University of Iowa where our new faculty member currently teaches. We expect her actual syllabus to be similar to this one.

#### **1. List of CSU Campuses Using Physical Geography in their GE programs for B1**

Cal Poly Pomona	GEOG 101: Physical Geography
CSU Chico	GEOG 101: Physical Geography
CSU Dominguez Hills	GEO 200: Physical Geography
CSU East Bay	GEOG 2100: Physical Geography
CSU Fullerton	GEOG 11: Physical Geography
CSU Long Beach	GEOG 101: The Global Environment
CSU Los Angeles	GEOG 1600: Physical Geography
CSU Monterey Bay	GEOG 110: Introduction to Physical Geography
CSU Northridge	GEOG 101: The Physical Environment
CSU Sacramento	GEOG 1: Physical Geography
CSU San Bernardino	GEOG 103: Physical Geography
CSU Stanislaus	GEOG 2010: Introduction to Physical Geography
Humboldt State University	GEOG 106: Physical Geography
San Diego State University	GEOG 101: Earth's Physical Environment (Also satisfies ES 100 req for Liberal Studies)
San Francisco State University	GEOG 101: Our Physical Environment
San Jose State University	GEOG 001: Geography of Natural Environments
Sonoma State University	GEOG 201: Global Environmental Systems

#### **2. Updated GE Form for Geog 110**

#### **3. Dr. Elizabeth Ridder's Syllabus**

#### **4. Email to Yvonne Meulemans regarding additional information for Question B1.4 of the GE form for Geog 11**



4) Email to Yvonne Meulemans regarding additional information for B1.4

Re: GEC review of GEOG 100

Thu 4/21/2016 1:44 AM

1 attachment (47 KB)

GEOG 110 LDGE B1 form.docx;

Hi Yvonne

Thanks to GEC for reviewing Geog 110 promptly. For the purposes of clarity allow me to restate the learning outcome b1.4. The question for learning outcome b1.4 is (1) whether students will be able to identify areas in which ethics directs or limits physical science research or (2) whether students will be able to identify areas in which ethics is informed by the products of this research.

There are a number of ways in which Introduction to Physical Geography accomplishes this learning outcome. I'll list three here.

First, students learn about a variety of ways in which humans have impacts on the environment. Urban Heat Island Effect is the name for the ways in which cities absorb heat and increase the temperature of cities above outlying areas . Cities absorb additional heat from the sun increasing urban temperatures.. Understanding this issue from a science basis, can lead to the ethical question: "Should cities be designed differently to reduce urban heat island effect and improve residents quality of life, for example, by reducing the effect of summer heat waves?" Students are asked to consider this question as part of a class discussion and short paper assignment. They are asked on exams to explain and define urban heat island effect.

Another example that addresses both dimensions of ethics in physical science in the learning outcome is climate change. First, the research has been directed to consider the scientific basis for climate change by the ethical issues raised by human impacts on the environment, do humans shape the climate of earth and if so, should they take steps to mitigate their impacts? Students learn the science of climate change in Introduction to Physical Geography and the various ways in which climate has changed in the past. They learn about positive and negative feedbacks in the climate system and are then able to understand the science behind contemporary debates concerning climate change. The issue from an ethical perspective is should anything be done now that scientists have identified the causes of contemporary climate change? Here we raise questions about the so-called "Green Economy" which has an ethical dimension to it which is rooted in physical science. In class, students discuss the scientific evidence of human-induced climate change and how to mitigate its effects by reducing our carbon footprint. Should we reduce our carbon footprint in a variety of ways in light of the evidence of human induced climate change and its likely effects on society? How will people do this? Exam questions ask students to explain or identify the mechanisms of climate change both in the past and in the present.

A third example is fracking. Students learn about how shale can contain pores in it that store natural gas which humans can use as a fuel and study the geography of shale gas deposits in the United States. Fracking is the process of hydraulic fracturing of shale bedrock to break up the rock and release the stored methane. The process is controversial because it can lead to ground water contamination, air quality problems around drilling sites, increased methane (a greenhouse gas) released into the atmosphere, irradiation of water from radon, among other effects. In class, students will discuss the science behind fracking and debate the issue of its environmental impacts in class, then write a reflection on whether they think fracking should be banned. On exams, students will be asked to explain what

shale gas is, where it is located (its geography), and how it is accessed.

I think these three topics and discussion assignments are great ways for students to learn to identify areas where ethics shapes scientific inquiry in physical science and to learn to identify areas where physical science research informs ethics.

Does this answer the question GEC has? I am happy to provide additional details if necessary. I am attaching a revised GEC form to this email containing similar language regarding Learning outcome b1.4.

Thanks

Greig Tor Guthey

Associate Professor of Public Policy and Planning & Geography

Coordinator

Department of Liberal Studies

homepage: [http://www.csusm.edu/liberalstudies/faculty/greig\\_guthey.html](http://www.csusm.edu/liberalstudies/faculty/greig_guthey.html)

geography: <http://www.csusm.edu/liberalstudies/geography.html>

food project: [http://www.csusm.edu/liberalstudies/Food\\_Project.html](http://www.csusm.edu/liberalstudies/Food_Project.html)

**From:** Yvonne Meulemans

**Sent:** Thursday, April 14, 2016 11:48 AM

**To:** Greig Guthey

**Subject:** Re: GEC review of GEOG 100

Hi Greig:

GEC reviewed GEOG 110 today and had only one request for clarification:

For the learning outcome B1.4 (Students will be able to identify areas in

which ethics either (1) directs or limits physical science research or (2) is informed by the products of this research.), the committee asks for further information in your responses in the 2nd column (Human Impacts on Earth Systems) and 3rd column. The committee felt that the responses didn't fully address the learning outcome, but certainly could. That is, the committee certainly sees how ethics could color research on human impacts on the earth system, so just needs further detail about this in the second column and then, in the third column how the students are asked to demonstrate they understand this.

I hope this make sense. I'm happy to talk f2f or by phone if you would think its helpful.

Thanks,  
Yvonne

Yvonne Nalani Meulemans  
Director, Information Literacy Program  
Library Faculty  
Kellogg 3422  
California State University at San Marcos  
760-750-4375