GEOG 390-1

California State University San Marcos **FORM T**

NEW TOPIC PROPOSAL

Note: The proposed topic below can only be offered two times.

Is GE credit being requested? ☒ Yes ☐ No
If so, which area(s)? BB
Please attach the GE form to this form for the area requested.
Please attach a section add form.

1. College of: ☒ CHABSS ☐ CoBA ☐ CoEHHS ☐ CSM 2. Center/Program/Department: LBST

3. Instructor Elizabeth Ridder

4. Topic Abbreviation and Number: GEOG 390 -1 5. Grading Method: Normal

6. Term: Fall 7. Year: 2017 8. Variable Units:* No

9. Has this topic been offered previously: ☐ Yes ☒ No If yes, indicate term(s) Year:

10 Topic Title: Climate Change and Life in the Anthropocene
(Titles using jargon, slang, copyrighted names, trade names, or any non-essential punctuation may not be used.)

11. Abbreviated Title for PeopleSoft: *(no more than 25 characters, including spaces)*
ST: Climate Change

12. Topic Description: Note: This part can be skipped if answer to part 9 is "yes." Please provide detailed information about the topic. Please type. You may also attach the topic description on a separate sheet if you do not have enough space.

Examines the physical basis of the climate system, including solar, atmospheric, biologic, and geologic evidence supporting our understanding of Earth's past, present, and future climate cycles. Compares recent climate data with that of past climates to discuss how Earth's current climates are changing, leading to the designation of a new era, "The Anthropocene." Concludes with an examination of climate modeling and potential impacts to components of Earth and human systems, such as ~~like~~ biological diversity, water issues, and international treaties.

13. Does this topic have prerequisites? ☒ Yes ☐ No Completion of LDGE B1

14. Does this topic have co-requisites? ☐ Yes ☒ No

15. Does the topic require consent for enrollment? ☐ Yes ☒ No

☐ Faculty ☐ Credential Analyst ☐ Dean ☐ Program/Center/Department - Director/Chair

16. Is topic crosslisted ☐ Yes ☒ No If yes, indicate which course and obtain signature in #18.

17. Justification for offering this topic.

Climate change is one of the major challenges facing communities across the globe. This course helps to address current educational gaps in terms of understanding the basics of climate science, including the scientific principles, data types, and methodologies on which climate scientists rely. This can lead to miscommunications between scientists and the public, delaying the implementation of viable adaptation and mitigation responses, and the creation of communities that are more resilient to changes in human and natural systems.

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* Enter units only if this is a variable-units topic course.

18. Does this topic impact any other disciplines? Note: This number can be skipped if answer to part 9 is "yes." ***(If there is any uncertainty as to whether a particular discipline is affected, check "yes" and obtain signature.)***

☐ Yes ☒ No If yes, obtain signature(s). Any objections should be stated in writing and attached to this form.

____ Discipline	ENVS - see email Signature	2-19-17 Date	✓ Support	____ Oppose
____ Discipline	____ Signature	____ Date	____ Support	____ Oppose

1. Elizabeth Ridder — 02 Feb 2017
   Originator (Please Print) — Date
2. Kim K. Yang — 2/7/17
   Program/Center/Department – Director/Chair — Date
3. Martha Fiddler Hess — 2/28/17
   College Curriculum Comm. Rep. — Date
4. Martha Fiddler Hess — 2/28/17
   Dean of College (or Designee) — Date
5. Regina Eisenbach — 3/2/17
   Associate VP Academic Programs — Date

Topic chart ✓
Tracker —
RP —

For Academic Programs Use Only: _____PeopleSoft_____ Excel _____ GE

ENVS support

From: Jeffrey Charles
Sent: Sunday, February 19, 2017 9:42 AM
To: Elizabeth Ridder <eridder@csusm.edu>
Cc: Kimberley Knowles-Yanez <kyanez@csusm.edu>
Subject: Re: Course proposal forms - impact to other disciplines review requested

Elizabeth:

This sounds like a great course. In ENVS we have been discussing a course on the politics and policy of climate change, so this would be a perfect complement. We will be sure to get this course on the list of recommended electives when it is assigned a number. Do you want me to send a separate e-mail to CAPC indicating ENVS support?

Jeff
--
Jeff Charles
Associate Professor
History Department
233 Markstein Hall
California State University, San Marcos
San Marcos, CA 92096
(760)-750-4093

From: Elizabeth Ridder <eridder@csusm.edu>
Date: Friday, February 17, 2017 at 12:26 PM
To: Jeff Charles <jcharles@csusm.edu>
Cc: Kimberley Knowles-Yanez <kyanez@csusm.edu>
Subject: Course proposal forms - impact to other disciplines review requested

Hi Jeff,

I am proposing a new course for Fall 2017, Climate Change and Life in the Anthropocene. CAPC has recommended that Environmental Studies review my proposal and indicate their support. I've included the C and GE (BB – physical science) forms, along with my syllabus and a proposed exercise. CAPC stated an email indicating support suffices. CAPC is meeting on Wednesdays this semester, and if possible, I would like to return revisions and your comments by Tuesday afternoon (Feb. 21).

Please let me know if you have any questions and thank you for your consideration.

Elizabeth Ridder
Assistant Professor of Geography
Department of Liberal Studies
California State University, San Marcos

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

<GEOG 310_390 Heat budget lab GE BB submission.pdf>
<GEOG 310_390 BB Form Climate Change.pdf>

GEOG 3XX: Climate Change and Life in the Anthropocene
Course meeting times & location

Instructor:	Professor Elizabeth (Liz) Ridder	Office:	SBSB 4229
Email:	eridder@csusm.edu	Phone:	760-750-8298
Office hours:	TIMES		

Official Course Description

Examines the physical basis of the climate system, including solar, atmospheric, biologic, and geologic evidence supporting our understanding of Earth's past, present, and future climate cycles. Compares recent climate data with that of past climates to discuss how Earth's current climates are changing, leading to the designation of a new era, "The Anthropocene". Concludes with an examination of climate modeling and potential impacts to components of Earth and human systems, like biological diversity, water issues, and international treaties.

Student Learning Outcomes

Course Learning Outcomes
Upon completion of the course, students will be able to:

1. Describe atmospheric contributions to past and current global climate change.
2. Provide examples of proxy data and explain how these data are used to understand past climates.
3. Discuss the role of plate tectonics on climate and the distribution of Earth's organisms.
4. Evaluate the role of the Sun, and its interaction with Earth and Earth's atmosphere, in climate and climate change throughout time.
5. Analyze and interpret data, graphs, or images.
6. Correlate changes in climate to changes in the distribution of organisms, including humans, throughout time.
7. Critique modeling approaches.
8. Relate model projections to human and environmental changes.
9. Discuss various hypotheses on the role of humans in current and future climate conditions.

University GE Program Student Learning Outcomes
Students will be able to:

1. Describe and/or apply principles and methods necessary to understand the physical and natural world.
2. Communicate effectively in writing to various audiences.
3. Think critically and analytically about an issue, idea, or problem.
4. Find, evaluate, and use information appropriate to the course and discipline.

Required Materials and Technology

Text: Ruddiman, William F., 2013, *Earth's Climate: Past and Future*, 3rd Ed., W.H. Freeman & Company, New York, 464 pages. ISBN-13: 978-1429255257.

Technology: Every student must have regular access to a computer with a reliable (and preferably fast) internet connection. All course materials including supplemental readings, lecture slides, and homework

assignments, are posted through Cougar Courses. Some applied coursework requires the use of ArcGIS, available in our classroom and through CougarApps.

Course Format

Class meetings: Our class meetings are 75 minutes in length and are broken into lecture, where concepts are initially introduced and examples are discussed through case studies and videos. Throughout the semester, class sessions incorporate activities where you will work directly with data (provided and collected in class), and manipulate or construct simulations and models to illustrate course concepts. Student-led discussions at the end of each week are intended to highlight the connections between lecture, video, activity, and reading concepts.

Activities: The activities are designed to investigate a problem associated with climate change. The activities will focus on a central question, where you will form hypotheses and predictions prior to working with the data in simulations or modeling exercises. Results are interpreted are compared to your predictions to formulate conclusions that address the central question. Some activities are completed as a group, or may have individual components. Other activities are individual efforts. Even when working on an individual effort, you can ask the instructor and your classmates for help in navigating any software and finding and interpreting data or results. For individual activities, any responses to questions and conclusions must be your own work, not the collective effort of your classmates.

Quizzes: At the end of each week, you will complete a quiz consisting of 5-7 multiple-choice questions. The quizzes are conducted through Cougar Courses, and are closed note, closed book, individual efforts. We will use Safe Exam for quizzes.

Discussion prep: Prior to our first meeting each week, you will submit an annotated bibliography of that week's reading assignments. At the end of the annotated bibliography, you will also include two potential discussion questions that you would like to investigate further with your classmates. We will spend 25-30 minutes during our last meeting of each week discussing your questions, and relationships between lecture, readings, and activity concepts, as well as discuss the conclusions you reached during the week's activity. Participation during discussion is graded; everyone is expected to contribute to the week's discussion items. The instructor will moderate and provide input, but you are expected to carry the conversation. The instructor will launch our first week's discussion, which will include expectations of behavior and civil discourse in our classroom.

Course Requirements and Graded Components
Plus/minus grading will be used.

Activities	45%
Quizzes	25%
Discussion participation	10%
Discussion prep (annotated bibliographies & discussion questions)	20%

Tentative Course Schedule

Week	Lecture Topics	Reading	Activity
1	Welcome to the Anthropocene • Defining the Anthropocene	Crutzen & Stoermer (2000) Masters (2010) Steffen et al. (2011) Ch. 1	
2	Energy • Electromagnetic spectrum • Light, heat, and temperature • Units of measurement Earth's modern atmosphere • Atmospheric components o Structure o Radiation balance o Gases o Greenhouse concept • Atmospheric motion o Local to global circulation models • Ozone layer Climate Basics • Climate systems • Climate controls o Latitude & elevation o Continentality o Ocean currents	Arrhenius (1896) Ch. 2	Analyzing the Antarctic ozone hole Earth's Heat Budget
3	The role of the oceans • Surface & subsurface currents • Links to the atmosphere • ENSO	Revelle and Suess (1957)	Sea Surface Temperatures relationships with El Nino and La Nina
4	Weather and climate	PBS: Journey to Planet Earth – Extreme Realities (2014)	Weather anomalies and links to climate change
5	Feedback loops Climate forcing factors	Ch. 6	Sunlight, albedo, and climate Water vapor feedback in climate models
6	Carbon Cycle	Ch. 4 & Ch. 11	Modeling the carbon cycle
7	Paleoclimate • Proxy measurements o Tree rings o Isotopes o Ice cores	Ch. 3 & Ch. 13	Case Study: Pollen Database and Plant Diversity Global change in local places

	○ Pollen		
8	Plate tectonics and climate change • Evolution of plate tectonic theory • Previous plate positions & their climates Plate tectonics, climate, and human evolution linked?	Ch. 4 Maslin (2013) in Scientific American	Evidence for plate tectonics Visualizing plate motion
9	Earth-Sun relationships and climate change • Milankovitch Cycles • Last Glacial Maximum	Ch. 8 & Ch. 13	Case Study & Mapping Exercise: Chasing ice sheet retreat
10	Returning to the present • What evidence? • How to interpret?	IPCC Ch. 17 & Ch. 18	Exploring climate change data using GIS
11	What about the future? • Global climate models • Building future scenarios on evidence of the past • Predictions, model reliability, and questions of accuracy	IPCC Ch. 20	Case Study: Climate Change & Recreation: Constructing models and data visualization tools
12	Influence on the biosphere • Biodiversity losses • Water quality & quantity	Ch. 16	Examining time-series data to evaluate coastline changes
13	Economics of climate change? • Clean energy	Romm (2016; Ch. 6)	
14	Politics of climate change?	Maslin (2014; Ch. 7) Inhofe (2003) Hansen (2008)	
15	Adaptation, mitigation, and resilience	Maslin (2014; Ch. 8 & Ch. 9) Shiva (2011)	How cities affect their local climate

All-University Writing Requirement

In this class, the All-University Writing Requirement is met through the submission of activities, reading quizzes, discussion preparation, and a poster presentation. Together, these requirements will meet or exceed the 2500-word minimum.

Student Responsibilities/Course Policies

This syllabus details specific expectations I 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 any instructors or guest lecturers and you will treat them with the courtesy you expect to receive in return. You are expected to help create an environment where others are treated with dignity and to behave in a way that promotes a physically and psychologically safe, secure, and supportive climate. You are expected to allow all members of the

class and campus community to engage as full and active participants where the free flow of ideas is encouraged and affirmed. This policy applies to all forms of communication in this course. Any email correspondence will be conducted via your university email address; thus you are expected to check this email address regularly **or** forward email from this account to one you regularly use.

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 Cougar Courses. You are also responsible for any announcements made in class. It is not possible to make-up quizzes or assignments without being cleared in advance or for medical reasons.

- In order to avoid being administratively dropped, attendance is required on the first day of class.

University Academic Honesty Policies: Students are expected to adhere to standards of academic honesty and integrity, as outlined in the Student Academic Honesty Policy (p. 99, 2016-2018 University Catalog And at http://www.csusm.edu/policies/active/documents/Academic_Honesty_Policy.html). All assignments must be original work, clear, and error-free. All ideas/material that are borrowed or adapted from other sources must have appropriate references to the original sources. Any directly quoted material should give credit to the source and be punctuated accordingly.

Students are responsible for honest completion and representation of their work. There is a zero tolerance policy for infractions. If you believe there has been an infraction by someone in class, please bring it to the instructor's attention. The instructor reserves the right to discipline any student for academic dishonesty, in accordance with the general rules and regulations of the university. Disciplinary action may include the lowering of grades and/or the assignment of a failing grade on an exam, assignment, or the class as a whole. In addition, faculty are responsible for reporting all incidents of Academic Dishonesty to the Office of the Dean of Students. The Dean of Students may impose sanctions, which can include a warning, probation, suspension, or expulsion.

> Collaboration: In this class, students are not allowed to collaborate with others on quizzes and some of the in-class activities. In these cases, do not share your work with others or ask others to see their completed work since both are considered academic misconduct. In the case of in-class activities 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, are behaving in an academically dishonest manner and are subject to the same penalties as cheating and plagiarism.

You are responsible for communicating with me if you do not understand how the policy applies to particular assignments. Campus resources can help you to understand the differences between a citation, giving credit, original writing, and plagiarism.

- CSUSM (by Sue Thompson): https://microsites.csusm.edu/plagiarism-tutorial/
- Purdue University Online Writing Lab: https://owl.english.purdue.edu/owl/resource/589/1/

Credit hour policy: For each semester hour of credit that assigned to a Geography course, you should expect to spend minimum of **two** hours per week for each unit of credit, outside the classroom preparing for class sessions. ***In this course, this means you should plan for a minimum of six 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 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 not provided appropriate evidence or received prior instructor approval, any work submitted late is subject to a 10% grade reduction penalty per day late. No late work will be accepted the final week of class or during finals week. As you are submitting work late, I will grade items as I am able to find time, so they may not be returned to you in the assignment's stated turn-around time. Unless otherwise instructed, do not send assignments through email. Submit according to the assignment instructions.

Technology: Assume that technology will fail at some point. Do not assume that everything will go smoothly when it comes to computers. **Plan ahead.** Do not leave the completion of assignments or projects for the last possible moment. Printer failure or lack of access happens to everyone at some point and is not a valid excuse for work to be turned in late.

Contact the CSUSM help desk for technical assistance with Cougar Courses at sth@csusm.edu or 760-750-6505.

Use of electronic devices is only allowed in the support of your own learning. This means that any cell phone, PC, tablet, or other electronic devices are not to be used during class for social media, web surfing, texting, or other uses that distract you and your fellow students.

ADA Statement

Students with disabilities who require reasonable accommodations must be approved for services by providing appropriate and recent documentation to the Office of Disabled Student Services (DSS). This office is located in Craven Hall 4300, and can be contacted by phone at 760-750-4905, TTY 760-750-4909, and by email at dss@csusm.edu. Students authorized by DSS to receive reasonable accommodations should meet with me during my office hours to ensure confidentiality.