

CALIFORNIA STATE POLYTECHNIC UNIVERSITY, POMONA  
ACADEMIC SENATE

GENERAL EDUCATION COMMITTEE  
REPORT TO  
THE ACADEMIC SENATE  
GE-116-156

GEO 3030 – Climatology (GE Area B5)

General Education Committee

Date: 01/03/2017

Executive Committee  
Received and Forwarded

Date: 01/18/2017

Academic Senate

Date: 02/01/2017  
First Reading

**BACKGROUND:**

This is a revisioned course seeking GE status. Its name under the quarter system is GEO 303 – Climatology (3 units). It will be offered as a 3-unit Large Lecture course under the semester system.

**RESOURCES CONSULTED:**

Faculty  
Department Chairs  
Associate Deans  
Deans  
Office of Academic Programs

**DISCUSSION:**

The GE Committee reviewed the ECO for this course and found to satisfy the GE SLO's and other requirements for Area B5.

**RECOMMENDATION:**

The GE Committee recommends approval of GE-116-156: GEO 3030 – Climatology for GE Area B5.

## GEO - 3030 - Climatology

C. Course - New General Education\* Updated

### General Catalog Information

Department\*

Geography and Anthropology

Semester  
Subject Area\*

GEO

Semester 3030  
Catalog  
Number\*

Quarter Subject  
Area

GEO

Quarter Catalog 303  
Number

Course Title\* Climatology

Units\*

(3)

C/S  
Classification \*

C-02 (Lecture Discussion)

To view C/S Classification Long Description click:

[http://www.cpp.edu/~academic-programs/scheduling/Documents/Curriculum%20Guide/Appendix\\_C\\_CS\\_Classification.pdf](http://www.cpp.edu/~academic-programs/scheduling/Documents/Curriculum%20Guide/Appendix_C_CS_Classification.pdf)

Component\*

Lecture

<b>Instruction Mode*</b>	<input type="checkbox"/> Face-to-Face <input type="checkbox"/> Fully Asynchronous <input type="checkbox"/> Hybrid w/Asynchronous Component <input type="checkbox"/> Web-Assisted
<b>Grading Basis*</b>	<input type="checkbox"/> Graded Only
<b>Repeat Basis*</b>	<input type="checkbox"/> May be taken only once
<b>If it may be taken multiple times, limit on number of enrollments</b>	<input type="text" value="1"/>
<b>Cross Listed Course Subject Area and Catalog Nbr (if offered with another department)</b>	
<b>Dual Listed Course Subject Area and Catalog number (If offered as lower/upper division or ugrd/grad)</b>	
<b>Choose appropriate type (s) of course(s)*</b>	<input checked="" type="checkbox"/> Major Course <input checked="" type="checkbox"/> Service Course <input checked="" type="checkbox"/> GE Course <input type="checkbox"/> None of the above
<b>General Education Area / Subarea*</b>	<input type="text" value="B5"/>

To view the General Education SubArea definitions, click <http://www.cpp.edu/~academic-programs/scheduling/Documents/Ch.3-GeneralEducationProposals.pdf>.

## I. Catalog Description

<b>Catalog Description</b>	<p>Introduction to the fundamental concepts and theories in climatology. Methods of inquiry, including qualitative, quantitative, and computer based modeling and simulation methods. Explore climate variation through time and space and the reciprocal impact of climate and society. 3 hours lecture and problem solving.</p>
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**II. Required Coursework and Background**

**Prerequisite(s)**

All lower division courses in GE Area A and Subareas B1, B2, B3 and B4,

**Corequisite(s)**

**Pre or  
Corequisite(s)**

**Concurrent**

### III. Expected Outcomes

**List the knowledge, skills, or abilities which students should possess upon completing the course.\***

By successfully completing GEO 3030, the student should be able to:

1. Identify the basic physical elements and laws that govern the climatic processes
2. Solve physical, statistical, and analytical climatic problems qualitatively and/or quantitatively.
3. Describe the interactions between human activities and atmospheric processes in historical and contemporary contexts.
4. Compare and contrast climates in different scales, environments, and geographic regions in the context of climatic impact on human activities and vice versa.
5. Find, evaluate, and use climate and other relevant data for application in diverse subject areas (agriculture, anthropology, biology, engineering health, urban planning, etc.)
6. Improve written and oral communication skills in climatology and applied climatology

**If this is a course for the major, describe how these outcomes relate to the mission, goals and objectives of the major program.**

The course helps students to obtain knowledge in the atmospheric sciences (GEO SLO1); develop research, analysis and communication skills (GEO SLO2, SLO3); and prepare them for environmental related careers (GEO SLO4).

**Explain how the course meets the description of the GE SubArea (s). Please select appropriate outcomes according to the GE Area/SLO mapping.**

Climatology is a synthesis course that fulfills B5 requirements by integrating fundamental physical science concepts and social and economic issues associated with climate resources and challenges. Scientific and quantitative knowledge from the lower division GE courses are applied to solve practical problems associated with atmospheric processes, climate change, and impacts on society. The following box details how each of the GE Area B5 requirements are met in this course.

**Describe how these outcomes relate to the associated GE Learning Outcomes listed below.\***

1. (GE SLO 2a) Identify the basic physical elements and laws that govern the climatic processes
2. (GE SLOs 1e, 2a) Solve physical, statistical, and analytical climatic problems qualitatively and/or quantitatively.
3. (GE SLO 2d) Describe the interactions between human activities and atmospheric processes in historical and contemporary contexts.
4. (GE SLO 1d) Compare and contrast climates in different scales, environments, and geographic regions in the context of climatic impact on human activities and vice versa.
5. (GE SLO 1c) Find, evaluate, and use climate and other relevant data for application in diverse subject areas (agriculture, anthropology, biology, engineering health, urban planning, etc.)
6. (GE SLOs 1a, 1b) Improve written and oral communication skills in climatology and applied climatology.

**General Education Outcomes\***

**Ia. Write effectively for various audiences**

**Ib. Speak effectively to various audiences.**

**Ic. Find, evaluate, use, and share information effectively and ethically.**

**Id. Construct arguments based on sound evidence and reasoning to support an opinion or conclusion.**

**Ie. Apply and communicate quantitative arguments using equations and graphical representations of data.**

**IIa. Apply scientific methods and models to draw quantitative and qualitative conclusions about the physical and natural world.**

**IIId. Integrate concepts, examples, and theories from more than one discipline to identify problems, construct original ideas, and draw conclusions.**

To view the mapping, click <https://www.cpp.edu/~academic-programs/Documents/GE%20SLO%20Mapping.pdf>

#### **IV. Instructional Materials**

Provide bibliography that includes texts that may be used as the primary source for instruction, and other appropriate reference materials to be used in instruction. The reference list should be current, arranged alphabetically by author and the materials should be listed in accepted bibliographic form.

##### **Instructional Materials\***

1. Hidore and Oliver, (2010) *Climatology - An Atmospheric Science*. 3rd Ed. Prentice Hall.
2. Herveoux and Suthland (Editors), (2012) *Climatology: new developments* Nova Science Publishers.
3. David Archer, (2012) *Global Warming: Understanding the Forecast*, 2nd Ed. Wiley
4. Thompson and Perry, eds., (1997) *Applied climatology: principles and practice*. Routledge.
5. Relevant academic Journals such as:

*The Annals of the American Association of Geographers* (Published by American Association of Geographers)

*The Professional Geographer* (Published by American Association of Geographers)

*Atmospheric Environment* (Published by Elsevier)

##### **Examples of primary climate data sources students will use in class:**

Climate data through California Irrigation Management Information System (CIMIS) (<http://www.cimis.water.ca.gov/>)

NOAA National Centers for Environmental Information (<https://www.ncdc.noaa.gov/>)

Faculty are encouraged to make all materials accessible. Indicate with an asterisk those items that have had accessibility (ATI/Section 508) reviewed. For more information, <http://www.cpp.edu/~accessibility>



## **V. Minimum Student Material**

List any materials, supplies, equipment, etc., which students must provide, such as notebooks, computers, internet access, special clothing or uniforms, safety equipment, lockers, sports equipment, etc. Note that materials that require the assessment of a fee may not be included unless the fee has been approved according to University procedures.

### **Minimum Student Material\***

1. Required text
2. Required reading materials, atlas, maps, etc. (mostly accessible via library and internet sites); access to computers with internet connection and standard office software (for word and data processing).
3. Digital storage media

## **VI. Minimum College Facilities**

List the university facilities/equipment that will be required in order to offer this class, such as gymnastic equipment, special classroom, technological equipment, laboratories, etc.

### **Minimum College Facilities\***

1. Classroom with wall maps and multimedia facilities
2. Access to computer labs and internet
3. Access to GIS lab and GIS software
4. Weather observation equipments
5. Access to relevant academic journals and other literature sources via library

## **VII. Course Outline**

Describe specifically what will be included in the course content. This should not be a repetition of the course description but an expansion that provides information on specific material to be included in the class, e.g. lecture topics, skills to be taught, etc. This should not be a week-by-week guide unless all instructors are expected to follow that schedule.

### **Course Outline\***

1. Introduction to climatology
2. Composition and structure of the atmosphere
3. Energy exchange processes
4. Terrestrial and solar radiation
5. Moisture exchange processes
6. Precipitation
7. Wind and atmospheric pressure
8. Global atmospheric circulation
9. Weather systems
10. Climate of selected regions and scales
11. Climate change, past and future climate
12. Influence of climate and climate change on society
13. Research methods in climatology
14. Climatology as an applied science

### **VIII. Instructional Methods**

**Describe the type(s) of method(s) that are required or recommended for the instruction of this course (lectures, demonstrations, etc.). Include any method that is essential to the course, such as the use of particular tools or software.**

#### **Instructional Methods\***

1. Lectures/discussions
2. In-class problem solving sessions
3. Group and individual assignments/Projects, include computer based exercises and field observations with instruments
4. Writing assignments and in class oral presentations

**IX. Evaluation of Outcomes**

**Describe the methods to be used to evaluate students' learning, i.e. written exams, term papers, projects, participation, quizzes, attendance, etc.\***

1. Subjective and objective examinations aimed at assessing student's ability of identifying the basic physical elements and laws that govern the climate processes, describe the interactions between human activities and atmospheric processes in historical and contemporary contexts, compare and contrast different climates in different scales, interfaces, and geographic regions, and solve quantitative climatic problems.
2. Assignments (may including problem solving with math and physical equations, computer based exercises, and field observation) to assess student's problem solving abilities and climate data observation and collection skills (GE SLO 1e, 2a).
3. A 10 - 15 page term research paper or equivalent term project report (GE SLO 1a) with feedback process during the semester focusing on assessing the student's ability in finding, evaluating, and using data (GE SLO 1c) to construct arguments on climate related environmental issues based on data analysis or computer models and to draw a sound conclusion (GE SLOs 1d, 2a, 2d)
4. (GE SLO 1b) Oral presentation and class discussion aimed at assessing student's oral communication skills and the ability to identify climatic processes and the underlying physical elements.

**Describe the meaningful writing assignments to be included.\***

Meaningful writing components: Students receive feedback from sequential assignments with writing components that they can improve through the semester. Paper writing will be a process through the semester with topic, outline, components submission and feedback and discussions in the class.

**Discuss how these methods may be used to address the course and program outcomes, as appropriate. Include or attach a matrix to align the evaluation methods to the outcomes.**

This course contributes to the Geography Student Learning Objectives in the following ways:

Activity	GEO Department Objective No			
	1	2	3	4
Written assignments	D	D	D	D
Class discussion	D			
Oral presentations			D	
Quizzes	D			
Exams	D	D		
Problem solving Assignments		D	D	D

A link to the Geography Student Learning Objectives may be found at [http://www.cpp.edu/~class/geography-anthropology/docs/GEO\\_SLO.pdf](http://www.cpp.edu/~class/geography-anthropology/docs/GEO_SLO.pdf)

**If this is a general education course, discuss how these methods may be used to address the associated GE Learning Outcomes listed below. Include or attach a matrix to align the evaluation methods.**

Gen. Ed. Outcomes	1a	1b	1c	1d	1e	2a	2d
Written assignments	D		D	D		D	D
Oral presentations	D						D
Quizzes	D			D	D		
Exams	D			D	D		
Problem solving Assignments				D	D	D	D

**X. This OPTIONAL Section is for describing Course/Department/College specific requirements.**