GLENDALE
COMMUNITY COLLEGE

COURSE DISCIPLINE :   GEOG

COURSE NUMBER :   107

COURSE TITLE (FULL) :   Weather, Climate and Climate Change

COURSE TITLE (SHORT) :   Weather and Climate Change

CALIFORNIA STATE UNIVERSITY SYSTEM C-ID : GEOG 130 – Introduction to Weather and Climate

ACADEMIC SENATE DISCIPLINE: Geography

CATALOG DESCRIPTION

GEOG 107 is an introduction to the atmosphere with an emphasis on its properties and physical processes. The course focuses on the atmosphere's composition and structure, incoming solar radiation and energy balance, temperature, seasonal changes, atmospheric moisture, clouds and fog, precipitation, air pressure, winds, air masses and fronts, tornadoes, hurricanes, weather forecasting, El Niño, climate and climate change.

Total Lecture Units:3.00

Total Laboratory Units: 0.00

Total Course Units: 3.00

Total Lecture Hours:54.00

Total Laboratory Hours: 0.00

Total Laboratory Hours To Be Arranged: 0.00

Total Contact Hours: 54.00

Total Out-of-Class Hours: 108.00

Recommended Preparation: ENGL 100 or ESL 151.

ENTRY STANDARDS

	Subject	Number	Title	Description	Include
1	ENGL	100	Writing Workshop	Read, analyze, and evaluate contemporary articles and stories to identify topic, thesis, support, transitions, conclusion, audience, and tone;	Yes
2	ENGL	100	Writing Workshop	read, analyze, and evaluate contemporary articles and stories for the comprehension of difficult content and the identification of main ideas and (topic-based) evidence;	Yes
3	ENGL	100	Writing Workshop	read, analyze, and evaluate student compositions for unity, development, use of evidence, interpretation, coherence, and variety of sentence form;	Yes
4	ENGL	100	Writing Workshop	write a summary of a contemporary article or story with correct citation techniques;	Yes
5	ENGL	100	Writing Workshop	write an argumentative essay that has an introduction, body paragraphs, and a conclusion, demonstrating a basic understanding of essay organization;	Yes
6	ENGL	100	Writing Workshop	write an argumentative essay that addresses the topic, is directed by a thesis statement, uses appropriate textual evidence, develops logical interpretations, and concludes with some compelling observations;	Yes
7	ENGL	100	Writing Workshop	write an argumentative essay that integrates the ideas of others (i.e., authors) through paraphrasing, summarizing, and quoting with correct citation techniques;	Yes
8	ENGL	100	Writing Workshop	write an argumentative essay that generates novel ideas (those that add to the conversation rather than repeating the author's ideas) related to the topic and the readings;	Yes
9	ENGL	100	Writing Workshop	write compositions (e.g., summaries and argumentative essays) that are easy to read and follow, though some errors in grammar, mechanics, spelling, or diction may exist;	Yes
10	ENGL	100	Writing Workshop	proofread and edit essays for content, language, citation, and formatting problems.	Yes
11	ESL	151	Reading and Composition V	Read and critically analyze various academic readings;	Yes
12	ESL	151	Reading and Composition V	summarize readings;	Yes
13	ESL	151	Reading and Composition V	organize fully-developed essays in both expository and argumentative modes;	Yes

14	ESL	151	Reading and Composition V	compose a 500 to 550-word essay which: summarizes and cites appropriately a reading passage; includes a clear thesis statement; uses evidence to support the thesis; shows clear organization into an introduction, body, and conclusion;	Yes
15	ESL	151	Reading and Composition V	revise writing to eliminate errors in syntax, and grammatical constructions;	Yes
16	ESL	151	Reading and Composition V	employ basic library research techniques;	Yes
17	ESL	151	Reading and Composition V	compose one research paper (1,000 words) or two short research papers (500-700 words each) with citations.	Yes

EXIT STANDARDS

1   Describe the energy balance of the Earth-atmosphere system;

2   evaluate the forces that cause atmospheric motion and resultant pressure patterns, wind systems andglobal circulation;

3   explain atmospheric moisture, clouds and precipitation processes, and their distributions;

4   distinguish the major types of weather systems, their distribution and their formational processes;

5   classify and interpret atmospheric data through weather maps, radar imagery and satellite data;

6   summarize global climate distributions and compare the causes and implications of global climate change.

STUDENT LEARNING OUTCOMES

1   apply the key principles and topics in atmospheric science such as earth-sun relationships, seasonality, weather, climate, and climate change;

2   utilize modern methods and tools used in atmospheric inquiry and explain the role of scientific experimentation in the pursuit of atmospheric knowledge;

3   distinguish the forces that cause atmospheric motion and the resultant pressure patterns, wind systems and global circulation;

4   illustrate and describe the development and geographic distribution of storm systems and extreme weather events;

5   summarize and assess the changing composition of the atmosphere through time, the root causes, and the impact of these changes on everyday life.

COURSE CONTENT WITH INSTRUCTIONAL HOURS

Description	Lecture	Lab	Total Hours
1 Survey of the Atmosphere • The thickness of the atmosphere • Atmospheric composition • The vertical structure of the atmosphere • The evolution of the atmosphere	4	0	4

2	Energy and Mass • Solar radiation and the seasons • Energy balance and temperature • Atmospheric pressure and wind	8	0	8
3	Water in the Atmosphere • Atmospheric moisture • Cloud types • Atmospheric thermodynamics • Precipitation processes • Precipitation forms	8	0	8
4	Distribution and Movement of Air • Tropospheric circulation and pressure distribution • Air-sea interactions • Air mass formation and source regions • Types of air masses • Fronts: cold, warm, stationary and occluded	6	0	6
5	Atmospheric Disturbances • Mid-latitude cyclones • Lightning, thunder and tornadoes • Tropical storms and hurricanes	10	0	10
6	Human Activities and Effects • Weather forecasting and analysis • Data acquisition and dissemination • Forecasting methods and types • Weather maps and images • Numerical models • Air pollution and heat islands	8	0	8
7	Current, Past and Future Climates • Earth's climate zones • Climate classification systems • Climate change • Paleo-climatological methods and techniques • Climates of the past • Factors involved in climate change • Feedback mechanisms • General circulation models	10	0	10
				54

OUT OF CLASS ASSIGNMENTS

1   creating content in preparation for in-class group presentations (e.g., PowerPoint presentation on hurricane formation);
2   research and writing assignments addressing a topic relative to the course content (e.g., project about the sequential development of a hurricane);
3   online lessons completed with approved LMS (e.g., online quiz on Koppen Climate System).

METHODS OF EVALUATION

1   unit exams
2   mid-term exams
3   student presentations (e.g., explaining recent temperature trends in Los Angeles);
4   online exercise (e.g., Moodle-based lesson on the global wind and pressure belts);
5   final examination.

METHODS OF INSTRUCTION

- ☑ Lecture
- ☐ Laboratory
- ☐ Studio
- ☑ Discussion
- ☑ Multimedia
- ☐ Tutorial
- ☐ Independent Study
- ☐ Collaboratory Learning
- ☐ Demonstration
- ☑ Field Activities (Trips)
- ☐ Guest Speakers
- ☑ Presentations

TEXTBOOKS

Title	Type	Publisher	Edition	Medium	Author	IBSN	Date
The Atmosphere: Introduction to Meteorology	Required	Prentice Hall	14	Print	Lutgens, Frederick	9780134758589	2018