

CLIMATOLOGY (GEOG357) - Spring 2020

Instructor: Dr. Dan Dugas, Breland 179, 646-1045, ddugas@nmsu.edu

Office Hours: Mon. 2:00-4:00 & Tues. 3:00-4:30, or by appointment

Course Description: A survey of the dynamic processes which create Earth's weather & climate, the characteristics of regional climates, and issues of global climate change.

Class structure will consist of lecture, reading, topic explorations, and group discussions.

Class times: Tu/Th 1:30-2:45 pm

Text: *Climatology* (4th ed.), Rohli and Vega, Jones and Bartlett Press.

DATE:	TOPIC/READINGS/EXAMS:
1/23 Th	Introduction (Chapter 1)
1/28 Tu	Atmospheric Structure and Composition (Ch 2)
1/30 Th	Energy and Solar Radiation (Ch 3)
2/4 Tu	Solar Radiation in the Atmosphere (Ch 5), Reading Discussion #1
2/6 Th	Terrestrial Longwave Radiation (Ch 5)
2/11 Tu	Planetary Energy Balance (Ch 5) and <i>Review</i>
2/13 Th	EXAM #1
2/18 Tu	Surface Climates & Urban heat islands (pgs. 307-309)
2/20 Th	Moisture in the Atmosphere (Ch 5); Exploration 1 Due!
2/25 Tu	Adiabatic Processes & Atmospheric Stability (Ch 5)
2/27 Th	Precipitation - Characteristics & Geography (Ch 6) and <i>Review</i>
3/3 Tu	Motion in the Atmosphere (Ch 6), Reading Discussion #2
3/5 Th	General Circulation (Ch 7)
3/10 Tu	Ocean Currents and El Niño (Ch 4)
3/12 Th	EXAM #2
3/17 Tu	Climates Classification (Ch 8)
3/19 Th	Regional Climates (Ch 9); Exploration 2 Due!
3/23	<i>Spring Break</i>
3/31 Tu	Regional Climates (Ch 9), Reading Discussion #3
4/2 Th	Regional Climates (Ch 9)
4/7 Tu	<i>No Class</i>
4/9 Th	<i>No Class</i> ; Exploration 3 Due!
4/14 Tu	Regional Climates (Ch 9)
4/16 Th	Regional Climates (Ch 9) and <i>Review</i> , Reading Discussion #4
4/21 Tu	EXAM #3
4/23 Th	Climate History & Change (Ch 11 & 12)
4/28 Tu	Climate History & Change (Ch 11 & 12)
4/30 Th	Climate History & Change (Ch 11 & 12); Exploration 4 Due!
5/5 Tu	Climate Modeling (Ch 13, 14, 15)
5/7 Th	<i>Review</i>
5/12 Tu	EXAM #4, 1:00-3:00 p.m.

GRADING: Your final grade will be based on a percentage of the following total points:

Four lecture exams @ 100 points each	=	400 pts.
Four explorations @ 50 points each	=	200 pts.
Exploration discussions @ 25 points each	=	100 pts.
Readings discussions @ 50 points each	=	<u>200 pts.</u>
		900 pts. Total

Final grades will be evaluated based on the following scale: (There is no curve.)

A+ = 100% to 95%	B- = < 84% to 80%	D = < 67% to 64%
A = < 95% to 93%	C+ = < 80% to 77%	D- = < 64% to 60%
A- = < 93% to 90%	C = < 77% to 74%	F = < 60% to 0%
B+ = < 90% to 87%	C- = < 74% to 70%	
B = < 87% to 84%	D+ = < 70% to 67%	

- **LECTURE EXAMINATIONS** will focus on lecture materials and readings covered since the previous exams; however, the exams will also be **comprehensive** to some degree since we are building on concepts covered throughout the course. **Exams may not be taken early for any reason.**
- **MAKEUPS:** Only ONE of the first two regularly scheduled lecture exams can be missed during the semester. You will receive **zero** points for the second missed exam. The final exam cannot be made up. The one makeup exam will be comprehensive and very challenging.

Add/ Drops - The deadline for registration/course additions (with instructor's permission) is 1/31/2020. The last day to drop a course with a W (except courses carrying designated dates) is 3/19/2020. The last day to Withdraw from the university is 5/8/2020. Students are responsible for withdrawing from class. The instructor will not withdraw a student for not attending class or not completing the course. In order to obtain an "S" grade in Geography-111G, a minimum of 70 percent of the total course points must be obtained, and you must earn a passing grade for the lab (>60%) independent of your lecture exam scores, for a final passing grade.

Academic and non-academic misconduct: The Student Code of Conduct defines academic misconduct, non-academic misconduct and the consequences or penalties for each. The Student Code of Conduct is available in the NMSU Student Handbook online: <http://studenthandbook.nmsu.edu/> Academic misconduct is explained here: <http://studenthandbook.nmsu.edu/student-code-of-conduct/academic-misconduct/>

Discrimination and Disability Accommodation: Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act Amendments Act (ADA) covers issues relating to disability and accommodations. If a student has questions or needs an accommodation in the classroom (all medical information is treated confidentially),

contact: Student Accessibility Services (SAS), Corbett Center Student Union Room 208, Trudy Luken, Director, 575-646-6840, sas@nmsu.edu

- New Mexico State University, in compliance with applicable laws and in furtherance of its commitment to fostering an environment that welcomes and embraces diversity, does not discriminate on the basis of age, ancestry, color, disability, gender identity, genetic information, national origin, race, religion, retaliation, serious medical condition, sex (including pregnancy), sexual orientation, spousal affiliation, or protected veteran status in its programs and activities, including employment, admissions, and educational programs and activities. Inquiries may be directed to the Laura Castille, Executive Director, Title IX and Section 504 Coordinator, Office of Institutional Equity, P.O. Box 30001, E. 1130 University Avenue, Las Cruces, NM 88003; 575.646.3635; 575-646-7802 (TTY); equity@nmsu.edu.

- Title IX prohibits sex harassment, sexual assault, intimate partner violence, stalking and retaliation. For more information on discrimination or Title IX, or to file a complaint contact:

Laura Castille, Executive Director and Title IX Coordinator
Office of Institutional Equity (OIE) - O'Loughlin House, 1130 University Avenue
Phone: (575) 646-3635 E-mail: equity@nmsu.edu
Website: <http://equity.nmsu.edu/>

- **Other NMSU Resources:**

NMSU Police Department: (575) 646-3311 www.nmsupolice.com

NMSU Police Victim Services: (575) 646-3424

NMSU Counseling Center: (575) 646-2731

NMSU Dean of Students: (575) 646-1722

For Any On-campus Emergencies: 911

- **Plagiarism:**

Plagiarism is using another person's work without acknowledgment, making it appear to be one's own. Intentional and unintentional instances of plagiarism are considered instances of academic misconduct and are subject to disciplinary action such as failure on the assignment, failure of the course or dismissal from the university. The NMSU Library has more information and help on how to avoid plagiarism at <http://lib.nmsu.edu/plagiarism/>

- The Teaching Academy has excellent resources for the development and review of syllabi. For more information please visit <http://teaching.nmsu.edu/Resources/rubrics/index.html>
- E-mail address: I will only use your NMSU e-mail address or the Canvas messaging system for electronic communications.

**A point of clarification: If a student drops by 5pm on the last day to cancel a class, a "W" will not appear on his/her transcript. After the last day to cancel a class and up to the deadline to drop a course, a "W" will appear on the transcript and students will not receive a refund of any tuition.

CLIMATOLOGY (GEOG357)

COURSE DESCRIPTION:

A survey of the dynamic processes which create Earth's weather & climate, the characteristics of regional climates, and issues of global climate change.

ENABLING COMPETENCIES: Student will gain knowledge of...

- a basic history of climate science and methods
- The trends in current climate research
- The fundamental processes that create climate on Earth including Atmospheric Structure and Composition, Energy and Solar Radiation, Solar Radiation in the Atmosphere, Terrestrial Longwave Radiation Dynamics and Planetary Energy Balance
- The causes, features and characteristics of regional climates
- The fundamental principles of climate modeling
- Socio-Economic and political aspect of current climate change processes

TERMINAL COMPETENCIES: students will be able to demonstrate the ability to...

- Describe the fundamental processes that create climate on Earth.
- Describe the physical laws that comprise the climate system.
- Describe the trends in Earth's climate system
- Summarize the current knowledge of climate change
- Examine and write about a specific aspect of the global climate system that may be affected by generally increasing temperatures, such as increasing energy in the system. The specific aspect might be, for example, hurricane frequency, tornado intensity, rainfall patterns, or drought.
- Examine and write about a **physical system** that may be affected by some form of global climate change. This might be, for example, rivers and flooding, glaciers or snowpack, sea-level, coastal systems, ocean currents, soils, landslides, etc. Choose a topic that specifically deals with a physical system (In a later exploration we will look at other systems such as biological or human).
- Examine and write about a **biological system** that may be affected by some form of global climate change. This might be, for example, effects on a particular species or ecosystem, breeding seasons, food sources, migrations, etc.
- Examine and write about a topic that specifically deals with a biological system other than humans (In the final exploration we will look at human systems).
- Examine and write about a **human system** that may be affected by some form of climate change. For example, you might examine the impacts on a particular community, city, or country, in terms of environment, economics, or politics, etc. Choose a topic that specifically deals with humans.