

# UTEP GEOG 3306, *WEATHER AND CLIMATE*

Course Reference Number 18202

SYLLABUS *version 1.0*

Fall Semester 2021

Tuesday and Thursday 3:00 – 4:20 PM, delivered online via Zoom

**Instructor:** Dr. Tom Gill Phone: 915-747-5168 [NO TEXT MESSAGES: Leave voice mail].  
**Email:** tegill@utep.edu.

You are encouraged to email me or call me at the above number with questions and queries. I will do my best to respond to emails and voice mails within 24 hours except on weekends, but may not always be able to do so depending on my schedule.

**Online open office /discussion hours on Zoom:** Will be determined after consulting with class once the semester starts, in order to find time(s) that are most appropriate to this semester's students. Meetings can always be set by appointment. Appointments are encouraged. Although this is an online class, I will not be available at all times, and generally will not be available on weekends.

This course will be delivered online and includes regular meetings Tuesday and Thursday at 3PM. It requires access to Blackboard, the official UTEP course management system, as well as Zoom. Please make sure you are familiar with Blackboard and Zoom. In addition to Blackboard, some course materials must be accessed through an American Meteorological Society (AMS) Weather Studies portal (described below); in addition, other educational videos will be assigned to be watched on YouTube, Vimeo, and/or other platforms.

If you experience any problems with Blackboard or Zoom (not the AMS portal), please call the UTEP Help Desk at 915-747-HELP to report the problem and help get it solved. If you have access issues with the AMS Weather Studies portal, contact them directly (link provided in the materials you purchase).

Your UTEP email is the official Blackboard email and official email to be used for the course. All class and personal communication from Blackboard goes there automatically. It is your responsibility to check your UTEP email account often. You may be able to set up automatic forwarding of messages from your UTEP email account to another email address.

**Course Description:** Study of the composition, structure, energy flows, and motions of the Earth's atmosphere on a range of scales, the physical principles of meteorology, weather phenomena, and climate. Physical principles of atmospheric phenomena are stressed to understand weather's impact on humans, particularly with regard to severe storms.

**Prerequisite:** GEOG 1306 OR GEOG 3308 OR GEOL 1211 OR GEOL 1213, OR department/instructor approval.

**Text:** *Weather Studies Student Package*, by American Meteorological Society, 2021-2022 edition

ISBN: 978-1-944970-73-4

The Weather Studies Student Package includes:

- Weather Studies: Introduction to Atmospheric Science, Seventh Edition (e-textbook)
- Weather Studies eInvestigations Manual for 2021- 2022
- Access to the RealTime Weather Portal

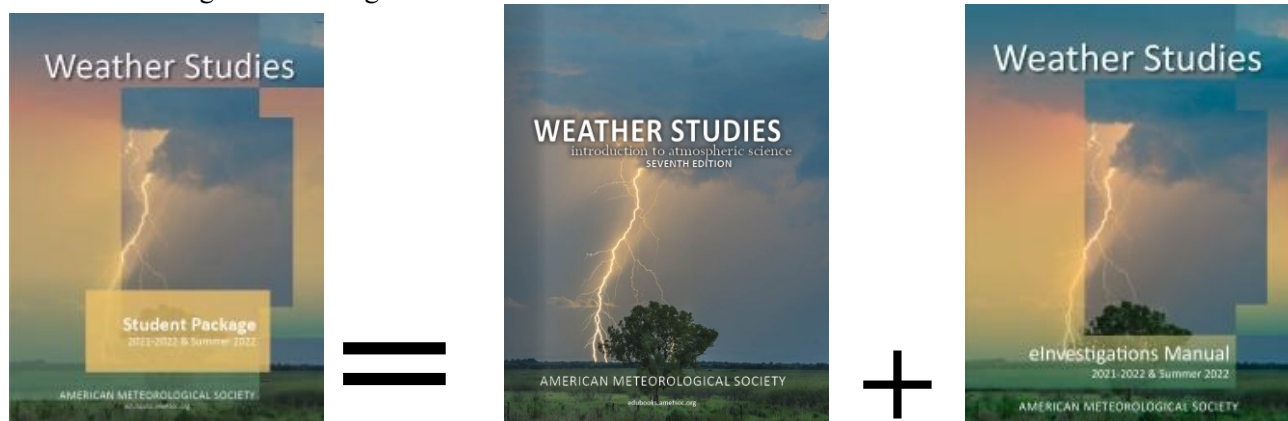
YOU MUST HAVE THE SEVENTH EDITION OF THE TEXTBOOK AND 2021- 2022 VERSION OF THE INVESTIGATIONS MANUAL. THE TEXTBOOK AND INVESTIGATIONS MANUAL ARE ELECTRONIC ONLY. They are available in print for a higher price. You must have the book *and* the investigations manual (sold together as the Weather Studies Student Package for a discount price) by September 7th. The American Meteorological Society and (hopefully) the UTEP bookstore both sell the Student Package.

You can order the student package and the book and/or the investigations manual for download/rental and/or for printed version (higher price for printed book) from the American Meteorological Society. Find them at: <https://edubooks.ametsoc.org/WXPK-20>

Chapter 1 ONLY of the book is available online at:

<https://www.ametsoc.org/ams/index.cfm/education-careers/education-program/undergraduate-faculty/weather-studies/course-components/textbook/weather-textbook-chap-1/>

Additional readings will be assigned.



**Weather Studies Student Package = Weather Studies Textbook (7<sup>th</sup> Ed.) + Weather Studies eInvestigations Manual**

#### **Additional Requirements:**

In order to participate in this course, the following requirements must be met:

- Internet connection. You will need to access not only UTEP Blackboard but also a course-specific Internet page regularly in this class (see below). This is a three credit course that is being offered online: you must be able to go online to complete the course.
- Weather makes sense if you follow it, so you will be encouraged to visit the Online Weather Studies page (see below) every day during the week if possible.
- Computer and software with the ability to **download** and **display** Graphical Image Files (.gif) and text files (.html and .txt) from the Internet.

**This course will follow to a large extent the American Meteorological Society's Weather Studies curriculum.**

Every week, in addition to

- (1) Attending class and reviewing the materials posted online in Blackboard in each week's instructions and content, you are expected to also
- (2) Complete and turn in an Investigation or Investigations from the E- Investigations Manual, AND
- (3) Access the Weather Studies online homepage, review material there, and complete and turn in an additional Investigation or Investigations called "Current Weather Studies."

**The Weather Studies online homepage may be accessed by the following address: (This information is provided to you when you download or buy the book. You will receive a unique login and password.)**

<https://edubooks.ametsoc.org/user/anonymous>

**Gain access by inputting your ID and password, and clicking on "LOGIN".**

If you lose your login ID and password, you will lose access to this information!

Once you access the Online Weather Studies homepage, each boxed item under the major headings is an active link to the information identified by that title.

The Online Weather Studies home page includes the following information:

The Daily Weather Summary.

Weekly Weather/ Climate News

Supplemental Information

“Current Weather Studies.” This will include some of the week’s homework assignment(s) from the Investigations Manual and answer sheet(s). There will be one or two homework assignments from the Investigations Manual every week.

“Math Skills” and “Critical Thinking and Diversity” exercises. You are encouraged to read each week’s “Math Skills” and “Critical Thinking and Diversity” exercises. There MAY be quizzes, regular assignments, and/or extra credit assignments given based on the Math Skills and Critical Thinking / Diversity exercises.

Student Resources - which will include many weather maps, forms, links, and diagrams.

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- **Learning**

The following steps summarize the weekly routine you are encouraged to follow to complete this course (in addition to reviewing all material posted online for the course on Blackboard and on the AMS Weather Studies home page, as well as attending lectures on Tuesday and Thursday).

- Maintain a daily watch/observation of the weather (a) to follow the development and progress of major weather systems and features, and (b) to relate the local weather in El Paso to the bigger-scale weather picture. This watch can be conducted in a number of ways including bringing up the Online Weather Studies Homepage Daily Summary and other maps and images, viewing weather broadcasts on television or radio, and accessing the home page of the National Weather Service’s El Paso office, at [weather.gov/epz](http://weather.gov/epz) .
- Read the chapter in text on which the week’s study is based. Questions/review material are provided in the book at the end of each chapter and on Blackboard by Professor Gill each week to help you access your understanding of the material. **IT IS BEST IF YOU READ THE CHAPTER IN THE BOOK BEFORE THE LECTURE AND BEFORE REVIEWING THE REST OF THAT WEEK’S ONLINE MATERIALS!**
- Each weekday, if possible, access the Online Weather Studies home page and read that day’s Daily Weather Summary, Supplementary Information, and (once each week) Weekly Weather and Climate News, Math Skills, and Critical Thinking and Diversity exercises.
- Access the course web page on Blackboard regularly, and download and read each week’s Learning Objectives, Additional Lecture, Weekly Supplemental Assignments, and Lecture Summary. By the end of each week and each chapter, make sure you have learned and can understand each one of the Learning Objectives, and have read, listened, and/or viewed all the materials listed above. The quizzes will include almost all of their questions specifically related to and derived from the Learning Objectives for each week.
- Go to the Online Weather Studies Homepage every week to acquire additional course study material for each chapter. Download the appropriate “Current Weather Studies” for each week (generally available by 10 AM Wednesday El Paso time), the Daily Summary and Supplemental Summary Files and any of the Images that are highlighted. Complete and turn in online the “Current Weather Studies” investigations as directed by Professor Gill. You may also wish to save file these documents and images following the study investigation material to which they are related.
- After reviewing the provided and assigned materials for each chapter, complete the Investigation(s) assigned by Dr. Gill in “Current Weather Studies” (see above) and the “E-Investigations Manual,” and turn them in as directed by the due date.
- Follow the instructions provided by Professor Gill for handling your learning materials.

Each of the different learning files is described below.

- *Daily Summary*

The Daily Summary is an overview describing the weather pattern across the United States and the location of major weather systems. It is updated once a day (Monday through Friday) and is generally available by

5:00 am El Paso time. The summaries of a particular week remain active links for the entire week till Sunday evening.

- *Supplemental Information*

In addition to the Daily Summary, the American Meteorological Society will often provide an additional file of supplemental information that expands on a point of the summary material or adds background information on meteorological topics via the Supplemental Information file. It can be displayed, read, and printed (if desired) whenever the position is highlighted.

- *Online Investigation File- also may be listed as “Current Weather Studies”*

Since weather is most exciting in real time, the Online Investigation File “Current Weather Studies” is designed to build upon (in near real-time) concepts found in the course assignments from your E-Investigations Manual each week. This is a .pdf file that contains approximately 5 to 7 questions relating to the weather images you display on screen and print. These files are available starting about 10 AM (El Paso time) on Mondays and/or Wednesdays. When requested, place your responses to the questions on the Investigation Answer Form that is delivered on the Online Weather Studies Homepage and turn it in by the due date

- *Images*

The different Image 1, Image 2, etc. files contain the maps, images, and charts you will need to complete the questions found in the Online Investigation File “Current Weather Studies.” While there are always three image positions listed, only those highlighted contain images accompanying the investigation which need to be completed. The images associated with each Online Investigation File are delivered Mondays and Wednesdays at the same time the Online Investigation File is made available (about 10 AM, El Paso time).

- *Critical Thinking/Diversity/ Math Skills*

The study of weather is a physical science which requires knowledge of mathematics, although advanced math is not required for students in this course. Still, to succeed in today’s world, it pays to be as mathematically literate as possible. The Math Skills weekly exercises will help reinforce mathematical concepts and include special concepts of particular relevance in studying the weather. The Critical Thinking/Diversity component first defines critical thinking, and then examines a specific critical thinking cognitive skill and an affective attribute that relate to each week's investigations. An activity that models some aspect of critical thinking is described and suggestions are made concerning ways in which critical thinking can be applied more generally to topics or issues that are not part of the science content of the course. Our theme for these applications is diversity. We do this because our nation is becoming increasingly diverse and our educational process has the potential of benefiting significantly by being more inclusive. Diversity is an issue that impacts all of us and in which there are many ideas to explore. Finally, it is a topic about which most of us have a great deal to learn.

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## **Extras**

The Blackboard site may be used to provide some important extras for this course. On the Blackboard page for this class will be a set of important links you will want to refer to throughout the semester. There will also be links to view and/or download materials for every week, links to video and/or audio files which are part of the official class presentation for every week, Learning Objectives, summaries of material, Dr. Gill’s lecture notes for each chapter, and links to additional reading and viewing assignments. The Blackboard site will be organized by week of the course (corresponding to chapter).

Several miscellaneous materials are available through the “EXTRAS” section of the Online Weather Studies homepage. Blank plotting maps, meteorological graphs, additional weather information sources, and additional notes on the homepage products are given here. These “EXTRAS” include, among others,

- Weather Map Symbols
  - The National Weather Service’s Weather Glossary
  - Additional Links
  - Various Diagrams
  - Self-scoring practice multiple-choice tests for each chapter
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**Course Objectives:** A three-credit one-semester course cannot in itself rigorously cover all aspects of atmospheric science in detail, but will be at least sufficient to impart to the student a background survey of scientific knowledge of the atmosphere. This course is to provide you with a basic scientific understanding of weather and climate. **For a more detailed understanding, each week's lectures here in this class would easily be covered by an entire semester's class in another university's Atmospheric Science department required to attain a college degree in meteorology!**

By successfully completing this course, you should have a working understanding of the weather we experience and the processes that produce it.

Specifically, this includes the ability to understand and describe the following and more:

- Methods and techniques for monitoring weather and measuring the properties of the atmosphere.
- The composition and structure of the atmosphere.
- Solar and terrestrial radiation and how the atmosphere receives and distributes energy.
- Air pressure, winds, and atmospheric circulation on a number of scales.
- The nature and behavior of moisture in the atmosphere, clouds, and precipitation.
- Air masses and fronts.
- Cyclones, anticyclones, and other weather systems.
- Severe storms including thunderstorms, tornadoes, and tropical cyclones.
- Climate, how it differs from weather; how we study climate and what factors influence the climate.

**Course Format:** This class will be presented completely online this semester, and includes a wide variety of materials the student is required to review as listed above. The course schedule will not be written in stone (more like written in air?) because every opportunity will be taken to review and describe the actual literal atmosphere of El Paso outside the classroom to illustrate concepts, terms, and phenomena.

**Attendance and Grading:** Attendance will be monitored online and is strongly encouraged (but I do understand that from time to time that may not be possible); part of the grade may be based on class attendance and participation or discussion. Students are expected to participate in the course and keep the "virtual classroom" interactive. Students who are absent are responsible for everything covered in the class, for announcements, and for changes in schedule if any. *If you know you will not be able to participate in class activities during a particular week, please let Dr. Gill know in advance or as soon as possible!*

**Some of the material covered in assignments and quizzes will NOT be in the book, and some of the material from the book will NOT be covered in assignments or quizzes. You will be responsible for both the material in the book, the AMS web portal, and the materials provided on Blackboard.**

The final grade will be based on:

60% Homework/ exercises, other miscellaneous assignments, and class participation

40% Quizzes (The quizzes will each cover three chapters, are intended to be "open-book" and must be turned in like homework is. Quiz 5 will be given during the Final Exam period and will be a comprehensive test with questions selected and repeated from Quizzes 1 through 4, but will count like any of the other quizzes. Only the four best of the five quizzes will count towards your quiz grade. Thus, you can drop your worst quiz grade or miss/skip/not complete one quiz without penalty, and each of the other quizzes will count 10% of your grade.)

● *Planned Letter Grading:* A ≥ 90% of top score; B 80-89% of top score; C 70-79% of top score; D 60-69% of top score; F < 60% of top score.

**Homework Assignment and Due Dates:** Homework assignments (including Current Weather Studies, Investigations from the e-Investigations Manual, and/or any other assigned homework) must be submitted by midnight, El Paso Texas time, on Monday nights. Class materials for each week including homework assignments will be announced in Tuesday's lectures and/or on Blackboard in a folder for each chapter/week. If you miss class on Tuesday, please refer to the Power Points posted on Blackboard after class, and if that is not possible, please check with a classmate or Dr. Gill. (So, materials for each chapter/week will be announced on Tuesday's class, and assignments for each week must be completed by the following Monday night at midnight.)

**Policy on Late Homework/ Assignments:** NO homework or other assignments will be accepted late except for reasons other than illness or injury (doctor's note required), the instructor's prior approval, or when a student is required to be on official University or government business (documentation required).

**Policy on Make Up Examinations:** NO make-up quizzes will be given for reasons other than illness or injury (doctor's note required), or when a student is required to be on official University or government business (documentation required). **OF THE FIVE QUIZZES, YOU WILL BE ABLE TO DROP THE LOWEST GRADE (OR SKIP/MISS A QUIZ): ONLY THE FOUR BEST QUIZ GRADES WILL COUNT TOWARDS YOUR FULL SEMESTER GRADE.**

**Students with Disabilities:** If you have (or think you may have) a disability, and need accommodation, contact the Center for Accommodations and Support Services (CASS) at <https://www.utep.edu/student-affairs/cass/> (915) 747-5148 (voice or TTY). CASS is the office at UTEP that is designated to determine eligibility for accommodations and services to students with disabilities, and will arrange for any necessary accommodations.

**Academic (dis)honesty and other issues:** Academic dishonesty is prohibited and considered a violation of the UTEP Handbook of Operating Procedures. It includes but is not limited to cheating, plagiarism, and collusion. In this class, since it is an upper division science course, you are expected to complete your own work, but consultation with your classmates and others (collaboration) is encouraged though not required on homework assignments and exercises (but NOT for quizzes). When you turn in homework and other assignments (but not quizzes) that you have worked on or consulted with others on, please make sure to think and submit your own answers: your classmate may not have the right answer!

**COURSE DROP:** the College of Science aligns with UTEP with respect to the drop date of October 29th. No requests for a withdrawal will be approved after that date. Students can always petition the Registrar for a complete withdrawal from all courses pending documentation.

**IMPORTANT NOTICE REGARDING COVID-19 AND ILLNESS:**

***Please stay do not come to campus or elsewhere in public if you have been diagnosed with (or test positive for) COVID-19 or are experiencing COVID-19 symptoms. If you are feeling unwell, and feel that you will not be able to attend class online or complete any assignments, please let me know as soon as possible, so that we can work on appropriate accommodations. If you have tested positive for COVID-19, you are encouraged to report your results to [covidaction@utep.edu](mailto:covidaction@utep.edu), so that the Dean of Students Office can provide you with support and help with communication with your professors. The Student Health Center is equipped to provide COVID- 19 testing and there are ample COVID-19 testing locations in and around El Paso.***

**The Center for Disease Control and Prevention recommends that people in areas of substantial or high COVID-19 transmission wear face masks when indoors in groups of people. The best way that Miners can take care of Miners is to get the vaccine. If you still need the vaccine, it is widely available in the El Paso area, and will be available at no charge on campus during the first week of classes, and is available free of charge at many other locations in and around El Paso. For more information about the current rates, testing, and vaccinations, please visit [epstrong.org](http://epstrong.org)**

**EXPECTED Course Outline:**

**NOTE: This schedule is fluid, just like the atmosphere, and could change based on the needs, requirements and opportunities of the students, professor, availability of new materials, and the actual atmospheric conditions and phenomena which may be observable or happening on any given day.**

Reading of various chapters from the book is required for each week of online study below. You will be expected to do the readings and access the Online Weather Studies home page, as well as Blackboard, every week, as detailed above in the syllabus. The online lectures, videos, and other materials are considered an addition to/illustration of the readings and material from the AMS Weather Studies portal, and may not always match what is in the text or the online Weather Studies portal material. Assignments of problems from the textbook and/or Online Weather Studies investigations manual and/or home page will be given almost every week. Additional materials will be assigned: you will be responsible for knowing the material in them and turning in assignments when required to do so.

READ CHAPTER #	DATE	TOPIC
1	AUG 31 -SEP 2	Monitoring the Weather
2	SEP 7 - 9	Atmosphere: Origin, Composition & Structure
3	SEP 14 - 16	Solar & Terrestrial Radiation QUIZ 1
4	SEP 21 - 23	Heat, Temperature & Atmospheric Circulation
5	SEP 28 - 30	Air Pressure
6	OCT 5 - 7	Humidity, Saturation & Stability (start)
	OCT 12 - 14	Humidity, Saturation & Stability (conclusion) QUIZ 2
7	OCT 19 - 21	Clouds, Precipitation & Radar
8	OCT 26 - 28	Wind and Weather
9	NOV 2 - 4	Atmosphere's Planetary Circulation QUIZ 3
10	NOV 9 – 11	Weather Systems of Middle Latitudes
11	NOV 16 – 18	Thunderstorms and Tornadoes
12	NOV 23 – 30	Tropical Weather Systems QUIZ 4
	DEC 2	Last day of classes. Review or catch up.
	DEC 9	QUIZ 5, to be completed by the end of the scheduled final examination time for the class, 6:45 PM. during the final exam week, date/time TBA- Part of the quiz will be a repeat of prior quiz questions from quizzes 1, 2, 3, and/or 4.