

**GGG 309, Fall 2020**

**Online Course (Asynchronous)**

**Introduction to Weather and Climate**



### **Course Information**

Title: GGS309: Introduction to Weather and Climate

Instructor: Prof. John Qu

E-mail: [jqu@gmu.edu](mailto:jqu@gmu.edu)

Office Hour: 10:30-11:45 AM (online) Mondays or make appointment

### **Course Description:**

This course will introduce the students to the fundamental principles upon which the atmosphere and climate sciences are based and to provide quantitative description and interpretation of the wide range of atmospheric observing the atmosphere phenomena with an emphasis on sub-synoptic scales (i.e. weather and regional scale climate). This course engages students with real-world examples and a captivating narrative. One of the main goals of this course is not only to provide the basic knowledge of fundamentals of the weather and climate, but also to prepare students for the science of atmospheric modeling and simulations. This course is designed for both science majors and non-majors taking their first course in weather and climate sciences.

**Prerequisites:** MATH 214 and PHYS 262, or permission of instructor.

**Detailed Schedule**

Week one:	Introduction to the Atmosphere and Climate Science
Week two:	The Energy Cycle
Week three	Temperature <i>Quiz One</i>
Week four	Water in the Atmosphere
Week five	Observing the Atmosphere
Week six	Atmospheric Forces and Wind <i>Quiz Two</i>
Week seven 03/08	Global and Small Scale Winds <i>Mid-term</i>
Week eight	Atmosphere-Ocean Interactions: El Niño and Tropical Cyclones
Week nine	Air Masses and Fronts <i>Quiz Three</i>
Week ten	Extratropical Cyclones and Anticyclones
Week eleven	Thunderstorms and Tornadoes
Week twelve	Weather and Climate Forecasting <i>Quiz Four</i>
Week thirteen	Past and Present Climates
Week fourteen	Human Influences on Climate
Week fifteen	<i>Final Exam</i>

## **Grading**

- Quizzes 20%
  - Homework 20%
  - Midterm 25%
  - Final Exam 35%
- (A=90-100, B=80-89, C=70-79, D=60-69, F=<60)

## **Textbook:**

“Meteorology: Understanding the Atmosphere”, Third Edition, by Steven A. Ackerman and John A. Knox 2011, Jones & Bartlett Learning (2011), ISBN 9781449631758 (paperback edition) and ISBN 1449631754 (hardback), 578 pages.

Reference book: “Climatology”, By Robert V. Rohli, Anthony J. Vega, Jones & Bartlett Learning (2011), Paperback - 432 pages - ISBN 0763791016

Other references: Selected publications will be posted on Blackboard

## **Honor code:**

Students must follow the GMU Scholastic Honor Code. Copying homework (or quiz) is considered cheating.

