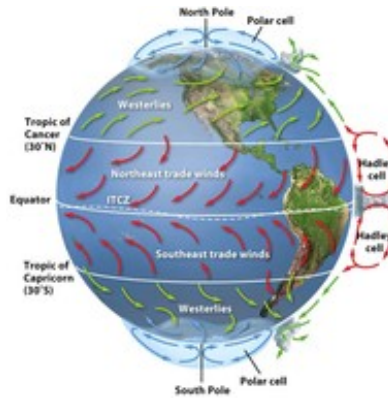


# GGG 670 Spring 2020

## Introduction to Atmosphere and Weather



### Course Information:

Title: Introduction to Atmosphere and Weather

CRN: 21334

Time: 04:30 pm-7:10 pm, Wednesdays, 01/21-05/13/2020

Location: Exploratory Hall 2312

Instructor: [Prof. John Qu](#)

Telephone: (703) 993-3958

Office: Room 2412, Building: Exploratory Hall

Office Hour: Stop by 2:00-4:00PM Mondays and Wednesdays or make appointment

### Course Description:

This course will introduce the students to the fundamental principles upon which the atmospheric sciences are based and to provide quantitative description and interpretation of the wide range of atmospheric phenomena with an emphasis on sub-synoptic scales (i.e. weather and regional scale climate). One of the main goals of this course is not only to provide the basic knowledge of fundamentals of the atmosphere science and weather, important in our Earth system, but also to prepare students for the science of climate. This course is designed for both science majors and non-majors taking their first course in atmosphere science. We will focus on extreme weather and climate in Spring 2020.

### Prerequisites

College Math (such as MATH 214) and physics (such as PHYS 262), or permission of instructor.

### Final project:

Weather and atmosphere science related final presentations and final term papers are encouraged.

### Grading:

Grades will be based upon your performance on the homework exercises, midterm, class attendance and final term paper and presentation. The weighted contribution of each of these items to your final grade is given below:

**Homework** 30%

**Midterm** 30%

**Final Project** 30%

**Class attendance** 10%

(A=90-100, B=80-89, C=70-79, D=60-69, F=<60)

**Textbook:**

Required Textbook:

Required Textbook: “Meteorology: Understanding the Atmosphere”, Fourth Edition, by Steven A. Ackerman and John A. Knox 2014, Jones & Bartlett Learning (2014), ISBN 978-1-284-02737-2 (paperback edition), 575 pages.

Recommended References:

1: Wallace, J. M., and P. V. Hobbs, Atmospheric Science: An Introductory Survey (Second Edition), Academic Press, 2006.

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

**Honor code:**

Students must follow the GMU Scholastic Honor Code. Please show respects to everyone in the classroom. Copying homework (or quiz) is considered cheating.

## Detailed Schedule

Week one 01/22	Introduction to the Atmosphere
Week two 01/29	The Energy Cycle
Week three 02/05	Energy Balance and Temperature
Week four 02/12	Water in the Atmosphere
Week five 02/19	Observing the Atmosphere
Week six 02/26	Atmospheric Forces and Winds
Week seven 03/04	Global and Small Scale Winds Mid-term
Week eight 03/11	Spring break
Week nine 03/18	Atmosphere-Ocean Interactions: El Niño and Tropical Cyclones
Week ten 03/25	Air Masses and Fronts
Week eleven 04/01	Extratropical Cyclones and Anticyclones
Week twelve 04/08	Thunderstorms and Tornadoes
Week thirteen 04/15	Weather and Climate Forecasting
Week fourteen 04/22	Past, Present and Future Climate
Week fifteen 04/29	Final project presentations
Week sixteen 05/13	Final term papers