GGS309 Spring 2016
Introduction to Weather and Climate

Course Information

Title: Introduction to Weather and Climate(GGS 309)
CRN: 14014
Time: 1:30pm-4:10pm, Thursdays, 01/19-05/11/2016
Location: Exploratory Hall 2312

Instructors

Instructors	John Qu	Xianjun Hao
Telephone:	(703)993-3958	(703)993-9322
Office:	Room 3411, Exploratory Hall	Room 3409, Exploratory Hall
Email:	jqu@gmu.edu	xhao1@gmu.edu

Office Hours: Stop by 10:00 AM -12:00 PM Thursdays or 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.

Schedule

Week one: 01/21	Introduction to the Atmosphere and Climate Science [PPT]
Week two 01/28	The Energy Cycle [PPT] [Chapter two, Introduction to Atmospheric Radiation]
	Temperature [PPT]

Week three 02/04	Temperature [PPT] *Quiz One*
Week four 02/11	Water in the Atmosphere [PPT]
Week five 02/18	Observing the Atmosphere [PPT] *Quiz Two*
Week six 02/25	Atmospheric Forces and Wind [PPT]
Week seven 03/03	Global and Small Scale Winds [PPT1] [PPT2] *Mid-term*
Week eight 03/10	Spring break
Week nine 03/17	Atmosphere-Ocean Interactions: El Niño and Tropical Cyclones [PPT]
Week ten 03/24	Air Masses and Fronts [PPT] *Quiz Three*
Week eleven 03/31	Extratropical Cyclones and Anticyclones Homework Three & Four, Due on April 28, 2016)
Week twelve 04/07	Thunderstorms and Tornadoes [DL] [PPT]
Week thirteen 04/14	Weather and Climate Forecasting [PPT 1] [PPT 2]
Week fourteen 04/21	Past and Present Climates [PPT] *Quiz Four*
Week fifteen 04/28	Human Influences on Climate [PPT 1] [PPT 2] Guest Lecture [PPT] **Final Exam Summary**
Week sixteen 05/05	*Final Exam*

Grading

- Class attending: 5%
- Quizes: 20%
- Homework: 20%
- Midterm: 25%
- Final Exam: 30%

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

Textbooks

1. 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.
2. 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.

Useful Links

1. WMO
2. NOAA/CDC
3. NOAA/NCDC
4. IPCC
5. Climate Conference in Copenhagen, 2009
6. COP21
7. Climate Change Science Compendium 2009 by UNEP
8. Global Weather Maps