GGS 670 Fall 2017
Introduction to Atmosphere and Weather

http://estc.gmu.edu/Course/GGS670-17/

Course Information
Title: GGS 670 Introduction to Atmosphere and Weather
CRN: 73954
Time: 04:30 pm-7:10 pm, Mondays, 08/28-12/20/2017
Location: Exploratory Hall 2312
Instructors: Prof. John Qu and Dr. Xianjun Hao
Telephone: (703) 993-3958 and (703)993-9322
Office: Room 2412, and room 3412, Exploratory Hall
Office Hour: Stop by 2:00-4:00PM Mondays 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, 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 energy meteorology in Fall 2017.

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

Schedule

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Topic</th>
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<tbody>
<tr>
<td>Week one</td>
<td>08/29</td>
<td>Introduction to Atmosphere</td>
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<tr>
<td>Week two</td>
<td>09/05</td>
<td>The Energy Cycle (DL)</td>
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<td>Week three</td>
<td>09/12</td>
<td>Energy Balance and Temperature</td>
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<td>Week four</td>
<td>09/19</td>
<td>Water in the Atmosphere</td>
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<td>Week five</td>
<td>09/26</td>
<td>Observing the Atmosphere</td>
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<td>Week six</td>
<td>10/03</td>
<td>Atmospheric Forces and Winds</td>
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<td>Week seven</td>
<td>10/10</td>
<td>Global and Small Scale Winds Mid-term</td>
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<td>Week eight</td>
<td>10/17</td>
<td>Atmosphere-Ocean Interactions: El Nino and Tropical cyclones</td>
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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:

- Homework 30%
- Midterm 30%
- Final Project 30%
- Class Attendance 10%

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

Textbooks
Required Textbook:

Recommended References:

Useful Links
1. NOAA/CDC
2. NOAA/NCDC
3. IPCC
4. Climate Conference in Copenhagen, 2009
5. Global Climate Change Impacts in the United States
6. Climate Change Science Compendium 2009 by UNEP
7. IPCC 2007 Reports
8. A climate threat, rising from the soil
9. Global Weather Maps
10. COP21