CLIM713 Atmosphere-Ocean Interactions
Spring 2015 – Wed 10:30am-1:10pm
Class Location: Robinson Hall B442

Instructor: Dr. Kathy Pegion
                Research Hall 260
                Email: kpegion@gmu.edu
Course Credits: 3
Website: http://mason.gmu.edu/~kpegion/teaching/clim713sp2014/
Office Hours: By appointment

Overview/Motivation
The coupled interactions between the atmosphere and the ocean have a significant impact on determining the Earth's climate. The El Nino-Southern Oscillation (ENSO) is the largest source of variability in the climate system on interannual timescales, has large impacts throughout the globe, and is the dominant example of air-sea interactions between the atmosphere and ocean. This course will focus on how the atmosphere and ocean interact to determine global climate variability, using ENSO as an example.

Goals
1. Understand how the ocean and atmosphere interact to determine global climate variability.
2. Understand what causes SSTs to change, how the atmosphere responds to SSTs, and how this leads to the development and evolution of ENSO.
3. Understand what determines ENSO's preferred timescale and why it is irregular through understanding of current ENSO theories.
4. Understand the methods by which ENSO is currently predicted.
5. Understand what the current research questions are regarding ENSO
6. Apply understanding of air-sea interactions to research on other topics.

Prerequisites
Successful completion of Atmospheric Dynamics (CLIM 711) and Physical and Dynamical Oceanography (CLIM 712) is required. A basic understanding of Unix and computer programming is also required.

Class Format
Since this is a 1-day a week, very long class period, each class will be divided into two periods with a brief break. Each class will involve some lecture, as well as a computer lab, group discussion or problem solving activity.

Class Attendance
Since this is a one-day a week, long class period, missing class will result in a student missing a large amount of material. Students are encouraged to attend all classes, as it will be difficult to catch up. Please notify me in advance if you must miss class.

Class Preparation and Participation

Please come to class prepared with all materials listed under Assignments/Class Prep in the schedule. The schedule will be updated regularly. Active participation in the discussion is expected. In some cases, you may be the only person assigned to read a particular paper and you will be expected to explain your understanding of the paper to other students.

Grading

Homework/Labs/Participation (40%)
Mid-term Exam (20%)
Semester Project (40%)

Class Schedule & Important Dates

The class schedule is posted on the class website and will be regularly updated.

Some important dates to remember are:
Jan 28: Idea for Project
Feb 11: Outline of proposed project
Mar 4: Midterm
Mar 11: No Class – Spring Break
Mar 18: Project Report
Apr 8: Paper Draft
Apr 22: Paper Reviews
Apr 29: Presentations
May 8: Final Paper

Late Assignments

Assignments are due at the beginning of the class period. Late assignments will not be accepted.

Semester Project/Term Paper/Oral Presentation

Students will be required to conduct a semester project consisting of an idea statement, a proposed plan, a project update report, a term paper, an oral presentation, review of a draft term paper written by another student and review of oral presentations by other students. Further details will be provided in class.

Technical Information

This class will require analysis and plotting of datasets from observations and models of the atmosphere and ocean. All students will need to have access to the COLA computing systems and be able to analyze and plot data using a programming environment of their choice (e.g. Matlab, GrADS, IDL, NCL). Students who do not have a COLA computer account must contact me within the first week of class to obtain an account.

Group Work Policy

Students are encouraged to discuss labs, homework and semester projects with each other. However, all assignments must be completed and written by each individual student, including computer and plotting codes. You may not copy any program from another person or the internet. You may use canned routines included in higher level programming packages or pre-packaged software libraries (e.g. LAPACK). If in doubt, please ask.

Mid-term exam is closed book and taken individually in class.

Required Texts
There is no required text for this class. Required readings will be provided.

Subject to Change
This syllabus is subject to change. Students will be provided with an updated syllabus on the first day of class and notified of any changes throughout the semester in advance of any due dates.

How to Contact Me
Please use email as the primary way to contact me with questions and/or to schedule a time to meet in-person. *In order to guarantee that I see your email, all emails regarding this class must have the subject line: CLIM713*. I will make every effort to respond to your emails in a timely manner. Emails received Mon-Fri (before 5pm) will be acknowledged within 24 hours. Emails received after 5pm on Fri and on the weekend will be acknowledged by the end of the day on Mon. If you have not heard from me in that time, please assume I did not receive your email and re-send.

Additionally, if you stop by my office (Research Hall 260) and my door is open, I am available to meet with you.

University Requirements
If you have a documented learning disability or other condition that may affect academic performance you should: 1) make sure this documentation is on file with Office of Disability Services (SUB I, Rm. 4205; 993-2474;http://ods.gmu.edu) to determine the accommodations you need; and 2) talk with me to discuss your accommodation needs.

GMU is an Honor Code university; please see the Office for Academic Integrity for a full description of the code and the honor committee process. The principle of academic integrity is taken very seriously and violations are treated gravely. What does academic integrity mean in this course? Essentially this: when you are responsible for a task, you will perform that task. When you rely on someone else's work in an aspect of the performance of that task, you will give full credit in the proper, accepted form. Another aspect of academic integrity is the free play of ideas. Vigorous discussion and debate are encouraged in this course, with the firm expectation that all aspects of the class will be conducted with civility and respect for differing ideas, perspectives, and traditions. When in doubt (of any kind) please ask for guidance and clarification.

Students must use their MasonLive email account to receive important University information, including messages related to this class. See *http://masonlive.gmu.edu* for more information.

Absence for Religious Observances
It is the policy of George Mason University to make every reasonable effort to allow members of the university community to observe their religious holidays without academic penalty. Absence from classes or examinations for religious reasons does not relieve students from responsibility for any part of the course work required during the period of absence. Students who expect to miss classes, examinations, or other assignments as a consequence of their religious observance shall be provided a reasonable alternative opportunity to complete their academic responsibilities. Please provide me with notice of the dates of major religious holidays on which you will be absent within the first week of classes.