Syllabus for Atmospheric Physics (ATMO 302, CRN: 85316)

Time: Spring 2020 (Jan 13, 2020 - May 15, 2020), MWF, 10:20-11:20 am
Location: HIG 310

Instructor: Dr. Jingxia (Grace) Zhao, HIG 365, 956-3736, jingxiaz@hawaii.edu

Office Hours: TuTh. 10:30-12:00 am or by appointment

Prerequisites: MET200, MATH242 and PHYS272

Text: ***Atmospheric Science, and Introductory Survey***, by John M. Wallace and Peter V. Hobbs, Academic Press, 2nd Edition, 2006, 483pp, IBSN-13:978-0-12-732951-2.

Course description: This course is a quantitative introduction to fundamental physical principles and processes in the Earth's atmosphere. It provides an elementary description and interpretation of the wide range of atmospheric phenomena dealt with in detail in more advanced courses. Topics to be studied include overview of the atmosphere and Earth Systems, basic description of moist and dry thermodynamics, radiative transfer, atmospheric chemistry and cloud microphysics. ATMO 302 can be completed together with ATMO 303 which addresses the dynamics of atmospheric motions and weather.

Grading:

Problems	30%
Exam #1	20%
Exam #2	20%
Final Exam	30%
Total	100%

Grading Scale	
100-90	A
89-80	B
79-70	C
69-60	D
Below 60	F

A focused effort is essential to understanding the material and completing the problems successfully. You are encouraged to work together, but you are not allowed to copy each other. Claiming someone else's work or ideas as your own will be considered as dishonesty. It will not be tolerated with consequence of a bad outcome. Format of the exams will be short essay, draw and label a sketch, and problems like ones in the homework. Homework and exams will contribute to grades as indicated in the table above on the left.

Weather information web sites:
University of Hawaii Meteorology weather Server
http://weather.hawaii.edu
The Marshall Spaceflight Center's GOES Satellite viewer:
http://weather.msfc.nasa.gov/GOES/
And the NCEP web-based surface weather analysis:
http://www.hpc.ncep.noaa.gov/html/sfc2.shtml

The Student Learning Outcomes listed in this syllabus are those required actions that a student who successfully completes the course must be able to perform. The educational experience, however, is a two-way, interactive process involving both the student and the instructor. The student must play an active role in the learning process in order to be successful. Instructors will provide an Instructor's Course Requirements document at the first class meeting explaining how they measure each of the Student Learning Outcomes. A student who is unable to accomplish the outcomes will not receive a passing grade in the course.

The information in this Syllabus may not be accurate beyond the current semester. Textbooks and other course materials are subject to change. Students should verify the textbooks at the first class meeting with their instructor prior to purchasing.

- **Student Learning Outcomes:**
  By the end of the course, students will be able to
  - *Apply* physical principles and processes to explain the wide range of atmospheric phenomena.
  - *Describe* thermodynamics and heat transfer, cloud and precipitation forms and important chemical processes in the atmosphere.