

ATMO 620 – Physical Meteorology

Syllabus

Fall Semester 2019
Location: HIG 310
Class time: MW 9:30-10:45
Instructor: Prof. Giuseppe Torri
Email: gtorri@hawaii.edu
Phone: 617-460-1490

Student Learning Objectives

Upon completion of the course, the student should be able to:

1. Understand the fundamental concepts of Atmospheric Thermodynamics, such as the First and Second Principle of Thermodynamics, and entropy.
2. Understand the microscopical processes that lead to the formation of clouds.
3. Understand and describe the physical processes that lead to the formation of rain.
4. Describe all the ice crystal habits and at what condition each forms.
5. Describe electromagnetic radiation.
6. Understand and describe how radiation can interact with the atmosphere.
7. Critically understand the physical principles behind the greenhouse effect.
8. Describe the feedbacks between climate and radiation.

Grading

The final grade will be determined by a combination of weekly assignments, in-class exams, and participation in class:

Weekly Assignments	40%
In-class Exams	50%
Participation in class	10%
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	100%

Assignments

Every week, students will be assigned homework that they will have to hand in or email within 7 days. The main objective of the homework will be to help the students better understand the concepts they learnt in class.

Calendar

08/26 Review: Math

08/28	Thermo: Ideas gases
09/02	Holiday: Labor Day
09/04	Thermo: First principle of thermodynamics
09/09	Thermo: Second principle of thermodynamics
09/11	Thermo: Moist thermodynamics
09/16	Micro: Formation of cloud droplets
09/18	Micro: Droplet growth by condensation
09/23	Micro: Droplet growth by condensation
09/25	Micro: Initiation of rain in warm clouds
09/31	Away
10/02	Away
10/07	Micro: Initiation of rain in warm clouds
10/09	Micro: Growth of ice crystals
10/14	Micro: Rain and snow
10/16	Review
10/21	Midterms
10/23	Micro: Stable water isotopes
10/28	Rad: Fundamentals
10/30	Rad: Fundamentals
11/04	Rad: Absorption and scattering
11/06	Rad: Absorption and scattering
11/11	Holiday: Veterans' Day
11/13	Rad: Absorption and scattering
11/18	Rad: Radiative transfer
11/20	Rad: Radiative transfer
11/25	Rad: Greenhouse effect
11/27	Rad: Radiation and climate
12/02	Rad: Radiative forcing
12/04	Final exam

Title IX Statement:

The University of Hawai'i is committed to providing a learning, working and living environment that promotes personal integrity, civility, and mutual respect and is free of all forms of sex discrimination and gender-based violence, including sexual assault, sexual harassment, gender-based harassment, domestic violence, dating violence, and stalking. If you or someone you know is experiencing any of these, the University has staff and resources on your campus to support and assist you. Staff can also direct you to resources that are in the community. Here are some of your options:

As members of the University faculty, your instructors are required to immediately report any incident of potential sex discrimination or gender-based violence to the campus

Title IX Coordinator. Although the Title IX Coordinator and your instructors cannot guarantee confidentiality, you will still have options about how your case will be handled. Our goal is to make sure you are aware of the range of options available to you and have access to the resources and support you need.

If you wish to remain ANONYMOUS, speak with someone CONFIDENTIALLY, or would like to receive information and support in a CONFIDENTIAL setting, use the **confidential resources available here**:

<http://www.manoa.hawaii.edu/titleix/resources.html#confidential>

If you wish to directly REPORT an incident of sex discrimination or gender-based violence including sexual assault, sexual harassment, gender-based harassment, domestic violence, dating violence or stalking as well as receive information and support,

contact: Dee Uwono Title IX Coordinator (808) 956-2299 t9uhm@hawaii.edu.