

ATMO 601: Advanced Atmospheric Dynamics II

Spring 2019, Tue & Thu 10:30-11:45am, HIG 311

Instructor: Tim Li, POST 409B, Phone: 956-9427, Email: timli@hawaii.edu

Student Learning Objectives (SLOs):

ATMO 601 is the second part of a two-semester course series on Advanced Atmospheric Dynamics. Upon completion of the course, the student should be able to:

1. Demonstrate a familiarity with the structure and dynamics of mid-latitude synoptic-scale motion.
2. Understand the quasi-geostrophic dynamic framework and the theory of the baroclinic instability.
3. Describe and explain the structure and controlling mechanism of the zonal mean atmospheric general circulation.
4. Understand the basic patterns and dynamics of the Middle Atmospheric circulation.

Prerequisite:

ATMO 600, or consent of the Instructor.

Course outline:

I Synoptic-Scale Motion I: Quasi-Geostrophic Analysis

Holton book Chapter 6 (6.1, 6.2, 6.3, 6.4, 6.5)

II Synoptic-Scale Motion II: Baroclinic Instability

Holton book Chapter 8 (8.2, 8.3, 8.4)

III The General Circulation

Holton book Chapter 10 (10.2, 10.4, 10.5)

IV Middle Atmosphere Dynamics

Holton book Chapter 12 (12.1, 12.2, 12.3, 12.4, 12.5, 12.6)

V Tropical Cyclone Formation

Li and Hsu book Chapter 4

Major Reference Books:

- Holton, J. R.: An Introduction to Dynamic Meteorology, 4th Edition, 2004
Pedlosky, J. : Geophysical Fluid Dynamics, Spring-Verlag, 1987
Gill, A. E. : Atmosphere-Ocean Dynamics, 1982
Li, T., and P. Hsu: Fundamentals of Tropical Climate Dynamics, 2017

Grading Policy:

Homework 40%, mid-term exam 30%, final exam/project 30%.

Title XI Statement:

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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:

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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.