Introduction to the Dynamics of the Earth System

Objectives: This course provides an overview of the processes that determine the Earth system and contribute to its change, including atmospheric radiation, ocean circulation and atmospheric dynamics.

Meetings
MW 1:30pm-2:50pm, Math Sciences 7124B

Instructor
Prof. Gang Chen (gchenpu@atmos.ucla.edu)
Office: Mathematical Sciences 7149, Phone: (310) 206-9956
Office Hours: After each lecture or by appointment

Textbook
See https://ccle.ucla.edu/ for general course information.
Optional text: Global Physical Climatology, by Dennis L. Hartmann
Climate Change and Climate Modeling, by J. David Neelin

Grading:
• Midterm (1/2) + Final (1/2)
• Alternate grading scheme: if you perform poorly on the midterm exam, you may petition for the alternate grading scheme for the exams: Midterm (1/3) and Final exam (2/3). You must petition for this before December 1, 2019, and this cannot be done retroactively after the final exam.

Class attendance/participation is expected throughout the course.

Schedule
Monday 9/30     Lecture 1: Global and Meridional Energy Balance
Wednesday 10/2  Lecture 1 (cont.)
Monday 10/7     Lecture 2: Radiation and the Atmosphere’s Vertical Temperature profile
Wednesday 10/9  Lecture 3: Surface Processes
Monday 10/14    Lecture 4: Planetary Boundary Layer
Wednesday 10/16 No class
Monday 10/21    Lecture 4 (cont)
Wednesday 10/23 Lecture 5: Atmospheric Circulation
Monday 10/28    Lecture 6: Hydrologic Cycle
Wednesday 10/30 Midterm exam
Monday 11/4     Lecture 7: Ocean Circulation
Wednesday 11/6  Lecture 8: ENSO and teleconnections
Monday 11/11    No class (Veteran’s Day)
Wednesday 11/13 Lecture 8 (cont.)
Monday 11/18    Lecture 9: Paleoclimate
Wednesday 11/20 Lecture 10: Climate Sensitivity
Monday 11/25    Lecture 11: Observed Climate Change
Wednesday 11/27 No class
Monday 12/2     Lecture 11: (cont.)
Wednesday 12/4  Lecture 12: Climate and Climate Change Modeling
TBD            Final exam