Advanced Atmospheric Dynamics I  
(METR 5113)  
Fall 2008 Syllabus

General information  
Essential mathematical and physical concepts underlying theory of atmospheric flows will be presented in depth. Applications of this theory to a broad variety of atmospheric flow types will be demonstrated. Basic equations of atmospheric dynamics will be thoroughly derived and analyzed. Calculus, differential equations (both ordinary and partial), linear algebra, and vector/tensor analysis will be extensively used throughout the course. Focus will be made on the understanding of fundamental principles of atmospheric dynamics and application of these principles in atmospheric modeling. Goal of the course is to develop quantitative and problem solving skills in atmospheric dynamics. It is not a survey course.

Time and place. Mon, Wed, Fri: 1:00 - 1:50 p.m.; Room NWC 5600.

Instructor. Dr. Evgeni Fedorovich (weather.ou.edu/~fedorovi/fedorovich.html)  
NWC, School of Meteorology, Room 5419, Phone: 405 325 1197.  
E-mail: fedorovich@ou.edu

Office hours. Mon, Wed, Fri: 2:00 - 3:00 p.m. or by appointment through E-mail.

Prerequisites: METR 3113 (Atmospheric Dynamics II) and MATH 4163 (Partial Differential Equations), or equivalent coursework, or permission of instructor.


Recommended additional texts. See Appendix.

Class notes and supplementary materials will be posted on learn.ou.edu

Grading. Two in-class exams (September/October and November): 30% each. Final exam (December): 40%. Grading scheme: A - ≥85%, B - ≥70%, C - ≥50. Grades will be posted on learn.ou.edu.

List of topics (tentative):

Note: Any student in this course who has a disability that may prevent him or her from fully demonstrating his or her abilities should contact Dr. Evgeni Fedorovich personally to discuss accommodations necessary to ensure full participation and facilitation of educational opportunities.
Useful Additional Reading
for
Advanced Atmospheric Dynamics I

Dynamical Meteorology


Geophysical Fluid Dynamics


Fluid Mechanics


Applied Mathematics