METR 3123, ATMOSPHERIC DYNAMICS II
SPRING 2008

MWF 10:00 - 10:50 a.m., National Weather Center 1350
W 4:00 - 5:15 p.m., National Weather Center 1350

Instructor:

Prof. Alan Shapiro
National Weather Center, 5423
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email is a good way to reach me -- I read it many times a day.

Office Hours:

MWF 11:00 a.m. - noon
Additional office hours upon request -- just ask!

Grader: Nathan Dahl

Required Text:

Holton, J. R., 2004: *An Introduction to Dynamic Meteorology*, 4th ed.

Recommended Texts:

Hay, G. E., 1953: *Vector and Tensor Analysis*, Dover.
Schey, H. M., 1992: *Div, Grad, Curl and All That*, 2nd ed.

Prerequisites:

C or better in each of these courses:
MATH 3413: Physical Math 1
METR 3213: Physical Meteorology I -- Thermodynamics
METR 3113: Dynamics I

Grading:

3 in-class exams (50 %: your two best scores are retained @ 25 % each)
Final Exam (35 %)
Problem sets (15 %)

Information about exams:

- No make-up exams given under any circumstances (but recall that the lowest of the 3 in-class exams gets dropped).

- Exams are closed book.

- No calculators allowed on exams.

- Final Exam is comprehensive.

Information about problem sets:

- Feel free to discuss the problem sets in study groups but do not copy each other's work. Your written work must be an original effort if you are to receive any credit for the assignment.

- Problem set solutions should be detailed, explicit, and logical. State clearly what equations/assumptions are being used, and describe the nature of each step in a derivation (i.e., use words to supplement your equations).

- Illegible homework will receive a grade of 0. The grader decides what is illegible.

- Problem sets are collected at the beginning of the morning class on the day they're due.

- Late homework not accepted unless you have a documented medical emergency (if you lose an arm I still need to see the note from the doc).

List of Topics:

Order of magnitude reasoning. Eulerian and Lagrangian viewpoints. Trajectories and streamlines. Forces. Statics. Equations of motion in inertial and rotating reference frames. Scale analysis of equations of motion. Mass conservation. Isobaric coordinates. Natural coordinates. Inertial flow. Geostrophic, cyclostrophic, and gradient balances. Thermal wind. Kinematics of circulation and vorticity. Vorticity dynamics.

Any student who has a disability that may prevent him or her from fully demonstrating his or her abilities should contact me as soon as possible so that accomodations necessary to ensure full participation and educational opportunity can be made.