ATM 316 - Dynamic Meteorology I
Fall 2019

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Course page: [http://www.atmos.albany.edu/facstaff/rfovell/ATM316/](http://www.atmos.albany.edu/facstaff/rfovell/ATM316/)
Credit: 3 hours
Prerequisites: ATM 211, PHY 150/151, MAT 214; MAT 311 (corequisite)
Class meetings: MW 2:45-4:05 PM in ES B13 (Holidays: 9/2, 10/14, 11/27)
Final exam: Tuesday, December 17, 10:30-12:30

Required text: Mid-latitude Atmospheric Dynamics: A First Course, by J. Martin.

Objectives: Dynamic meteorology is where we start applying mathematical tools to understand how and why the atmosphere behaves as it does. In Dynamics I, we identify the fundamental forces (real and apparent) and derive the basic equations for momentum, continuity, and hydrostatic balance to better understand synoptic-scale flows.

Grading (A-E): Homeworks (7-8 assignments): 30%; In-class quizzes: 10%; Midterm exams (tentatively, 10/16 and 11/18): 30%; Final exam: 30%.

General topic list:

- Review of vector calculus.
- Fundamental forces.
- Rotating frame of reference and apparent forces.
- Hydrostatic balance.
- Momentum equation.
- Continuity equation.
- Scale analysis of the equations of motion.
- Pressure and natural coordinates.
- The “thermal wind”.
- Balanced flows and the Rossby number.

Late policy: Late homework and off-time exams are only allowed for University-recognized reasons.

Absences: Class attendance is expected. Unavoidable, anticipated absences should be discussed with the instructor in advance, and arrangements should be made to make up missing work. For
information on medically necessary absences, refer to http://www.albany.edu/health_center/medicalexcuse.shtml

**Academic integrity**: Students are responsible for being familiar, and complying, with the University’s academic integrity standards. Refer to http://www.albany.edu/undergraduate_bulletin/regulations.html for more information.