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Time: MON/WED 1:15-2:35

Office hours (Chris): MON 2:35-3:35; or see me after class for an appointment

Office hours (Alicia): MON/WEDS 10:00-11:00

**Prerequisites for Course:** A ATM410

**Grading Scheme:** Graded

**Aim of Course:**
To develop theoretical concepts that can explain and help understand observed midlatitude weather systems and their development. This will build on the work already completed in ATM 410.

**Course Assessment:**

1. Class exam on Wednesday 7th March 25%
2. Class exam on Wednesday 25th April 25%
3. Problem sets (will be given one week to do these) 10%
4. Final Exam on ?????? May (?????) 40%

**Text Books:**
I will occasionally refer to Holton when appropriate.
Lecture Plan

1. Introduction
   1.1 Basic structures
   1.2 Equations

2. Vorticity and Potential Vorticity Concepts
   2.1 Introduction
   2.2 Quasi-geostrophic theory
   2.3 QG Vorticity and Thermodynamic equations
   2.4 Vorticity thinking
   2.5 Potential Vorticity thinking (QG)
   2.6 Use of Ertel Potential Vorticity
   2.7 Summary of PV thinking

3. Vertical Motion
   3.1 Introduction
   3.2 Omega equation: Vorticity and Thermal advection form
   3.3 Q-Vector form
   3.4 Summary of QG theory

4. Baroclinic Wave Life-Cycles
   4.1 Idealised Baroclinic wave structures
   4.2 A theoretical model for baroclinic instability: The Eady model
   4.3 Nonlinear Baroclinic Wave life-cycles
   4.4 Role of Latent Heat release and Friction on Cyclone Development
   4.5 Review of Papers/Case Studies