Instructor:
Dr. Allison Wing
awing@fsu.edu
Office: 423 Love Building
Office Hours: Monday 11-12:30, Wednesday 11:30-1

Lectures: MWF 1:25 - 2:15 PM, 307 LOV
Recitation Section: Th 2:00 - 3:15 PM, 307 LOV

Prerequisite: MET 3300 with a grade of "C" or better
Corequisites: MAP2302 or MAP3305, MET 4420

Teaching Assistants: Ms. Shannon Shields (srs17j@my.fsu.edu), Mr. John Uehling (jeu17@my.fsu.edu), 303 LOV, Office Hours: Tuesday 9:30-11 (Shannon), Thursday 10:30-12 (John)

Course Summary:
Atmospheric dynamics is the study of motion in the atmosphere. Understanding the basic nature of atmospheric flow is critical to understanding the origin and evolution of all weather and climate phenomena. In this course, students will learn how to apply fundamental principles of mechanics and thermodynamics (e.g., conservation of momentum, mass, and energy) to derive a set of equations governing atmospheric flow. Students will learn how use these governing equations in order to gain insight into the basic nature of atmospheric flow, including the dynamics of vorticity and circulation.

Textbook: (required) An Introduction to Atmospheric Dynamics, 5th Edition, by J. Holton and G. Hakim. Academic Press. 552p.

Grading Policy:
Homework will be assigned on Thursdays and will be due at the start of class the following Thursday. You are permitted to discuss solutions to homework assignments with your classmates, but you must write-up your solutions independently. Copying a classmate's solutions is a breach of the FSU Academic Honor Policy (see below).

The final grade for students enrolled in MET 4301 will be based on the following:

- Exam #1: 20%
- Exam #2: 20%
- Homework Assignments: 30% (The lowest score will be dropped)
- Final Exam: 30%

The final grade for students enrolled in MET 5311 will be based on the following:

- Exam #1: 17.5%
- Exam #2: 17.5%
- Homework Assignments: 25% (The lowest score will be dropped)
- Individual Take-home Assignment: 10%

- Final Exam: 30%

Criteria for Assessment:
The following general guidelines will be used when assessing work submitted by students for a grade, including exams and homework. Specific points-based schemes used to mark individual assignments will be discussed as appropriate at the time of assignment.

Score	Remarks	Criteria
>90%	Outstanding. Grade A	Demonstrates a deep understanding of material. Exhibits a high level of insight and originality.
75-90%	Very Good. Grades B to A-	Demonstrates a sound understanding of material and some level of insight and originality. Few errors.
55-75%	Adequate. Grades C- to B-	Demonstrates a sufficient understanding of material. Moderate errors. Little insight or originality.
40-55%	Poor. Grades D- to D+	Demonstrates little understanding of material. Many errors. No insight or originality.
<40%	Fail. Grade F	Makes an insufficient attempt to complete required work. Demonstrates a serious lack of understanding of material.

Course Content:

1. Introduction/Preliminaries
    - Fluid definitions
    - State variables
    - Review of mathematical tools
    - Kinematics
2. Equations of motion
    - Fundamental forces
    - Frames of reference
    - Conservation of momentum
    - Conservation of mass
    - Conservation of energy
3. Balanced flows and applications
    - Hydrostatic balance
    - Geostrophic balance
    - Gradient wind balance
    - Thermal wind relation
    - Vertical motion
4. Circulation and vorticity
    - Definitions
    - Circulation theorem
    - Vorticity equation
    - Potential vorticity
5. Quasi-geostrophic approximation
    - Scale analysis of synoptic-scale motions

- QG equations
- Basic QG dynamics

Student Responsibilities:
Students are expected to keep up with the class, engage with the course material, and submit assignments by due dates. Students are expected to be engaged and attentive in class, listening quietly and respectfully, but are encouraged to politely interrupt with questions! Students are expected to attend class, including all lectures and recitation sections, and arrive on time. To be successful in this course, students need to complete all required assignments and tests.

Late Assignments and Missed Exams:
Assignments turned in after the stated deadline will not be accepted and will be assessed a score of 0 % unless either a) a prior arrangement was agreed upon between the primary instructor (not the TA) and student , or b) mitigating circumstances permitted an excused absence on the due date of the assignment (see below for university attendance policy). Similarly, make-up exams will not be permitted unless either criterion (a) or (b) is met. Make-up exams, if granted, will not be identical in form or content to the original exams.

Important Dates:
There will be no class on Monday September 3 (Labor Day), Friday October 19 (Homecoming), Monday November 12 (Veterans Day), and Wednesday November 21 - Friday November 23 (Thanksgiving). The tentative dates (subject to change) for exams are as follows: Exam #1 will be given on Thursday October 18 at 2 PM, Exam #2 will be given on Thursday November 15 at 2 PM. Per the University final exam schedule, the Comprehensive Final Exam will be on Friday December 10 from 10:00 AM - 12:00 PM.

University Attendance Policy:
Excused absences include documented illness, deaths in the family and other documented crises, call to active military duty or jury duty, religious holy days, and official University activities. These absences will be accommodated in a way that does not arbitrarily penalize students who have a valid excuse. Consideration will also be given to students whose dependent children experience serious illness.

Academic Honor Policy:
The Florida State University Academic Honor Policy outlines the University's expectations for the integrity of students' academic work, the procedures for resolving alleged violations of those expectations, and the rights and responsibilities of students and faculty members throughout the process. Students are responsible for reading the Academic Honor Policy and for living up to their pledge to ".... be honest and truthful and .... [to] strive for personal and institutional integrity at Florida State University." (Florida State University Academic Honor Policy, found at `http://fda.fsu.edu/Academics/Academic-Honor-Policy`.)

Free Tutoring from FSU:
On-campus tutoring and writing assistance is available for many courses at Florida State University. For more information, visit the Academic Center for Excellence (ACE) Tutoring Services' comprehensive list of on-campus tutoring options - see `http://ace.fsu.edu/tutoring` or contact `tutor@fsu.edu`. High-quality tutoring is available by appointment and

on a walk-in basis. These services are offered by tutors trained to encourage the highest level of individual academic success while upholding personal academic integrity.

Americans with Disabilities Act:
Students with disabilities needing academic accommodation should:
(1) register with and provide documentation to the Student Disability Resource Center; and
(2) bring a letter to the instructor indicating the need for accommodation and what type. This should be done during the first week of class.

This syllabus and other class materials are available in alternative format upon request. For more information about services available to FSU students with disabilities, contact:

Student Disability Resource Center
874 Traditions Way
108 Student Services Building
Florida State University
Tallahassee, FL 32306-4167
(850) 644-9566 (voice)
(850) 644-8504 (TDD)
sdrc@admin.fsu.edu
`http://www.disabilitycenter.fsu.edu/`

Syllabus Change Policy:
Except for changes that substantially affect implementation of the evaluation (grading) statement, this syllabus is a guide for the course and is subject to change with advance notice.

Tentative Course Schedule: (subject to change)

Week	Month	Day	Topic	Reading
1	AUG	27-31	Introduction & Kinematics	HH 1.1, 1.5, 3.3
2	SEP	03	Labor Day, **NO CLASS**	
2	SEP	05-07	Reference frames, Material derivative, Forces	HH 2.1, 1.2
3	SEP	10-14	Hydrostatic balance, Rotating ref. frame	HH 1.3, 1.4, 2.2, 2.4
4	SEP	17-21	Conservation of momentum	HH 2.2, 2.4
5	SEP	24-28	Pressure coord., Continuity eqn., 1st law of thermo.	HH 1.4, 3.1, 2.5, 2.6
6	OCT	01-05	Buoyancy, stability, Rossby #, Geostrophic Balance	HH 3.5, 2.7, 2.4, 3.2
7	OCT	08-12	Thermal wind relation, Balanced flows	HH 2.4, 3.2, 3.4
8	OCT	15-17	Balanced flows, Exam Review	HH 3.2, 3.4, 3.5, 8.4
8	OCT	18	**EXAM #1**	
8	OCT	19	Homecoming, **NO CLASS**	
9	OCT	22-26	Gradient Wind Balance, Circ.& Vort	HH 3.2, 2.2
10	OCT	29-01	Circulation Theorem, PV	HH 4.1, 4.2, 4.4
11	NOV	05-09	Vorticity equation	HH 4.3
12	NOV	12	Veterans Day, **NO CLASS**	
12	NOV	14-16	Exam Review, Potential Vorticity	HH 4.4
12	NOV	15	**EXAM #2**	
13	NOV	19	Recap & Intro to Quasi-geostrophy	HH 6.1
13	NOV	21-23	Thanksgiving, **NO CLASS**	
14	NOV	26-30	Quasi-geostrophic Equations	HH 6.1, 6.2, 6.3, 6.4
15	DEC	03-07	Quasi-geostrophy Uses & Limitations, Final Review	HH 6.5
16	DEC	10	**FINAL EXAM, 10:00 AM - 12:00 PM**	