ATMS 251 MATHEMATICS in METEOROLOGY LAB Spring 2009

DESCRIPTION: A lab to study the basics of mathematics, equations and theories used in meteorology.

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Office Hours: Monday Wednesday 11-11:30 am; Tuesday, Thursday 12:45 – 1:30 pm.
(or by appointment, but walk-in is always welcome)

TEXT: Mathematics in Meteorology Lab Handout (2009), by Alex Huang.

SCHEDULE: 12:45 – 2:25 pm, Wednesday, RBH 238.

Final Exam: 11:30 am – 2 pm, Friday, May 8, 2009.

GRADING: **Lab Assignments: 75%; Classroom participation: 5%;**
and one comprehensive open-book final exam: 20%.

GRADE SCALE (100%): A $\geq$ 93: A-: 92.5-90; B+: 89.5-87; B: 86.5-83; B-: 82.5-80;
C+: 79.5-77; C: 76.5-73; C-: 72.5-70; D+: 69.5-67; D: 66.5-60; F: $\leq$ 59.5.

SPECIAL REMARKS: Each lab assignment is due a week after it is assigned, no late assignment will be accepted. Class attendance is **mandatory**, and you are responsible for the consequence due to your absence. You will receive an F for the semester if you miss more than 3 lab sessions without any justifiable and excusable reasons.

NOTE: This syllabus is subject to any reasonable modifications by the instructor with the consent of students.

Lab Outline

WEEK	DATES	SUBJECT	LAB
1	1/14	Equation of State (Ideal Gas Law)	1
1	**1/19**	**Martin Luther King, Jr's Birthday, NO CLASS**	
2	1/21	Temperature Tendency and Gradient	2
3	1/28	Pressure Tendency and Gradient	3
4	2/4	Continuity Equation (Conservation of Mass)	4
5	2/11	First Law of Thermodynamics (Conservation of Energy)	5
6	2/18	Moisture Variables and Clausius-Clapeyron equation	6
7	2/25	Moisture Equation (Conservation of Moisture)	7
8	3/4	Lapse Rates and Potential Temperature	8
8, 9	**3/7-3/15**	**Spring Break**	
10	3/18	Equations of Motion (Conservation of Momentum)	9
11	3/25	Balanced Winds	10
12	4/1	Hydrostatic Balance and Hypsometric Equation	11
13	4/8	Thermal Wind and Thermal Advection	12
14	4/15	Hodograph	13
15	4/22	Vorticity, Divergence and Vorticity Advection	14
16	4/29	Rossby Waves	15
17	5/8	Final Exam, 11:30 am – 2 pm, Friday	