ATMS 251 MATHEMATICS in METEOROLOGY LAB Spring 2008

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

INSTRUCTOR: **Dr. Huo-Jin (Alex) Huang,** RBH 236B, Dept. of Atmospheric Sciences, UNCA
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Office Hours: Tuesday Thursday 11-11:30 am, 1-1:30 pm; Wednesday 2:30 – 3 pm
(Or by appointment, but walk-in is always welcome)

TEXT: Mathematics in Meteorology Lab Handout (2008), by Alex Huang.

SCHEDULE: 12:45 – 2:25 pm, Wednesday, RBH 238. Final Exam: 11:30-2 pm, Wednesday, 5/7/2008.

GRADING: **Lab Assignments: 80%; and one comprehensive 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: 69.5-60; 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	1/16	Equation of State (Ideal Gas Law)	1
2	1/23	Temperature Tendency and Gradient	2
3	1/30	Pressure Tendency and Gradient	3
4	2/6	Continuity Equation (Conservation of Mass)	4
5	2/13	First Law of Thermodynamics (Conservation of Energy)	5
6	2/20	Moisture Variables and Clausius-Clapeyron equation	6
7	2/27	Moisture Equation (Conservation of Moisture)	7
8, 9	**3/1-3/9**	**Spring Break**	
9	3/12	Lapse Rate and Potential Temperature	8
10	3/19	Equations of Motion (Conservation of Momentum)	9
11	3/26	Balanced Winds	10
12	4/2	Hydrostatic Balance and Hypsometric Equation	11
13	4/9	Thermal Advection and Thermal Wind	12
14	4/16	Vorticity, Divergence and Vorticity Advection	13
15	4/23	Rossby Waves	14
16	**5/7**	**Final Exam, 11:30-2 pm, Wednesday**	