

**DESCRIPTION:** Subjects include weather data collection, fundamental analysis, understanding of weather codes and maps, and weather forecasting procedures and skills.

**INSTRUCTOR:** **Dr. Alex (Huo-Jin) Huang**, RBH 236B, 232-5157 (O)  
e-mail: [ahuang@unca.edu](mailto:ahuang@unca.edu) Web page: <http://facstaff.unca.edu/ahuang>  
Department of Atmospheric Sciences([www.atms.unca.edu](http://www.atms.unca.edu))  
251-6149 (ATMS Office) 251-6440 (Lab) 232-5046 (fax)  
Office Hours: M W F 11:15-11:45 am; T R 1 – 1:30 pm  
(Or by appointment, but walk-in is always welcome)

**TEXT:** Weather Analysis (2007), compiled by Dr. Alex Huang, UNCA.

**REFERENCES:**

1. Weather Maps Handbook (2004) by Tim Vasquez, WeatherGraphics.com.
2. Weather Forecasting Handbook (2002) by Tim Vasquez, WeatherGraphics.com.
3. Weather Maps (1997) by Peter R. Chaston, Chaston Scientific, Inc.
4. TheWeatherPrediction.com

**SCHEDULE:** **1:45 –3 pm**, Tuesday, Thursday, RBH 110.

**EXAMS:** 1st Test: 9/18; 2nd Test: 10/16; 3rd Test: 11/13;  
Final Exam: 11:30 – 2 pm, Monday, 12/10/2007.

**GRADING:** **Assignments: 25%; 3 Tests: 50%; Forecasts: 5%; 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:** Class attendance is strongly recommended. You are solely responsible for the consequences due to your absence. Each assignment is due in a week, unless otherwise indicated. No late assignments will be accepted; no make-up tests will be given. Exception may be granted for uncontrollable circumstances and medical reasons. You have to consult with the instructor at your earliest convenience for exceptions. A significant reduction of your score on your late assignments may be applied. You will receive an F for the semester if you miss more than 5 class periods without any justifiable and excusable reasons. Please let the instructor be aware of any problems and difficulties that you may have, so we can resolve the issues together as early as possible.

The class will be divided into teams, each team should have 3 students. Each team should make team forecasts together. The official weather forecasts will start in October 2007. Each team should make a forecast for the next day at selected stations across the nation before the forecasting deadline. Accuracy of overall forecasts of your team is counted as 5% of your semester grade. It will be a team forecast, therefore each team member should receive the same score for weather forecasts.

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

## ATMS 205 COURSE OUTLINE

Week	Dates	SUBJECT	Chapter
1	8/21	Introduction	0
1	8/23	Coordinates and Geography	1
2	8/28	Asheville Climate	2
2	8/30	Dimensions, Units, and UTC	3
<b>3</b>	<b>9/3</b>	<b>Labor Day, No Class</b>	
3	9/4	Variables and Measurements	4
3	9/6	Surface Observations	5
4	9/11, 9/13	METAR and TAF	6
<b>5</b>	<b>9/18</b>	<b>1<sup>st</sup> Test, Surface Map Analysis</b>	<b>7</b>
5, 6	9/20, 9/25	Surface Map Analysis	7
6, 7	9/27, 10/2	NGM, AVN, MRF, and ETA MOS	8
7	10/4	Rawinsonde Observations	9
<b>8</b>	<b>10/6-10/9</b>	<b>Fall Break</b>	
8	10/11	Rawinsonde Observations	9
<b>9</b>	<b>10/16</b>	<b>2<sup>nd</sup> Test, Upper Air Map Analysis</b>	<b>10</b>
9	10/18	Upper Air Map Analysis	10
10	10/23	850 mb map analysis	10A
10	10/25	700 mb map analysis	10B
11	10/30	500 mb map analysis	10C
11	11/1	300 mb map analysis	10D
12	11/6	Weather Forecasting	11
12	11/8	Thermodynamic Diagram	12
<b>13</b>	<b>11/13</b>	<b>3<sup>rd</sup> Test, Thermodynamic Diagram</b>	<b>12</b>
13	11/15	Thermodynamic Diagram	12
14	11/20	Stability Analysis	12
<b>14</b>	<b>11/21-11/25</b>	<b>Thanksgiving Holidays</b>	
15	11/27	Satellite Meteorology	13
15	11/29	Radar Meteorology	14
<b>16</b>	<b>12/4</b>	<b>Reading day</b>	
<b>17</b>	<b>12/10</b>	<b>Final Exam, 11:30 – 2 pm, Monday</b>	

## Rules for ATMS 205 Weather Forecast Exercise

Fall 2007

**Objective:** To practice weather forecasting and have fun.

**Forecasted period:** Wednesday, Thursday, and Friday of the forecast week.

**Deadline for forecasting:** 10 pm of previous day before forecasted day, i.e., Tuesday, Wednesday, and Thursday.  
No late forecast will be accepted after the deadline.

**Forecasted variables for next day:** Maximum temperature, minimum temperature, and type of weather at Ashville Airport (KAVL), NC (or any selected city in the United States) for the forecasted day from midnight to midnight.

The temperatures are in °F.

Types of weather include snow, rain, no precipitation, and trace. As long as any type of measurable ( $\geq 0.01$ "") precipitation is reported and recorded within the forecasted day, it will be counted as precipitation.

Trace means the precipitation amount is less than 0.01".

**Procedures:** You are encouraged to discuss your forecasts with your teammates. Your team leader should be responsible for sending an e-mail of the forecast to [ahuang@unca.edu](mailto:ahuang@unca.edu) before 8 pm of each forecasting day. **Any e-mail received after 10 pm will be discarded without any exception.**

**The content of e-mail should ONLY have the following:**

**Team's Name (team members' names) , Max: XX, Min: XX, Weather: XXXX for (date).**

### **Scoring:**

It is desirable to have the lowest score. The average of all your forecasting scores will be counted for your final forecast grade.

The score is computed as follows:

Temperature: Square of difference between actual temperature and forecasted temperature.  
The maximum points will be 200 points.

Precipitation: Measurable rain is reported, but no rain or trace is forecasted: 30 points  
No rain is reported, but measurable rain is forecasted: 30 points  
**Trace is reported, but no rain or measurable rain is forecasted: 15 points**  
**No rain is reported, but trace is forecasted: 15 points**

Type of precipitation: Rain falls but snow is forecasted: 20 points.  
Snow falls but rain is forecasted: 20 points.

Example: Alex forecasts a maximum temperature of 56°F and a minimum of 34°F. He also predicts that there will be no rain. Official observations at Asheville Airport, NC for the following day yield a maximum temperature of 54°F and a minimum of 45°F, and there is a trace of rain. Therefore Alex scores as follows:  
4 points for maximum temperature:  $(56 - 54)^2 = 4$ ;  
121 points for minimum temperature:  $(34 - 45)^2 = 121$ ;  
20 points for precipitation, because trace occurs but when no rain or measurable rain is forecasted.  
The total scored points for Alex is 145 ( $= 4 + 121 + 20$ ).

### **Grading:**

A perfect weather forecast will score 0 points, and each missing forecast will automatically have 430 points ( $= 200 + 200 + 30$ ). Each point in your averaged forecast score is 0.01 semester point to be **subtracted** from the total of 5 semester points. For example, Alex's averaged score is 95. He will get  $5 - 95 * 0.01 = 4.05$  semester points for this forecasting exercise.