

# Applied Climatology: Advanced Meteorology & Forecasting

Fall 2005

Dr. Scott Sheridan

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**Welcome** to Applied Climatology! As most of you know, the topic of this course was selected to meet the wishes of those of you that planned to enroll (so now you can't drop without feeling *extremely* guilty!). With that in mind, the course has two ultimate goals:

1. To expand your knowledge of meteorological processes beyond the introduction you receive in Introduction to Meteorology and Principles of Climatology, and
2. To understand how to utilize this knowledge in preparing a meteorological forecast.

Just as the course has two components; so will each class period. The first part will involve lecture material relating to the first of the above points, and the latter part, an interactive map discussion that aims to meet the second goal.

The best forecasters are generally the most experienced, and this is one class where I enthusiastically encourage you to talk with your classmates. The forecasting competition is worth 25 percent of the grade, though if you look at the scoring rules for the course, even if you're the worst forecaster in the class, as long as you continually forecast, you'll get at least a B for that 25 percent. In other words, while I need to reward those who forecast more accurately, the most important thing is participation.

As with all of my courses, I encourage any feedback. I especially welcome it in this class as it represents a new topic for me to teach. Hope you enjoy the semester!

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# BASICS

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Our class **meets** every Wednesday from 3:20 to 5:50 pm. We will be meeting in McGilvrey 403, though I will move most of the lecture components to McGilvrey 307.

My **office** is in McGilvrey 405. My official **office hours** for this course are Mondays and Wednesdays from 1 to 3 pm. I am also generally available most weekdays during normal hours, though if you're coming by outside of office hours, let me know so I can arrange to be around.

**E-mail** ([ssherid1@kent.edu](mailto:ssherid1@kent.edu)) is the best way to reach me; I check it at least several times daily. You may also reach me at my office phone at (67)2-3224.

The course has a **webpage** (<http://sheridan.geog.kent.edu/wx>) that you can access. On it are this syllabus (updated as needed), links, references, and any other notices or advisories. I encourage you to visit it. You will also need to visit our NFC page (<http://sheridan.geog.kent.edu/nfc.html>) for the forecasting contest.

There is one **required book** in this course, Dusan Djuric's *Weather Analysis* (Prentice Hall, 1994). Everything else will be given to you in class.

As most of you know, this is the first time I'm teaching this course. I'm planning things out the way I feel things will work best, but please provide feedback or suggestions if things aren't running smoothly. As you know, we meet once a week. The structure of each meeting will be roughly as follows:

- 3:20 to 4:30: lecture on material of the day
- 4:30 to 4:45: break
- 4:45 to 5:45: map and forecasting discussion

Note that for six weeks during the semester I have listed a map discussion for the Monday before class. This is related to the National Forecasting Contest. I would like all of you to attend, though if this conflicts with your schedule please see me. On weeks where we meet on Monday, the Wednesday class will go shorter.

In accordance with university policy, if you have a **documented disability** and require accommodations to obtain equal access in this course, please contact the instructor at the beginning of the semester or when receiving an assignment for which an accommodation is required. Students with disabilities must verify their eligibility through the Office of the Student Disability Services (SDS) in the Michael Schwartz Student Services Center (672-2972).

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# GRADING

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As this class consists of graduate students and undergraduate students, grading will be done separately for each group. The total number of points earned in this class is 100 for the undergrads, and 125 for the grads. No extra credit will be offered. The breakdown is as follows:

## **Final exam (20)**

The final exam, held during finals week, will include both lecture material and a forecasting practicum. More details will be provided as the semester progresses.

## **Forecast contest (25)**

The forecast contest will be a pivotal component of your course grading. We'll go over the details of the contest at some length in class, but basically for four days a week (M-Th) you need to provide a simple three-component forecast (high temperature, low temperature, and precipitation) for one city. These cities are:

- Charleston, SC (9/12-9/22)
- Alpena, MI (9/26-10/6)
- Victoria, TX (10/10-10/20)
- Williston, ND (10/24-11/3)
- Elkins, WV (11/7-11/17)
- Portland, OR (11/28-12/8)

Your grade for forecasting will be based on the normalized score calculated by the folks at Penn State. The best normalized score (which is the lowest value) will get 25 points; the worst normalized score in class will get 20 points, the grades in between will be assigned on a linear scale. You'll lose 5 points if you get disqualified for a city (meaning more than 2 absences) and if you miss more than two cities you won't be scored at all, meaning you'll get a 0 for this part of the grade (not something I'd recommend). Note that you submit forecasts online, so you do not need to be up at school four days a week, just have access to a computer.

Note that forecasts are (obviously) timely products. Thus there is no tolerance for lateness – we can all forecast yesterday's weather perfectly!

## **Quizzes (15)**

Part of the class requirement will be to read the chapters before class. To keep you honest, there will be three unannounced brief (10 min) quizzes during the semester. If you miss one, you will not be allowed to make it up unless you can provide a documented reason for missing class.

## **Homework (25)**

There will be 5 homework assignments in the semester, as noted. These will generally be associated with map or forecast analyses and interpretation. All assignments are due in by the following class period. Every day a homework assignment is late results in 10% being lost off the grade. No work will be accepted after the final.

### **Map discussions (15)**

As noted above, the second half of each class period will be devoted to map discussions. I will begin these in September, though afterwards you guys will take over. (I'll give out more info on the structure and schedule once I know the final class enrollment numbers.) Starting with September 28<sup>th</sup>, each afternoon we will have two or three map discussions, and you will work in groups of two or three to present them. It's my goal that you will be involved in at least 3 map discussions during the semester.

### **Graduate paper & presentation (25)**

For the grad students, the additional workload consists of identifying a current forecasting problem or issue (look at *Weather and Forecasting* for ideas), and researching the problem. You will need to evaluate at least three articles, and summarize them in a 6-8 page paper and as a presentation to class. The length of the presentation will depend on the number of grad students enrolled, though I expect it to be roughly 20-30 minutes.

### **Attendance and Participation (5)**

This is a class heavily reliant upon discussion and interaction, and so it's quite important you attend. For each unexcused absence after the first two, your final grade will be lowered by 5 points. Your participation in class, though not an official part of the grade, will be used to adjust your grade in borderline situations (which, with the coming of the +/- system, means far more than previously was the case).

### **Policies**

What you turn in must be your own work. Cite references as often as you wish, but any attempt to claim something as your own when it isn't will result in losing all points for the assignment. This applies to working with classmates too: I encourage you guys to talk about class issues with each other, and work together if you're not understanding something fully, but working together does not mean copying!

If you cannot be in class on a given day, or need other accommodation, you'll save a lot of hassle by telling me **beforehand**. Please note that, as stated above, if you miss a quiz or exam without informing me **beforehand**, you will get a zero unless you provide some substantiation for why you were neither able to turn in the exam *nor give me prior notice*.

I make every attempt to return graded material as soon as possible. While I will be happy to discuss any challenges to the grade assigned, please note you will have one week from receipt of the graded work to challenge the grade. After that point, the grade is considered final.

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# SCHEDULE

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<b>AUG</b>	<b>Introduction (Ch. 1, Ch. 3)</b>
<b>31</b>	An overview of the course, and a review of basic processes and maps
<b>SEP</b>	<b>Weather forecasting models and the forecasting competition</b>
<b>7</b>	Please have your forecasting ID name by today!
<b>SEP</b>	<b>Weather forecasting models; Forecasting begins!</b>
<b>14</b>	<i>Charleston, South Carolina forecast discussion Sept 12</i>
<b>SEP</b>	<b>Kinematics (Ch 4)</b>
<b>21</b>	Homework 1 assigned
<b>SEP</b>	<b>Vertical soundings of the atmosphere (Ch 5); student forecast discussions begin</b>
<b>28</b>	<i>Alpena, Michigan discussion Sept 26</i>
<b>OCT</b>	<b>Thermal properties of the troposphere (Ch 6)</b>
<b>5</b>	Homework 2 assigned
<b>OCT</b>	<b>Wind and atmospheric forces (Ch 7)</b>
<b>12</b>	<i>Victoria, Texas discussion Oct 10</i>
<b>OCT</b>	<b>Thermodynamics and Atmospheric profiles (Ch 5)</b>
<b>19</b>	Homework 3 assigned
<b>OCT</b>	<b>Thermodynamics and Atmospheric profiles (Ch 5)</b>
<b>26</b>	<i>Williston, North Dakota discussion Oct 24</i>
<b>NOV</b>	<b>Graduate student presentations</b>
<b>2</b>	Homework 4 assigned
<b>NOV</b>	<b>Radar and Satellite Meteorology (Ch 2)</b>
<b>9</b>	<i>Elkins, West Virginia discussion Nov 7</i>
<b>NOV</b>	<b>Graduate student presentations</b>
<b>16</b>	Homework 5 assigned
<b>NOV</b>	<b>Thanksgiving holiday – no class; no forecasting this week</b>
<b>23</b>	
<b>NOV</b>	<b>Severe weather (Ch 12)</b>
<b>30</b>	<i>Portland, Oregon discussion Nov 28</i>
<b>DEC</b>	<b>Lake weather</b>
<b>7</b>	<i>And course wrap up</i>

**FINAL EXAM: Thursday, December 15, 7:45 AM.**

This schedule is tentative. That is, it may change. This includes changes to exam dates, and what material will be covered on each exam. I will announce any changes in advance, but it is not my responsibility if you aren't aware of the changes because you weren't in class.