Instructor: Dr. Amanda S. Hering
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   Phone: 303.384.2462
   Office: 235 Chauvenet Hall
   Office Hours: T 3:15-4:15 and R 12:15-1:15

Course Schedule: TR 2:00 pm–3:15 pm, in Brown Building W210

Web Page: The username and password for the website will be given in class.
   http://inside.mines.edu/~ahering/math482/practicum

Official Description: This is the capstone course in the Statistics Option. Students will apply statistical principles to data analysis through advanced work, leading to a written report and an oral presentation. Choice of project is arranged between the student and the individual faculty member who will serve as advisor.

Official Prerequisites: MATH 335 and MATH 424

My Course Description: The main objective for a “Statistics Practicum” or “Capstone” course is to apply your knowledge and skills to a brand new problem. This course is not structured in a “lecture” format in which you attend class to listen to lectures. Instead, you will gain practice in problem-solving and in learning how to learn. Students are allowed to work individually or in teams of two for the forecasting competition.

This particular year’s practicum is slightly different. CREW, the Center for Research and Education in Wind (http://crew.colorado.edu/), is sponsoring this year’s course, and it will be comprised of two parts. First, a set of papers will be given on the class website, and each individual will select one of these papers and summarize the paper’s content in oral and written presentations. Undergraduates will only summarize their paper, but graduate students must implement the method (or a modified version thereof) on real wind data. Secondly, all teams will be given a time series of wind speed observations, and teams must work to build a model to forecast these wind speeds. These models will be run on a withheld set of wind speeds, and the teams with the best forecasts will win monetary prizes. During the class’ two-hour final exam time slot, teams will present short summaries of their wind forecasting models, and the winners of the competition will be announced.

To facilitate students in completing both of these tasks, during approximately the first month of the course, lectures will be given over assigned readings in basic time series, forecasting, and general wind energy. However, class attendance is required throughout
the semester. I will be available during the class period to discuss problems with individual teams, and teams are guaranteed to have a conflict-free meeting time twice a week.

**Course Objectives:** Sponsored by the Center for Research and Education in Wind (http://crew.colorado.edu/), in this course you will:

- learn about applications of statistics to wind forecasting;
- learn about common forecasting techniques;
- work with real wind data;
- build models to forecast wind speed/power;
- evaluate model forecasts;
- participate in a short-term wind forecasting competition; and
- present your work to wind industry professionals.


Can be accessed for free through the university at the following website:


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**Course Grade:** Your grade for the course will be based on the following (relative weights given in percentage):

- **Attendance/Participation (20%)**: Attendance will be taken every class day. There will also be periodic simple assignments given in class that students will be expected to complete.

- **Paper Report (10%)**: A written report that summarizes the important components of the paper that was read.

- **Paper Presentation (30%)**: An oral presentation designed to “teach” the rest of the class about the content of the paper that your team read and/or implemented. Examples should be given.
• **Model Report (15%)**: A written report that explains the forecasting model in detail along with an R function that will produce forecasts is required.

• **Model Presentation (25%)**: A short presentation detailing the salient parts of your wind forecasting model, along with diagnostics and behavior of the model, must be given during the 2-hour final exam time period.

**Oral Presentations**: Oral presentations must be professional and high-quality as they will be recorded and made available to CREW member companies on the class website.

**Forecasting Competition**: You can still make an “A” in the course even if your forecasting model does not perform well. As long as your written and oral presentations of the model are thorough, clear, and good thought was put into building the model, there is no penalty for a poor model. There will be an overall forecast competition winner and then one winner amongst only undergraduate teams and one winner amongst only graduate teams. The overall winner may be either an undergrad or a grad team. Prizes for the 3 categories are as follows:

- Overall: $1000
- Undergraduate: $250
- Graduate: $250

Prize money is per team, so if a team of two individuals wins in the Overall category, then they must split the prize money equally. Winners will be invited to present their models at the poster session of the CREW symposium, typically held in August 2013, and mileage for traveling to the conference (from Golden) will be provided.

The following letter grades are guaranteed:

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<td>100-90%</td>
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<td>79-70%</td>
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**Notes**: A few more things...

- More information on the paper summary & forecasting competition will be given.
- Check the website frequently for updates.
- I would like to know about any particular academic difficulties or personal problems that are affecting a student’s performance.