

Meteorology 5803 (formerly 5463)

Advanced Forecasting Techniques

Instructor: Dr. Charles A. Doswell III

General Guidelines

This class will be a **challenging** class, and operates under the assumption that you are [serious graduate students](#). Therefore, I'll endeavor to treat you with dignity and respect. If you feel you're being mistreated in some way, please let me know how you feel! In exchange for being treated as people worthy of respect, I have certain expectations, and policies.

I don't take attendance in class - I'm assuming that you can make your own decisions about class attendance and how it might influence your performance. I expect you to arrive on time for class and I'll dismiss the class on time. I don't want food or drink in the classroom, and if you engage in disruptive behavior (e.g., having a conversation or talking on your cell phone during a lecture), you'll be asked to leave. Clearly, you're responsible for anything presented or assigned in class, including homework assignments. Should you miss something, **it's your responsibility** to obtain what you missed - through me or through your classmates.

Each class session will usually have two parts: a **lecture**, perhaps at the start of class, and a **map discussion** (see below). Given the limited time in class, those who are leading the map discussion should be prepared *prior* to the beginning of class - there will be no time available for preparation *during* the class.

Grading

Grades are determined by averaging scores and weighting the average in each of the following categories, according to the following:

1. homework - 30%
2. exams and quizzes - 25% (80% exams + 20% quizzes)

3. class participation - 25%
4. term project - 20%

Extra credit problems will be offered occasionally - these count as a "free" homework problem (any points earned will be added to the total for homework, but will *not* be included in the denominator when averaging the homework scores). Extra credit problems will be challenging and subjected to rigorous grading (including the "core dumping" policy described below). They'll be due no later than the second-to-last day of class, but can be turned in anytime *prior* to that.

Since this is a graduate-level course, my policy regarding grades is simple: you will have earned any grade you get. Class attendance will not have any direct impact on your scores, but missing class and thereby doing badly on exams and homework (and, of course, class participation!) is going to result in a poor grade! I'll inform any student in danger of getting a "C" or worse about their situation as soon as possible - if you don't hear from me, it's safe to assume that you're performing at a "B" level or better.

NOTE: a **standard policy** I'll apply in grading your answers to test questions, quizzes, homework, and the term project concerns the "core dump" (putting out quasi-random bits of information in hopes that one or more of them is relevant to the question). If I've deemed that you're core-dumping in response to a question, you'll receive a *negative* score for that question. If the question is worth, say, 20 points, you could receive *up to* -20 points, depending on how much you dump on me. On the other hand, if you truly don't know the answer and simply say "I don't know", rather than core dumping, you'll get 10% of the total score for that question (except for extra-credit problems).

Some "curving" of the grades can be expected, but if no one is doing well enough overall to deserve an "A", the top of the curve might be set at a lower level. I'll give the benefit of any doubt to those who participate consistently, and to those who show improvement.

I'll make an attempt to provide "answers" to all homework and exams/quizzes. Some open-ended questions may not have simple answers, of course, but I'll suggest what I was looking for in such cases. I'm much less concerned with whether or not you got what I was looking for in any answer than I am about the **process** by which you arrived at your answer. Obviously, that means you should be careful to show your work and/or explain clearly from where your answers came.

If reading assignments are made, I expect them to be undertaken right away. Pop quizzes may well be administered if I have any doubts about the accomplishment of the reading assignments.



Homework

I like to give homework problems. Since I don't waste my class time with deriving equations, you'll be expected to know the derivations - if not, you'll be working on them at home. Some homework will be my most common way of "answering" your questions during class. My expectation is that you should begin to learn how to answer your own questions whenever possible. If you *don't* ask questions during class (to avoid getting homework, or for any other reason), you'll be getting a low class participation score (see below). I don't require that homework be done on a computer or whatever, but it will be a helpful skill to learn how to do so. Handwritten homework will be acceptable, but it should be neat and legible; I don't intend to work hard to read your chicken scratches - if I can't read something, I'll consider it *missing* and your score will reflect that absence. I'll neither encourage nor discourage working together on homework, but working on homework together with your classmates will *not* be considered cheating. It's up to **you** to decide how much of your work should be your own; if you depend on someone else to get you through the homework, you probably will do poorly whenever you have to depend on what you've learned (e.g., exams). Going to someone or some source *outside* of the class for help (including the Internet), however, *will* be considered academic misconduct.

Exams and quizzes

There will be three scheduled exams:

1. an in-class, closed-book, one-hour written exam;
2. a take-home exam (likely over a weekend) to be done strictly on your own (no in-class cooperation); and

3. a 30 minute oral exam.

Don't bother asking me what's going to be covered on each exam, or what you're responsible for; you *always are responsible for everything that has been covered or assigned* -- and expected to be able to *use* what has been discussed in class to solve problems and answer questions.

Make-ups for exams can be arranged, and there will be no problem with make-ups, especially if you have let me know you are going to be absent *beforehand*. Should you have an unanticipated problem that forces you to miss an exam without letting me know in advance, be prepared to *document* the reason why you were absent. I will **not** allow make-ups in case of undocumented absences from exams.

Unannounced quizzes will be given whenever I feel like it, but especially when I think assignments are not being done or folks are skipping out on class. *No make-ups* will be offered for missed quizzes.

Unless someone is foolish enough to insist on having a final exam (I do **not** recommend insisting on it!), the term project will substitute for the final.

Class participation

My lecture style involves asking a lot of questions during the class. I expect everyone to chime in and attempt to answer the questions. **Being wrong is nowhere near as bad for your grade as being silent.** Be aware that if you don't know the answer to a question and are trying to be inconspicuous to avoid being called upon, that makes you conspicuous. If you have questions or think I've made a mistake, I expect you to have your hand in the air asking your question or making your critical comment. During map discussions (see below), when you're not leading the discussion, I expect you to be able to ask hard questions and make critical comments. If you're leading the discussion and receive a critical comment, I expect you to react constructively, not defensively. This is a graduate class in a scientific subject, and being able to criticize and to accept criticism (both constructively) is an important capability.

Term Project

You'll do a term project in this course, preferably one of your own choosing. You must get my approval to begin the project. It's not a good strategy to begin your term project just before the end of the semester. You'll be far better off if you approach the term project by doing a little bit each week, instead of trying to cram it all in at the end - but

how you do it is your choice. When you've completed the project, a written report is expected; no term project report will be accepted that

- is handwritten, or
- exceeds 15 pages of double-spaced typed text (**not** including references and captions), or
- includes more than 10 figures

The project will be due on the *second-to-last day of class*, and that deadline will be enforced in the standard way (see *deadlines*, below).

The criteria for grading the project report (each accounting for 25% of the total) are:

1. Creativity and originality
2. Level of Effort
3. Quality of the report
4. Quality of the science

If you have no clue about what to do for a project after six weeks of class, I'll suggest something, but you should come to me during office hours to discuss it before I make a topic assignment. If you have a topic in mind, please come to discuss it with me; I'll have to approve your topic before you can get credit for it.

Assignment deadlines

Unless you have a really good excuse (and are prepared to document it), no assignments (take-home exams, homework, term projects, extra credit, etc.) will be accepted that are *more than 3 hours overdue* (in such cases, your score will be a zero) by *my* clock.

Generally, assignments will be due at the end of class on a class day (MWF);

- assignments turned in 1- 60 min late (by *my* timekeeping) will have a 20% deduction prior to scoring (if your score is 100%, it will start at 80%),
- assignments 61-120 min late will have a 40% deduction,
- assignments 121-180 min late will have a 60% deduction.

Note that if you habitually miss class on days when assignments are due just so you can turn in the assignment just before class ends, I'm likely to give "pop" quizzes on such days.



Map Discussions

Map discussions are a *very* important part of the course, so they should be prepared for and given as professionally as possible. What I consider to be a map discussion is *not* a simple presentation describing the features on weather charts and diagrams. Such simple descriptions I consider to be *briefings*, not discussions. If you're slipping into a briefing rather than a discussion, I'll stop you and let you know that it's not acceptable. **In a genuine map discussion, critical thinking is employed both by the presenter(s) and the audience of peers.** Participation in the map discussions is **not** limited to those times when a student is *leading* the discussion (see below); failing to become *involved* in the map discussions on a regular basis will result in a low score for class participation (recall it is 25% of your grade!), no matter what else you do in class.

Depending on the class size, there may be one or two persons leading the map discussion. Every student will be given the chance to lead the discussion several times during the semester. You will have a schedule for which days you will be leading the discussion. This schedule will be followed without exception, unless an emergency demands your absence. In such a case, you'll be responsible for doing your best to (a) inform me of the situation, and (b) arrange for a substitute within your class.

Map discussions should have some sort of focus, and I look favorably on discussions that explore topics from the recent lecture material. I also look favorably on tough, pointed questions from those class members *not* leading the discussion. The object is to learn, and to get used to thinking on your feet. And I look favorably on insightful and well-reasoned presentations from the discussion leaders, including good answers to any tough questions from the "audience."

A forecast may or may not be an outcome of the map discussions. If a forecast is made, everyone in class will contribute their forecast (including the instructor!) and I expect a brief post-mortem evaluation of the forecasts at the next map discussion.

Sit-ins Policy

Generally, I do **not** permit sit-ins (those sitting in on the class, but not taking it for credit). Any benefits to being in the course accrue only to those who *participate*; passive observations are not very useful and represent a distraction to me and to the other class members. The only circumstances in which I permit sit-ins will be where I have obtained their prior agreement to *participate fully* in the class, including the examinations, homework, map discussions, and class participation in general. The only allowable exceptions to this agreement about full participation are the term project and the last, oral exam. I'll grade any contributions from sit-ins as if they were taking the class for credit, but obviously the grades will not count.

Textbooks

The textbook for the course is:

- Martin, J.E. (2006): *Midlatitude Atmospheric Dynamics: A First Course*

Other *recommended* textbooks:

- Saucier, W.J. (1955): *Principles of Meteorological Analysis* (I believe this can be ordered from Dover Reprints)
- Holton, J.R. (1992): *An Introduction to Dynamic Meteorology* (3rd Ed.)

Departmental Seminars

I'll expect all of us to attend the Tuesday afternoon SoM Departmental Seminars regularly. Following these seminars, we'll take some time on Wednesday for a critical discussion of them. This is a useful exercise in critical thinking, so as usual, I'll expect lots of participation from everyone in these discussions.

Office Hours

My OU SoM office hours will be announced on the first day of class, and I'll be available there for at least 3 hours per week ... more if needed. If, for some reason, you're unable to take advantage of my scheduled office hours, please let me know and I'll make whatever arrangements are necessary.

My office is on the 3rd floor of the Norman Weather Center, room 3104. My e-mail address is <[cdoswell % hoth.gcn.ou.edu](mailto:cdoswell%hoth.gcn.ou.edu)> or <[cdoswell % earthlink.net](mailto:cdoswell%earthlink.net)>. My office phone number is 325-6093 and cell phone is 834-2404.

Notices:

Any student in this course who has a disability that may prevent him or her from fully demonstrating his or her abilities should contact me personally as soon as possible so we can discuss accommodations necessary to ensure full participation and facilitate your education opportunities.

It is the policy of the University to excuse absences of students that result from religious observances and to provide without penalty for the rescheduling of examinations and additional required classwork that may fall on religious holidays.

Anything that appears to be cheating (or other forms of academic misconduct) will not be tolerated. Apparent misconduct will be dealt with by immediate referral of the circumstances through the regular University channels.