MET1010
Intro to the Atmosphere

Schedule for first day:
- **Everyone must sign in first day.**
- **Athletes must sign in at beginning of every class.**
- **Examine course syllabus and semester calendar**
- **Office hours**
- **Discuss how to study and scientific method**
- **Overview of textbook**

Dr. Jon Ahlquist <ahlquist@met.fsu.edu>
Office: 421 Love Bldg, 644-1558; Lab: 308 Love, 644-7511
TA: Mr. Will Sexton <wsexton@met.fsu.edu>
Office: 501B Love Bldg

Syllabus & Calendar

- Distribute syllabus and calendar
- These will also be posted at class Web site: http://ahlquist.met.fsu.edu
- Important: Get an email account by going to http://www.ucs.fsu.edu; click on "Get started"
- I'll be sending you lots of email with answers to student questions and other information.
- Your email account will be needed to access your MET1010 test scores at http://campus.fsu.edu

Office Hours

- Dr. Ahlquist
  - MWF 12:30-1:10, Tues & Thurs 11:00-12:15
  - By appointment (ask after class or send email)
  - Check office (421 Love) or lab (308 Love). If more than a few attend, check conference room (402 Love) and 5th floor classroom in Love Bldg.
- Teaching assistant: Mr. Will Sexton, 501B Love
- You should make frequent use of office hours.
- Typically, students in the top quarter of the class visit the most, but everybody is welcome and should come in for office hours.

Visiting a professor may seem intimidating

Professors may not seem very sensitive

Don't be shy about office hours. Professors want to help.

Dr. Jon Ahlquist
- At FSU since 1981
- PhD: meteorology
- MS: planetary science
- BA: physics & math
- Hobbies: violin, viola, singing, computers, puzzles, running
- Family: wife and two daughters

Textbook & other references

- Our textbook is the most common "met" book in the country.
- Publisher's Web site: http://now.brookscole.com/ahrens8
- Other good references (about $20 each)
  - *The Weather Book* by Jack Williams
  - *The Audubon Society Field Guide to North American Weather* by David Ludlum
- Internet searches are good, but any idiot can post a Web page, so beware. Government sources are more reliable. Example: At http://www.google.com, enter: tornado site:gov
  The extra "site:gov" will restrict the search to Web sites whose addresses end in "gov," which are government Web sites.
- Keep your college books at end of semester; don't sell them.
  - If you sell them, you'll get a pittance.
  - Start personal library to maintain your college investment.
  - Our textbook will answer almost all your weather questions.

How to study

- Read handout on how to study at http://ahlquist.met.fsu.edu
- YOU have to study. The instructor can't do it for you.
- To help you, I'll post lecture notes at the course Web site. This is by no means a substitute for attending class and reading the text.
- Attend ALL classes, and read ALL chapters.
- Analogy: Being on a sports team
  - You must attend every practice and work hard
  - The coach won't let you sit on the sidelines for practices if you say, "I'll just watch." (This is like students who just watch a lecture.)
  - The coach won't tolerate athletes who say, "I'll miss a lot of practices, but I'll be there for the game (exam)."

College Courses Are Typically Much Harder Than High School Courses

- General rule for college courses: Two hours of study outside of class for each hour in class.
- 15 credits should involve roughly 30 hours of work per week outside of class. Total = 45 hrs/week. That is why someone taking 15 credits is called a full-time student.
- Some say: GPA you want = hours of study per credit, so 4 hours study per credit for A, 3 for B, etc.
- High school AP class meets 5 days per week for a year to equal a college course that meets 3 days per week for a semester. So college course covers same material as AP course in ¼ of meeting sessions.

College Courses Are Hard (cont.)

- Don't come to me the last week of class and say, "I'll lose my Bright Futures scholarship if I don't raise my grade from a C or D to a B. What can I do?"
- By then, it is too late. There is no "extra credit " work for this class. Start working steadily NOW in all your classes.
- Having a job while being a full-time student
  - Many people can handle a job with up to 15 hr/week if they plan carefully and work hard
  - Many full-time students who try to work to work 30 hrs/week or more flunk out of school. It is too much!

Honors Section of MET1010

- For the few of you in the Honors Section:
  - Do the same work as those in the regular section
  - Receive a grade based on that work using the same grading scale as applies to the class in general
  - In addition, complete a satisfactory project developed in discussion with the professor.
- The project is typically a report, but it can be something else.
  - One student created a piece of art involving weather concepts and wrote a report discussing those concepts
- If the project becomes too much to complete, I can transfer you to the regular section at the end of term.

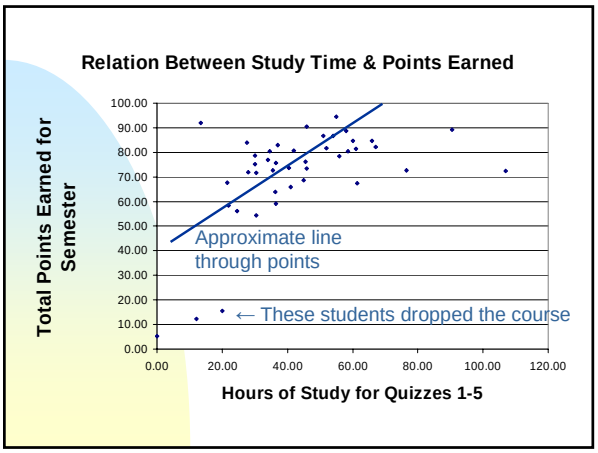
Progress in science is often made by following the scientific method

1. Observe something
2. Get an idea (theory) how it works
3. Does theory explain observation?
4. Does theory predict something that can be checked?

- This list is idealized. Sometimes one gets an idea (theory) first and then collects observations to test the theory.
- Other times, one seeks to determine the extent of a relationship, not just yes or no.
- The scientific method commonly taught in public school is more rigid than what is used in practice.

Scientific method: Example 1

- Hypothesis: Studying improves test scores.
- Get data: Students reported study hours for MET2700 during Fall 2000.
- Compare number of study hours against total points earned.
- See graph on next slide.



Relation between hours of study and total points earned

- General trend: study correlates with higher scores
- Significant variations, though.
  - Someone who spent less than 20 hrs studying earned one of the top scores
  - Someone who studied over 100 hrs earned a medium score
  - Much of that variation can be explained by differences in mastery of earlier courses.
  - Remainder due to fact that some people learn faster than others.

Example 2: Relation between attendance & course success

- Unannounced, easy quizzes given for MET1010, spring 2000, so quiz scores basically measure attendance
- Compare attendance (quiz total) with total points earned at date of compiling table

Quiz score	# people	Avg of total points (tests + quizzes)
5	25	34.2
4	22	30.3
3	13	27.5
2	11	28.2
1	18	24.3
0	13	17.4

Relation between attendance & course success (continued)

Previous table shows:

- High correlation between attendance (as measured by quiz scores) and total points earned in course.
- In particular, average total points for those with good attendance (quiz score = 5) was at about 50% higher than for those with poor attendance (quiz score 1 or less)
- Similar experience in a recent MET1010 class. One day when attendance was low, I took attendance. 2/3 of A and B students were there, 1/2 of C students were there, and 1/3 of D and F students were there.

Theories to explain relation between attendance and points earned

- Theory 1: Those attending class learn more.
- Theory 2: Diligent students are more likely to attend class.
- Truth is probably a combination of the two.
- How could we design a procedure to determine how important each factor is? (We probably would not want to do this, though, because people's grades would probably suffer.)

Testing a theory

- Does a theory explain the observations?
- Does the theory predict something not yet observed? If so, can we observe it?
- "The exception proves the rule." means "The exception probes the rule." Old meaning of "prove" is probe. Example: A "proving grounds" is a test site.

Choosing between competing theories: Occam's Razor

- William of Occam: 14th century logician and friar who lived in Occam (Ockham), a village in the county of Surrey on the SW side of London
- He advocated a principle for choosing between competing theories: "Pluralitas non est ponenda sine necessitate" (Pluralities are not placed without necessity.)

Modern equivalent:
KISS = Keep It Simple, Stupid
(or Keep it Short and Simple)

Deduction versus Induction

- Deduction applies general principles to draw particular conclusions. Example: Weather forecasting computer programs solve general equations involving forces and energy sources to compute pressure, temperature, wind, rainfall, etc., to estimate the particular weather for tomorrow.
- Induction infers a general result from a few specific examples. Example: Studying a sample of hurricanes provides a basis for conclusions that one expects to apply to all hurricanes.

Structure of our textbook

Every chapter is laid out in the same way.

- On first 2 pages: engaging photo, chapter contents, and motivational paragraphs
- Text clearly marked into sections. Some sections even have summaries, such as the "Brief Review" on page 8.
- All figures are in color.
- At the end of each chapter:
  - Chapter summary
  - Key terms
  - Questions for Review (straightforward)
  - Questions for Thought (harder, require reasoning)
  - Problems and Exercises (often projects &/or involve math)
  - Questions for Exploration (Blue Skies CD and Internet)
  - Reference to publisher's Web site, http://now.brookscole.com/ahrens8 (Ahrens, 8th edition)

Our textbook (continued)

- Read **Chapter Summary** before reading chapter.
- Read chapter several times over several days in increasing levels of depth.
- Don't worry about **Key Terms** that are not words you'll see in the newspaper or in weather reports. Course Web site has a list of selected key terms. Prospective meteorology majors should learn all the key terms.
- **Questions for Review** test your reading recall. Do these as part of your studying.
- **Questions for Thought** require thought. I'll give you a list of the ones to do.

Our textbook (continued)

- **Problems and Exercises** are often hard. Prospective meteorology majors should try some. Otherwise, skip them.
- **Questions for Exploration** can be useful. They point you to the publisher's Web site (http://now.brookscole.com/ahrens8) and to other Web resources that go beyond what we'll talk about in class.