About METR 3113

Contents

Who, When, What

The instructor is Prof. Brian Fiedler, bfiedler@ou.edu Office is at NWC 5636.

METR 3113 *Atmospheric Dynamics 1* meets Monday and Wednesday at 10am NWC 1350. *Class does not meet on Friday.*

There are 20 hourse of video lectures available for download at http://gentry.metr.ou.edu/metrlect. You can also access the video lectures for streaming at METR3113 on Vimeo. The time released by canceling class on Friday (total ~20 hours, including commute time) should allow you to adjust your schedules to watch the video lectures.

Goal Statement

The goal of METR 3113 is to develop the student's abilities in using knowledge of the fundamental forces in the atmosphere: the pressure gradient force, gravity and the Coriolis force. Analysis of atmospheric motion caused by these forces is done without recourse to the analysis of the spatial derivative of continuous vector fields. This means vector calculus (i.e., the del operator) is minimally employed. Aspects of fluid mechanics, for example changes in the pressure field resulting from "colliding parcels", is reserved for later courses.

Course Content

1. Units of measurement.
2. Dimensions, dimensional homogeneity and dimensional analysis.
3. Vectors and orientational invariance. Vector products.
4. Elementary functions and elementary differential equations.
5. Review of elementary Newtonian mechanics.
6. The equation of motion in one-dimension as a differential equation, and its solution. Conservation of energy.
7. Pressure. The pressure gradient force. Bernoulli equation.
8. The buoyancy force. Buoyancy driven motion.
9. Choosing a coordinate system.
10. Polar coordinates.
11. Non-inertial reference frames. Tidal forces. Rotating reference frames, the Coriolis force.
12. The gradient wind.
13. Angular momentum in the presence of a Coriolis force. Vorticity.
14. The thermal wind.

Textbook and Video Lectures

The textbook is provided as a free PDf file, available for download at TextBook.

Video lectures are available for download http://gentry.metr.ou.edu/metrlect and for streaming at METR3113 on Vimeo.

Grading

The grade for the course is usually determined by a weighted average of JiTT scores, Test scores, Writing Assigments, and Final Exam, The total score for the course is a weighted average of these scores:

- 60%: 3 test scores, with the JiTT score replacing the lowest test score, if it is greater.
- 30%: Final Exam
- 10%: OtherPoints, which are Writing Assignments **AND/OR** Dynamics Carols **AND/OR** Classroom Presentations.

Alternatively, the total score is based 100% on the Final Exam, if that total score is higher than the above method. (Only very rarely is that so).

No calculators are allowed in tests or exams.

The final letter grade is computed from the total score t with:

- A: $t \geq 80$.
- B: $65. \leq t < 80$.
- C: $50. \leq t < 65$.
- D: $35. \leq t < 50$.
- F: $t < 35$.

JiTT

JiTT stands for Just-in-Time Teaching, which you can read about What is JiTT. But JiTT also means something simpler --JiTTs are the online questions that must be answered by 8am on the day of a lecture. In general, two new questions are posted by noon after a lecture, which generally gives students at least 44 hours to read and answer the two new questions.

Students may answer JiTT questions and check their grades at the secure student record page Students will need both the *class password* to view the page, and their *personal METR 3113 password* to interact with it. (Also, more details about the grading policy can be viewed in the above link). These passwords were distributed on August 18. Your personal METR 3113 password is NOT your OU password.

This will expand as the semester progresses: 2011 Graded JiTT questions.

Similar JiTT summaries are available for previous years at http://12characters.net/old3113/. Those summaries should be helpful to you as you attempt to answer this year's questions.

Students are NOT required to work alone on the JiTT problems. It is not realistic to enforce that; only the honest people would suffer. So share the joy of your scientific and analytic inquiry with your peers!

Important Dates for Graded Items

- Monday 9/26: Test #1 (moved from original date of Monday 9/27)
- Monday 10/24: Test #2
- Monday 11/21: Test #3
- Friday 12/16: Final Exam, 8am-10am.

Scheduled Meeting Times

Type	Time	Days	Where	Date Range	Schedule Type	Instructors
Class	10:00 am - 10:50 am	MWF	National Weather Center 1350	Aug 22, 2011 - Dec 09, 2011	Lecture	Brian H. Fiedler (P)
Final Exam	8:00 am - 10:00 am	F	National Weather Center 1350	Dec 16, 2011 - Dec 16, 2011	Lecture	Brian H. Fiedler (P)

Office Hours

Office hours will be 10:00am - 11:00am on Friday in my office NWC 5636. Or you can try your luck anytime. Or you may e-mail me to schedule an appointment.

Passwords

On August 18, 2010. This password email was sent to all enrolled students.

Required Disability Statement

What statement is the most common statement on OU syllabi, and that a typical OU student may see 40 times before graduating?

1. "The University of Oklahoma is committed to providing reasonable accommodation for all students with disabilities. Students with disabilities who require accommodations in this course are requested to speak with the professor as early in the semester as possible. Students with disabilities must be registered with the Office of Disability Services prior to receiving accommodations in this course. The Office of Disability Services is located in Goddard Health Center, Suite 166, phone 405/325-3852 or fax only 405/325-4173."
2. "If I have seen further, it is by standing on the shoulders of giants." - Isaac Newton
3. "Everything should be made as simple as possible, but not simpler." - Albert Einstein

Answer: 1.

AboutMETR3113 (last edited 2011-08-06 15:17:23 by BrianFiedler)