FUNDAMENTALS OF ATMOSPHERIC SCIENCE

COURSE: ................................................................. EAS B9014
ROOM/TIME: ............................................................. MR 107, M/W 2-3:15
INSTRUCTOR: ................................................................. James Booth
OFFICE: ................................................................. Marshak 930
OFFICE HOURS: ............................................................ After class and/or by appmt.
PHONE: ................................................................. 212-650-6471
EMAIL: ................................................................. jbooth@ccny.cuny.edu

http://www.sci.ccny.cuny.edu/~jfbooth/EAS0309

Prerequisites: Calculus I, II, III and Physics 20700 and 20800

Description: An introductory survey to the field of Atmospheric Science, with special attention given to thermodynamics and dynamics. Atmospheric science is a complex field of study that builds on physics, chemistry and math, hence the prerequisites. This course covers rudimentary components of radiation, chemistry and cloud microphysics and in depth details of thermodynamics and dynamics. This course is intended to provide an introductions and solid foundation for students interested in atmospheric physics.

Grading:

<table>
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<tr>
<th>Component</th>
<th>Percentage</th>
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<tr>
<td>1 Final Exam.</td>
<td>20%</td>
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<tr>
<td>6 Mini-exams.</td>
<td>60%</td>
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<tr>
<td>Term Paper</td>
<td>20%</td>
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Students will write a term paper, linking a topic learned in class with either (a) their own research or (b) an atmospheric phenomena of the student’s choice. The paper is due at the end of the semester. However, there are multiple milestones related to the paper that the student must reach throughout the course. See website for dates of milestones.

Course Outline (see webpage for precise dates and book pages):

- Week 1: Overview of atmospheric science and the climate system.
- Weeks 2-5: Thermodynamics
- Weeks 6-8: Radiation, Chemistry, Cloud Microphysics
- Weeks 9-14: Dynamics and Weather systems.

Expectations/Rules: Be respectful of your fellow students and the professor; do not act out in a way that prevents others from learning or dissuades others from participating.

Plagiarism, dishonesty, or cheating in any portion of the work required for this course will be punished according to City College regulations. Read more about the CCNY Policy on Academic integrity at:
http://www1.ccny.cuny.edu/upload/academicintegrity.pdf

Learning Outcomes:

1. Describe atmospheric composition and structure (temperature, pressure, wind…), and distill the phenomena into categories based on spatial and temporal scales.
2. Apply atmospheric thermodynamic principles to analyze air motions.
3. Use moist thermodynamics to understand saturated ascent.
4. Understand atmospheric dynamic principles (e.g., geostrophic and thermal wind) and apply them to explain atmospheric general circulations.
5. Apply knowledge learned in this class to explain common weather phenomena, particularly extratropical cyclones, hurricanes, and convective storms.