# FUNDAMENTALS OF ATMOSPHERIC SCIENCE, FALL 2016

EES 79903
ROOM/TIME: ..... MR 044, M/W 2-3:15
INSTRUCTOR: ..... James Booth
OFFICE: ..... Marshak 927
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## http://www.sci.ccny.cuny.edu/~jfbooth/EAS0309

**Prerequisites**: Math 20300 and Physics 20700, or equivalent.
**Textbook (required)**: *Atmospheric Science: An Introductory Survey* (2nd edition), by John M. Wallace and Peter V. Hobbs, published by Academic Press
**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.

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| **Grading:** | 4 Exams (3 X 15%, last one: 30%) | 75% |
| | 1 Term paper covering recent advances in Atmospheric Science | 25% |
| | Class Participation | 5% |

*Notes: One homework, or the class participation can be dropped. No final exam.*
*Graduate students: homework is replaced by special assignment, see additional handout.*

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

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| Week 1: | Overview of atmospheric science and the climate system. |
| Weeks 2-5: | Thermodynamics |
| Weeks 6-8: | 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.