MAR 541 – Foundations of Atmospheric Sciences I
Instructor: Daniel Knopf

This course is intended to introduce graduate majors to the foundations in the atmospheric sciences necessary for future, more specialized courses. This course will cover atmospheric thermodynamics to assess adiabatic and saturated adiabatic processes. The fundamentals of radiative transfer such as blackbody radiation, scattering, absorption, and emission by molecules and particles will be discussed. The course will cover tropospheric and stratospheric chemistry with its subsequent effects on air pollution and ozone chemistry. Cloud microphysics involving cloud condensation nuclei and ice nuclei and their effect on precipitation will be addressed.

Learning Objectives:
- Know the foundations in the atmospheric sciences
- Explain atmospheric thermodynamics, radiative transfer, tropospheric and stratospheric chemistry, and cloud microphysics


Grading:
- 2 Class exams each 20%
- Final Exam 30%
- Homework 30%

It is planned to cover the following material in the textbook, plus material from other sources.

Chapter 3. Atmospheric Thermodynamics
Chapter 4. Radiative Transfer
Chapter 5. Atmospheric Chemistry
Chapter 6. Cloud Microphysics
Class Protocol: Cell Phone and electronic device have to be turned off during classes. No digital recording of the classes is allowed without permission of instructor.

Class Resources: Additional information is provided using Blackboard.

ACADEMIC INTEGRITY STATEMENT:
Each student must pursue his or her academic goals honestly and be personally accountable for all submitted work. Representing another person’s work as your own is always wrong. Faculty are required to report any suspected instance of academic dishonesty to the Academic Judiciary. For more comprehensive information on academic integrity, including categories of academic dishonesty, please refer to the academic judiciary website at http://www.stonybrook.edu/uaa/academicjudiciary/

CRITICAL INCIDENT MANAGEMENT:
Stony Brook University expects students to respect the rights, privileges, and property of other people. Faculty are required to report to the Office of Judicial Affairs any disruptive behavior that interrupts their ability to teach, compromises the safety of the learning environment, and/or inhibits students’ ability to learn.

AMERICANS WITH DISABILITIES ACT:
If you have a physical, psychological, medical, or learning disability that may impact your course work, please contact Disability Support Services at (631) 632-6748 or http://studentaffairs.stonybrook.edu/dss/. They will determine with you what accommodations are necessary and appropriate. All information and documentation is confidential. Students who require assistance during emergency evacuation are encouraged to discuss their needs with their professors and Disability Support Services. For procedures and information go to the following website: http://www.sunysb.edu/ehs/fire/disabilities.shtml