ATM 350: Meteorological Data Analysis and Visualization

Spring 2020
Course #: 5616: T/Th 2:45-4:05 ES-333

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2:00-3:00 PM, Mon., and 9:30-10:30 AM Wed., and by appointment

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10:30-11:30 AM Tue. and Thu., and by appointment

Class webpage: http://www.atmos.albany.edu/daes/atmclasses/atm350

Objectives:

This course provides an overview to the main types of meteorological datasets used by operational forecasters, researchers, and numerical weather prediction modelers. Students will master a selection of software applications used to display and manipulate these datasets.

The course will primarily focus on open-source software developed for Linux and Linux-like operating systems (i.e., UNIX); therefore, students will learn the basics of the UNIX command shell environment, via an introduction to common UNIX commands. The bulk of the course will involve the use of the Python programming language. Students will develop Python scripts, primarily via the Jupyter web-based programming environment, to analyze and visualize meteorological datasets. These datasets will be drawn from both real-time and archived data sources.

The course will be conducted via a mix of classroom lectures and exercises. Five or six graded lab assignments will be assigned as homework. Each such assignment will have equal weight in the determination of the overall homework score, which will account for 60% of the student's final course grade (thus, each assignment will be worth 10–12% of the final course score). There will be one exam during the semester. This exam accounts for one-fifth of the student's final grade. Each student will prepare and present a final project on a case study of their choice using analysis and visualization techniques that they have learned during the semester. This project will account for 1/5 of the student's final grade.

Homework assignments will be distributed and discussed typically at the end of a class period, and will be due at the start of class on the date specified, unless otherwise directed. For the first 24 hours that the assignment is turned in late, two points will be deducted from the maximum total of ten. Each successive day (including weekends) that the assignment is tardy will entail an additional one point loss. Since assignments will typically be submitted electronically, each file

will automatically have a timestamp, to avoid any questions of the time that the student completed the homework. The instructors reserve the right to make exceptions to the tardiness policy if the situation warrants.

Students are encouraged to log into one of the maproom computers, or their own personal computer or tablet, during class in order to interactively follow along with the presented material. It is expected though that during class time, computer use will be restricted to ATM350-related material, not private web surfing, social networking, etc.

Grading:
*** 60% Homework
*** 20% Mid-term
*** 20% Project

Prerequisites:
ATM 211, ATM316

Cell phones:
Unless an emergency, please put away your cell phones during class.

Absences:
Medical: Please refer to the University's medical excuse policy:
https://www.albany.edu/health_center/medicalexcuse.shtml

Religious observance: New York State Education Law Section 224-A excuses absences due to religious beliefs. Students must notify the instructors in a timely manner prior to the absence.

Undergraduate academic regulations, and standards of academic integrity:
https://www.albany.edu/undergraduate_bulletin/regulations.html