

Environmental Statistics

AATM 315, Spring 2014

Credits: 3

Professor: Dr. Oliver Elision Timm **Location:** ES 223

Class Schedule: TuTh 11:45am–1:05pm

TA(s): Jennifer Gahtan (jgahtan@albany.edu)

Contact Information:

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Course Description

Statistics can make your life easier, not harder! In this course you will work with data from the real world and learn to apply basic concepts of statistical data analysis. You will use your computer/laptop and learn to solve statistical problems often found in atmospheric and environmental research. A brief introduction to programming will be provided in this course. The classes are designed as an *interactive lecture*: You will work (in groups) with data sets and solve statistical problems with the free software package R (available for Windows, Mac, Linux computers). The examples and results will then be reviewed using generalized statistical concepts. The essential mathematical and theoretical aspects will be introduced in the classes. Students are expected to use online resources in self-directed independent learning. This course will cover standard concepts in probability theory, univariate and multivariate statistical analysis methods, statistical description of data, visualization of data and the concepts of hypothesis testing, time series analysis and model forecasting of environmental data. **Bring your computer (or equivalent devices) with software R or R-studio to the classes!**

1. Course Objectives

- Prepare students to apply basic statistical concepts in their research/professional activities
- Improve the causal understanding and reasoning of statistical results
- Build experience in computer programming and data visualization

2. Prerequisites

Basic algebra and calculus (AATM 210, AATM 113 or 119 or T MAT 119; A MAT 220 recommended).

3. Grading

2 Exams (each 30%); classroom participation and homework assignments, 40%) Grading Scale:(<http://www.albany.edu/uhs/grading.php>)

A	A-	B+	B	B-	C+	C	C-	D+	D	D-	E
93—100	90-92	87–89	83–86	80–82	77–79	73–76	70–72	67-69	63–66	60–62	<60

4. Course Requirements

Students must bring a Laptop or equivalent device to classes with the software R (for sources see references below). Arrangements will be made for students without computers to participate in the classes.

5. Late work / Absence policy

General guidelines for medical excuse policies will apply Details can be found online :http://www.albany.edu/health_center/medicalexcuse.shtml

6. Academic Integrity

Students will work in teams during classes on statistical task assignments, but students must submit independently, self-written summary/homework assignments. Referenced work from published books journals and online electronic resources must be cited properly. Violation of the academic integrity through plagiarism, cheating in exams etc. will not be tolerated in accordance with the University policies (http://www.albany.edu/undergraduate_bulletin/regulations.html)

7. References

R: The software package R can be downloaded from <http://cran.us.r-project.org/>

R-Studio: is the recommended software for this course (all examples will work with the standard R package, too). Download from <http://www.rstudio.com/>

R Tutorials: <http://www.cyclismo.org/tutorial/R/>, <http://ww2.coastal.edu/kingw/statistics/R-tutorials/>, <http://www.statmethods.net/>