THE OHIO STATE UNIVERSITY department of STATISTICS

Stat 6530 (Spring 2020): Introduction to Spatial Statistics

Lecturer

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Office hours in 427 Cockins Hall: Mon 3-4pm, Thu 1.30-2.30pm, or by appointment.

Grader

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Lectures

Wednesdays and Fridays, 11.30–12.25pm in Mendenhall Lab 173
Holidays: Martin Luther King, Jr. Day is January 20; Spring break is March 9–13.
Please download notes from the class website on Carmen
Lectures may not be recorded.

Class Attendance Policy

You are expected to attend all lectures.

Course Description

This course provides an introduction to the statistical analysis of data collected in space. Topics include defining geostatistical, areal and point processes, visualizing spatial data, spatial covariance functions, prediction and kriging, spatial (simultaneous and conditional) autoregressive models, intensity functions, and K functions. Experience is gained in the statistical theory and methods so as to be able to analyze spatial data in practice.

Prerequisites: Stat 6450 or Stat 6950, giving exposure to regression modeling at the masters level, or permission of the instructor.

Textbook

Waller and Gotway, Applied Spatial Statistics for Public Health Data, Wiley, 2004.
http://web1.sph.emory.edu/users/lwaller/WGindex.htm

I will highlight other useful references as the course progresses.

Computing

This class requires you to use the statistical software packages R and RStudio.
More details will be given in class and on the class web site.

Evaluation

Homework	Midterm	Final exam
25%	35%	40%

Grades will be recorded on Carmen

Homework will be due at the **beginning** of class on the day it is due. **No** late homework will be accepted. You are encouraged to work together on the homework, but **do not** copy any part of a homework. Each student must produce his/her own homework to be handed in. Electronic submissions are not permitted. Feel free to ask me for help after you have made an attempt of the questions. The grader for the course does not have the time to provide detailed explanations on each question that he/she grades. To make up for this, I will endeavor to make homework solutions detailed enough to allow you to understand how the question could be approached.

Homework preparation rules: Put your name and the homework assignment number on the top right-hand corner of every page. All homework must be submitted on 8.5"x11" paper. Staple the pages together. We are not responsible for lost pages. Submit the problems in order, making sure that the computer output and discussion is placed together (do not put the computer output at the end of homework). Raw computer output is not acceptable. Make it clear what parts of the output are relevant and show how they answer the questions posed in the homework.

Exams: There will be **one midterm** and **one final exam**:

Midterm	Wednesday March 4	(in class)
Final	Wednesday April 22	12.00–1.45pm

All exams are closed book/closed notes. A basic calculator is allowed – tablets, laptops, cellphones, and other communication devices are not. The midterm covers the material up to and including Friday February 28. The final will cover all the material for the course. There will be **no make-up** exams.

Academic misconduct

It is the responsibility of the Committee on Academic Misconduct to investigate or establish procedures for the investigation of all reported cases of student academic misconduct. The term "academic misconduct" includes all forms of student academic misconduct wherever committed; illustrated by, but not limited to, cases of plagiarism and dishonest practices in connection with examinations. Instructors shall report all instances of alleged academic misconduct to the committee (Faculty Rule 3335-5-487). For additional information, see the Code of Student Conduct (http://studentaffairs.osu.edu/csc/).

Disability Statement

Students with disabilities that have been certified by the Office for Disability Services will be appropriately accommodated, and should inform the instructor as soon as possible of their needs. The Office for Disability Services is located in 150 Pomerene Hall, 1760 Neil Avenue; tel. 292-3307, TDD 292-0901; http://www.ods.osu.edu/.

Disclaimer

This syllabus should be taken as a fairly reliable guide for the course content. However, you cannot claim any rights from it and in particular I reserve the right to change due dates or the methods of assessment. Official announcements will ALWAYS be those made in class.