ST740: Models and methodology for spatially explicit data

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office hours: Drop in any time (except Tuesdays) or schedule an appointment by sending me email.

Course Description: This class will focus on models and methodology for spatially explicit data. Anticipated topics include: models for point-referenced and areal data, Bayesian methods for modeling spatial data, spatial misalignment, spatiotemporal modeling, advanced MCMC methods, and other topics as time permits.

Prerequisites: ST730 or permission of the instructor.

Required textbook: Hierarchical Modeling and Analysis for Spatial Data by Banerjee, Carlin and Gelfand, 2004. The textbook may be augmented by relevant articles in the statistical literature.

Computing

ST740 Web page: www.stat.colostate.edu/∼jah/teach/st740

See the webpage for homework assignments, links to the necessary computer programs, and other information.

R: R is a high level statistical computing package. A large percentage of researchers in spatial statistics use R. R is available on all statistics machines and is also available for free download. R is available via free download. See the class web page for more information.

Note that you can often use the same code in R or S-Plus, depending on your graphics and computing needs. S-Plus has menu and command-line interfaces. S-Plus contains more specialized statistical methods and graphics, but R is generally faster for any computations requiring loops.

WinBUGS: WinBUGS is free computer software to carry out Bayesian analyses of complex statistical models using Markov chain Monte Carlo (MCMC) methods.

Grading: The final grade will be computed as follows: homework (50%), 2 presentations (10% each), final presentation and paper (30%).

The course will be graded on a curve based on my impression of the overall strength of the class and natural breaks in the distribution of scores. There is no quota or limit to the number of potential A's or any other grade. Overriding the curve, you have the following minimum guarantees: students with total scores of 90% and above will receive at least an A− for the course and students with total scores 80% and above will receive a B− or better, and so on.

Course Policies

1. Class attendance is required.
2. Late assignments: 20% reduction in the grade per day late.
3. Any grading dispute must be submitted in writing to me within one week after the work is returned. No changes will be made after this deadline.
4. Academic honesty: It is important that your homework represent only your ideas. I encourage discussion of homework in broad, conceptual terms where one student is trying to educate another without giving away the answer. Copying solutions or computing code from other students or other sources is plagiarism. At a minimum, all students involved will receive a 0 on the assignment in question for any type of academic dishonesty.
5. Other accommodations: If you need specific accommodations due to a disability, please meet with me outside of class to discuss your needs as soon as possible. Resources for Disabled Students is located in Student Services Building 116. Students with mobility, visual, hearing, or learning disabilities are eligible for support, as well as students with chronic health conditions. Some of the services available include note takers, readers, and alternative testing.