SYLLABUS FOR STATISTICS C173/C273
APPLIED GEOSTATISTICS
WINTER QUARTER 2021

Instructor: Nicolas Christou
Office: 8931 Math Sciences Bldg.
Telephone: (310) 206-4420
e-mail: nchristo@stat.ucla.edu
WWW: http://www.stat.ucla.edu/~nchristo/statistics_c173_c273/
Office hours: MRF 15:00 - 17:00, TW 17:00-19:00, Saturday 12:00 - 14:00, Sunday 18:00 - 20:00

<table>
<thead>
<tr>
<th>Lecture</th>
<th>Day</th>
<th>Class Time</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lecture 1</td>
<td>MWF</td>
<td>11:00 - 11:50</td>
<td>Online - Recorded</td>
</tr>
</tbody>
</table>

OFFICE HOURS:
Office hours are offered every day including Saturdays and Sundays. Do not hesitate to come to office hours if you have any questions. It will be great to see you! The weekend office hours will be on Saturday 12:00 - 14:00 and Sunday 18:00 - 20:00. The office hours during the week are MRF 15:00 - 17:00, TW 17:00-19:00.

RESOURCES:

Software:

COURSE PREREQUISITES:
Statistics 100B or equivalent.

COURSE DESCRIPTION AND OBJECTIVES:
Spatial statistics is one of the fastest growing areas of statistics and has applications across a wide range of disciplines. The term geostatistics evolved in mineral exploration and mining. However, geostatistics can be applied to tackle many problems in other disciplines such as hydrology, air and water pollution, epidemiology, economics, geography, waste management, forestry, oceanography, meteorology, agriculture, etc., and in general to every problem where data are observed at geographic locations. The main purpose of the course is to reinforce the importance of Statistics through applications of theory and methods to interesting real problems of spatial data.

COURSE TOPICS
1. Introduction.
2. Variogram.
3. Covariogram.
5. Isotropy, anisotropy.
6. Spatial prediction.
8. Simulations.
10. Lattice data.
11. Point pattern data.
12. Spatio-temporal data.
13. Extensive use of the R packages geoR and gstat to analyze real spatial data.
COURSE POLICIES:

Zoom etiquette:
- If you can, please be on time and be prepared with your device charged. Make sure all tech works 5-10 minutes before the meeting.
- Mute yourself to eliminate background noise. You can unmute yourself when asking a question.
- You can also use the chat function when needed so the instructor can respond to questions promptly.
- All lectures will be delivered live and attendance is highly recommended. The lectures will be recorded and the videos will be posted on CCLE on the same day.

ACCOMODATIONS:
Students needing academic accommodations should contact the Center for Accessible Education (CAE):
http://www.cae.ucla.edu or call (310) 825-1501.

STUDENT RESOURCES:
- Student resources for remote learning: https://teaching.ucla.edu/resources/students/.
- Resources on Equity, Diversity, and Inclusion: https://equity.ucla.edu/know/.
- Students can embrace their identities - LGBTQ Center: https://www.lgbt.ucla.edu.

ACADEMIC INTEGRITY:
You are expected to adhere to the honor code and code of conduct. As a student and member of the University community, you are here to get an education and are, therefore, expected to demonstrate integrity in your academic endeavors. All students must uphold University of California Standards of Student Conduct as administered by the Office of the Dean of Students. Students are subject to disciplinary action for several types of misconduct, including but not limited to: cheating, multiple submissions, plagiarism, prohibited collaboration, facilitating academic dishonesty, or knowingly furnishing false information. You may have assignments or projects in which you work with a partner or with a group. For example, you are welcome, and even encouraged, to work with others to solve homework problems. Even though you are working together, the assignment you submit for a grade must be in your own words, unless you receive specific instructions to the contrary. For more information about academic integrity, please go to http://www.deanofstudents.ucla.edu/.

COURSE GRADES:
We will maintain the academic rigor of an upper division course in statistics while being flexible in student assessment. There will be a midterm exam, a final exam, homework or labs that will be assigned every week, and a final project on a spatial data set of your choice.

1. Final exam (30%): The final exam is scheduled on Tuesday, 16 March, 15:00-18:00.
2. Midterm 1 (20%): This will be a 2-hour exam assigned on Wednesday, 10 February and can be taken starting at 20:00. The exam must be uploaded 2 hours after downloading and completed before 20:00 on 11 February.
3. Project (20%): Due by week 8.
4. Weekly homework/labs (15%). There is flexibility on the submission due dates. Homework can still be uploaded 48 hours after the due date. All homework assignments will be uploaded on Gradescope (https://www.gradescope.com).
5. Participation Credit (15%): I will meet with small groups of students (about 5-8 students) twice during the quarter. Each meeting will be between 30-45 minutes. The first meeting will take place between weeks 2-3 and the second meeting between weeks 8-9. A signup form will be available by the end of week 1. If you have any concerns or questions do not hesitate to ask. We will accommodate each student in case there is a time conflict.

The course grade will be based on the calculation:
Final score = 0.15 × Homework/Labs + 0.15 × Participation + 0.20 × Midterm1 + 0.20 × Project + 0.30 × Final
COMMUNICATION:
Please keep a current e-mail address with my.ucla.edu in order to receive class announcements and reminders.

IMPORTANT DATES:
First lecture: Monday, 04 January.
Last lecture: Friday, 12 March.
Holidays: Monday, 18 January (Martin Luther King, Jr.) and Monday, 15 February (Presidents’ Day).

EXAMS:
Midterm: Week 6
Final exam: Tuesday, 16 March, 15:00-18:00

Good Luck !!!