UNIVERSITY OF CALIFORNIA SANTA BARBARA,
DEPARTMENT OF GEOGRAPHY
GEOG 210B – Analytical Methods in Geography II - WINTER 2018

LECTURES: T R 11:00 to 12:15 ELLSN 3620
LABORATORY: T 12:30-2:20 ELLSN 3620

INSTRUCTOR: KONSTADINOS (KOSTAS) GOULIAS
OFFICE HOURS: BY APPOINTMENT (EMAIL: GOULIAS@GEOG.UCSB.EDU)

Goals: Explore probability and statistics, multivariate analysis methods, and regression techniques. Examples are from cross-sectional and spatial data analyses, linear and non-linear regression models, models for qualitative and other discrete dependent variables models. Organization: The class will meet twice a week for lecture and lab combined and will have the following as the default format: We will review basic model theory and formulation and a set of applications. Occasionally we will also have a discussion based on model results. In the lab we will analyze data from surveys and estimate statistics and regression models.

Textbooks and Reading Material

1. Online material and PDFs by instructor on Gauchospace
2. SOFTWARE: We will use R with RStudio.

Assignments and Grading:

1.	Lab Reports	(80%)	Four reports on data analysis
2.	Class Participation	(20%)	Class discussion & participation

210B Lab Reports general guidelines: There will be four laboratory reports on: a) Data description and hypothesis testing of means and distributions; b) Linear regression models and variants; c) Categorical data analysis; d) Spatial Statistics.

Each lab report format is an introduction describing the contents of the lab report, data analysis summary with tables and figures, findings, and a findings/conclusion section with recommendations on when to use each method in the report. All reports should be delivered by email in MSWord.

PRELIMINARY COURSE TOPICS & SCHEDULE:

Tentative Timeline*	Topic	Laboratory
Week 1 Jan 11	Introduction and basic notions of statistics	Online material
Week 2 Jan 16 & 18	Random variables - Probability & Sampling Getting started with R	RStudio Basic scripts

Week 3 Jan 23 & 25	Estimation and Hypothesis Testing	Sampling distribution & t-test
Week 4 Jan 26&28	Matrix Algebra Linear regression model	Matrix manipulation in R Report 1 due
Week 5 Jan 30 & Feb 1	Linear Regression variants	Linear regression plots and hypo testing
Week 6 Feb 6 & 8	Count Data Models (Poisson and NegBin)	Poisson and Neg bin comparisons
Week 7 Feb 13 & 15	Categorical data & Contingency Tables	Two-way tables and Chi-square Report 2 due
Week 8 Feb 20&22	Discrete data regression	Logit model
Week 9 Feb 27 & Mar 1	Spatial Stats	Basic stats, plotting, and Moran I
Week 10 Mar 6 & 8	Spatial Stats	W Regression Report 3 due
Week 11 Mar 13 & 15	Spatial Stats	Distances and neighborhoods W Regression
Mar 23		Report 4 due

* This timeline will change based on students progress in class and instructor schedule.