

GEOG2120 Introductory Spatial Analysis (6 credits)

Course Teacher: Dr L S Ran

Objectives

This course aims to introduce students to the research methodology and techniques commonly used in spatial analysis. Due to the unique nature of spatial data, traditional (or classical) statistics are not competent and adequate for geographical research, and thus spatial statistics are introduced. By finishing this course, students begin to appreciate the issues involved in choosing appropriate statistics to deal with some common problems in geographical research.

Course Synopsis

The course provides an overview of spatial statistical techniques that are fundamental to the analysis of spatial data. This is a foundation course for research in geography. Following an overview about the uniqueness of spatial data and related analytical issues, the course covers basic descriptive statistics and statistics used to describe the distributions of geographical features. Correlation measures, probability concepts, and inferential statistical concepts are discussed. The course also examines techniques to analyze point and polygon patterns, including spatial autocorrelation and interpolation statistics.

Lecture Topics

- Descriptive classical statistics: univariate and bivariate
- Centographic Measures for Points
- Basis for Inferential Statistics
- Spatial autocorrelation and regression
- Spatial interpolation: concepts and applications

Assessment

100% Coursework (consists of four exercises, not equally weighted).

Learning Outcomes

Knowledge:

- Similarities and differences of spatial and non-spatial sampling
- Assumptions and uses of different descriptive and inferential spatial statistics

Skills:

- Use Excel/SPSS to generate selected descriptive and inferential statistics
- Use ArcGIS to generate layers from geographic point data for spatial analysis

Recommended Reading List

1. Wong, D. W. S. and J. Lee (2005) Statistical Analysis of Geographic Information with ArcView GIS and ArcGIS. Wiley.
2. Nicholas J. Gotelli and Aaron M. Ellison (2012) A Primer of Ecological Statistics. Sinauer Associates, Inc.