GEOG2120 Introductory Spatial Analysis

 # Fulfill requirements of method-related courses

TIMETABLE ARRANGEMENT: Annual; 1st Semester **CREDITS:** 6

COURSE TEACHER(S): Professor Lishan RAN

ASSESSMENT:

EXAMINATION 40 %	COURSEWORK 60 %
• 1.5 hours	• 4 individual assignments

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 completing 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 statistics.

LECTURE TOPICS:
• Descriptive classical statistics: Univariate and bivariate
• Centrographic measures for points
• Basis for inferential statistics
• Hypothesis and significance testing
• Spatial autocorrelation and regression
• Spatial interpolation: Concepts and applications

RECOMMENDED READING LIST:

• Wong, D.W.S., & Lee, J. (2005). Statistical Analysis of Geographic Information with ArcView GIS and ArcGIS. Wiley.
• Nicholas J., Gotelli, N.J. & Ellison, A.M. (2012). A Primer of Ecological Statistics. Sinauer Associates, Inc.
• O'Sullivan, D,, & Unwin, D.J. (2010). Geographic Information Analysis. John Wiley and Sons, Inc.

	Course Learning Outcomes (CLOs) After completing this course, students would be able to:	**Alignment with Programme** Learning Outcomes (PLOs)*						**Course Assessment Methods**
		1	2	3	4	5	6	
1	differentiate spatial and non-spatial sampling			✔				Assignments & exam
2	apply different descriptive and inferential spatial statistics			✔			✔	Assignments & exam
3	use Excel/SPSS to generate selected descriptive and inferential statistics			✔			✔	Assignments
4	use ArcGIS to generate layers from geographic point data for spatial analysis			✔			✔	Assignments

*Geography Major Programme Learning Outcomes (PLOs)

In order to meet the demands and challenges in this dynamic and ever-changing world, the Department has designed a series of well-structured and contemporary courses to cater to the different interests of students. Its courses are designed to align with the University's educational aims which hope to nurture future generations not only with a critical and intellectual mindset, but also with a passion to contribute to society in general.

After completing the programme, Geography Major students should be able to:

PLO1 **critically analyse the geographical aspects of the relationship between people and the natural environment;**

PLO2 **demonstrate and develop an understanding of how these relationships have changed with space and over time;**

PLO3 **identify, collect and utilize primary and secondary data to investigate and analyse the issues and problems facing people, places and society;**

PLO4 **integrate, evaluate and communicate information from a variety of geographical and other sources;**

PLO5 **participate in promoting social, economic and environmental sustainability at the local, regional and global scales; and**

PLO6 **effectively apply a range of transferable skills in academic, professional and social settings.**