



MASENO UNIVERSITY

UNIVERSITY EXAMINATIONS 2015/2016

**SECOND YEAR FIRST SEMESTER EXAMINATION FOR THE DEGREE
OF BACHELOR OF SCIENCE IN GEOSPATIAL INFORMATION
SCIENCE WITH INFORMATION TECHNOLOGY**

CITY CAMPUS - REGULAR

PGS 212: SPATIAL DATA ANALYSIS

Date: 4th December, 2015

Time: 9.00 - 11.00 am

INSTRUCTIONS:

- Answer question ONE and any other TWO questions.



PGS 212: SPATIAL DATA ANALYSIS

(KISUMU CAMPUS)

Answer any three questions – **question 1 is compulsory**

1.a). Define spatial analysis and outline its key objectives . (5 marks)

b). Differentiate between:

I. Spatial interpolation and spatial extrapolation (5 marks)

II. Spatial statistics and spatial analysis (5 marks)

III. Raster model and Vector model (5 marks)

c). Explain the following terms:

I. Meta data (2 marks)

II. Geodatabase (2 marks)

III. Relational (2 marks)

IV. Triangulated irregular network (2 marks)

V. Attribute data (2 marks)

2.a) Within the context of Network analysis explain the possible basis of defining the least cost path (5 marks)

b). Differentiate the following elements:

I. Personal and Enterprise geodatabases (5 marks)

II. 2 tier client system and 3 tier client system in the network connectivity. (5 marks)

III. Global and Local spatial interpolation methods. (5 marks)

3.a. Define the kriging method as used in interpolation giving the assumptions overwriting its application. (5 marks)

b. Using diagrams, explain the three types of Kriging methods (10 marks)

c. Describe the advantages of interpolation by Kriging (5 marks)

4 a. Differentiate Spatial interpolation and spatial extrapolation (5 marks)

b. Raster and vector models are two approaches used in representing data. Compare the advantages and limitations of the two methods. (10 marks)

c. Explain the concept of Geospatial clearing house. (5 marks)

5. With diagrams explain the following overlay operations:

I. Buffering (4 marks)

II. Union (2 marks)

III. Intersection (4 marks)

IV. Identity (2 marks)

V. Boolean Overlay (4 marks)

VI. Polygon Overlay (2 marks)

VII. Point - in - Polygon (2 marks)

6.a. Explain the major differences between “Inverse Distance Weighted” and “Kriging” spatial interpolation approaches. (10 marks)

b. What is the difference between “spatial autocorrelation” and “spatial correlation”? (6 marks)

c. What is the difference between the “dependent” and “independent” map variables used in spatial data mining? (4 marks)