



ZIMBABWE EZEKIEL GUTI UNIVERSITY

COLLEGE OF LIFELONG LEARNING

EXAMINATION PAPER

MODULE CODE : GISRS112
MODULE TITLE : Georeferencing, Coordinate Systems, and Data Models
DURATION : 2 Hours
LEVEL : 1.1
DATE : 26 NOV 2025

INSTRUCTIONS TO CANDIDATES:

1. No cell phones are allowed in the examination venue.
2. Use of silent, non-programmable calculators is allowed
3. Answer **Question 1** and any other **THREE** in Section B.
4. Begin each question on a new page.
5. The number of marks for each question or part question is shown in brackets []
6. Show all workings, where applicable.

Section A: Compulsory Question (40 Marks)

Question 1:

Discuss the fundamental principles of georeferencing and coordinate systems. Your answer should include:

- a. The importance of georeferencing in GIS workflows. **(10 marks)**
- b. Types of coordinate systems and their differences. **(10 marks)**
- c. Challenges encountered when converting datasets between coordinate systems. **(10 marks)**
- d. Examples of Zimbabwean datasets that require accurate georeferencing (e.g., cadastral maps, satellite imagery). **(10 marks)**

Section B: Optional Questions (Answer Any 3; 20 Marks Each)

Question 2:

- a. Explain the concept of datums and their role in positioning. **(8 marks)**
- b. Compare WGS84 and Clarke 1880 as used in Southern Africa. **(6 marks)**
- c. Discuss sources of georeferencing errors. **(6 marks)**

Question 3:

- a. Describe the process of vector data modeling. **(8 marks)**
- b. Explain attribute tables and how they support spatial analysis. **(6 marks)**
- c. List two advantages and two disadvantages of vector data models. **(6 marks)**

Question 4:

- a. Explain raster data structure using cell concepts. **(8 marks)**
- b. Identify three common raster datasets used in Zimbabwe (e.g., DEMs, Landsat). **(6 marks)**
- c. State two limitations of raster data. **(6 marks)**

Question 5:

- a. Compare local, zonal, and global coordinate systems. (8 marks)
- b. Explain Universal Transverse Mercator (UTM) zones relevant to Zimbabwe. (6 marks)
- c. Discuss problems caused by incorrect projection selection. (6 marks)

Question 6:

- a. Describe the concept of map transformations. (8 marks)
- b. Explain affine transformation in georeferencing. (6 marks)
- c. Give two examples of data sources requiring transformation. (6 marks)

****END OF EXAMINATION****

1/0 (PM)