



"Investing in Africa's future"

**COLLEGE OF HEALTH AGRICULTURE AND NATURAL
SCIENCES**

COURSE CODE: NESN205 REMOTE SENSING AND GIS

END OF SECOND SEMESTER EXAMINATION

APRIL 2026

**LECTURER: MS B. BOLO
DURATION: 3 HRS**

INSTRUCTIONS

Answer all questions in Section A and any **three** from Section B

Section A carries **40 marks** and each question in section B carries **20 marks**.

SECTION A: Answer **all** questions from this section.

Question 1

- a) Explain how satellite imagery is acquired and the factors that influence image resolution. [8]
 - b) State four advantages of using UAVs (drones) in remote sensing. [4]
 - c) Identify four common sources of geospatial data used in GIS. [4]
 - d) Outline the main steps involved in GIS-based spatial analysis. [6]
 - e) Giving examples, discuss the use of remote sensing and GIS in urban planning and infrastructure management. [6]
 - f) Explore the role of vegetation indices in monitoring crop or vegetation health. [6]
 - g) Describe the process of image classification and change detection in land use and land cover mapping. [6]
- [40]**

SECTION B: Answer any **three (3)** questions from this section.

Question 2

Evaluate the contribution of remote sensing and GIS to environmental monitoring and natural resource management. [20]

Question 3

Explore the application of GIS and remote sensing in hydrological studies and water resource management. [20]

Question 4

- a) Using examples, discuss how GIS and remote sensing support range management. [12]
- b) Suggest practical measures for improving the accuracy of geospatial data in developing countries. [8]

Question 5

- a)
- i) Define spatial resolution and temporal resolution in remote sensing. [4]
 - ii) Determine four image preprocessing techniques used in remote sensing. [4]
- b) Explain the importance of raster and vector data models in GIS. [6]
- c) Outline the role of cloud computing platforms (e.g. Google Earth Engine) in modern geospatial analysis. [6]

Question 6

Discuss the role of GIS, remote sensing, and machine learning in climate change monitoring and sustainable development planning. [20]

END OF QUESTION PAPER!!!