ALUPE UNIVERSITY
COLLEGE

...Bastion of Knowledge...

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(A Constituent College of Moi University)

SCHOOL OF EDUCATION AND SOCIAL SCIENCES

DEPARTMENT OF SOCIAL SCIENCES EDUCATION

FIRST YEAR   **SEMESTER: 1**   **ACADEMIC YEAR: 2018/2019**

Course Title: INTRODUCTION TO REMOTE SENSING AND GIS

Course Code: GEO 111

Credit Hours: 3

Course Purpose
To explain to students the importance of Geographic Information System and its application to remote sensing.

Objectives
i.   To enable the learner know the fundamental of Remote Sensing and GIS
ii. To enable the learner to gain basic comprehension of Remote Sensing and GIS technologies and their respective functions
iii. To enable the learner to gain basic Remote Sensing and GIS skills and perform basic manipulations of geographic data.

Expected Learning Outcomes
At the end of this course, the learner should be able to:
i.   Develop literacy in Remote Sensing and GIS as geospatial technologies
ii. Have proficiency in geodata processing and manipulation skills
iii. Apply Remote Sensing and GIS to various areas of study.

Course Content
Remote Sensing and remote sensors; definition, history; photographic remote sensing and non-photographic remote sensing. The Electro-magnetic spectrum, its application in remote sensing technology; application of remote sensing on man's use of land: agricultural production, soil survey, range management, forest management, petroleum exploration etc. Introduction to GIS, GIS as an integrating technology; Basic GIS architecture: Raster and Vector based on GIS; Differences in the function of GIS packages: Data storage and manipulation techniques, Database creation and management, Data analysis and interpretation; Impediments in use of GIS; Setting up a GIS laboratory.

Course Outline
1. Introduction
    i.   Definitions and concepts in remote sensing
    ii. Origin and historical development of remote sensing technology
2. Principles of remote sensing technology
    i.   Electromagnetic energy radiation and wavelength
    ii. Electromagnetic spectrum and its application in remote sensing
3. Photographic remote sensing
    i.   Aerial photography – components and functions of a camera
    ii. Aerial photograph interpretation and limitations

4. Non-photographic remote sensing
    i. Sensor platforms
    ii. Passive sensors and active sensors
5. Application of remote sensing on man's use on land
6. Geographic Information System (GIS)
    i. Introduction
    ii. Raster GIS
    iii. Vector GIS
7. Functions of GIS packages
    i. Data storage and manipulation
    ii. Database creation and management
    iii. Data analysis and presentation
8. Challenges of GIS
    i. Challenges faced by developers
    ii. Challenges faced by users
9. Setting up a GIS laboratory
    i. Requirements
    ii. Procedure

Learning and Learning Methods
Lecture, Tutorials, discussion, explanation, guided library reading, E-learning platform

Instructional Materials/Equipment
Lecture notes, white board, text books, computers and LCD, satellite images, GIS software, aerial photographs, stereoscope.

Course assessment

Type		Weighting
Continuous Assessment Test (1)	Week 5/6	15%
Continuous Assessment Test (2)	Week 9/10	15%
End of Semester Examination	Week 15/16	70%
Total		**100%**

Course Texts/References
1. Basudeb B. (2011). *Remote Sensing and GIS* (2nd Edition). New Delhi: Oxford University Press

2. Dickson, C.G. (1979). *Maps and Photographs – images of the Earth*. London: EdwardArnold

3. Jensen, R.J.(2007). *Remote Sensing of the Environment*. London: Pearson Prentice Hall,Uk.2nd edn.

4. Modis. (2003). Moderate Resolution Imaging Spectroradiometer. www.modis.gsfc.nasa.gov.Accessedon 9/6/2018.

5. Wolf, P. R. (1979). *Maps and photographs*. London: Edward

6. Arnold Van der Meer, F. D. & Jong, S. M. (2002). *Imaging Spectrometry: Basic Principles and Prospective Applications*. Bookseries Remote sensing and Digital Image Processing Vol.4. Dordrecht: Kluwer Academic Publishers.

Course Lecturer MORRIS M. MWATU   **Sign** _____ **Date** 6-8-2018

COD DR. NANYA STEPHEN W.   **Sign** _____ **Date** 7/8/2018

Dean Prof. Carolyne Omulando   **Sign** Aleyo. **Date** 7/8/2018

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