



THE FEDERAL UNIVERSITY OF TECHNOLOGY, AKURE

Department of Applied Geology

AGY 506 – Remote Sensing II

COURSE PARTICULARS

Course Code: AGY506

Course Title: Remote Sensing II

No. of Units: 3

Course Duration: Two hours of theory and three hours of practical per week for 15 weeks.

Status: Compulsory

Course Email Address: aybanifowose@futa.edu.ng

Course Webpage: <http://www.agy.futa.edu.ng>

Prerequisite: NIL

COURSE INSTRUCTOR

1. Dr. A.Y.B. Anifowose

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Federal University of Technology, Akure, Nigeria.*

COURSE DESCRIPTION

The course is designed to teach students to the basic principles of locating features on the Earth's surface. While it is a compulsory course for students in remote sensing, it also meets the needs of students in the earth sciences and other location-based disciplines. It is also expected to expose to hands-on training in the use of locational equipment like compass-clinometer, hand-held GPS and GNSS.

COURSE OBJECTIVES

The objectives of this course are to:

- introduce students to the basic principles of Global Positioning System and the equipment that are deployed;
- teach students to carry out locationing and basic mapping using hand-held GPS equipment; and
- provide students with the skills required to link locational data to certain projections and present same as maps using ILWIS.

COURSE LEARNING OUTCOMES / COMPETENCIES

At the end of the course, the student should be able to:

- explain the workings of GPS, and understand the acquisition of locational data using the hardware;
- produce a simple map from field data acquired using hand-held GPS.

GRADING SYSTEM FOR THE COURSE

This course will be graded as follows:

Assignments	10%
Class Practical	20%
Test(s)	10%
<u>Final Examination</u>	<u>60%</u>
<u>TOTAL</u>	<u>100%</u>

GENERAL INSTRUCTIONS

Attendance: Every student is expected to be in class for lectures and also participate in all practical exercises; attendance records will be invoked to determine the eligibility (65% attendance) to write the final examination as spelt out in the Students' Handbook.

Assignments: Students are expected to submit assignments as scheduled.

READING LIST

¹CURRAN, P.J. (1985): Principles of Remote Sensing. 1st Edition, Longman Group, England, 282 pp.

^{1,2}DRURY, S.A. (1987): Image Interpretation in Geology. Allen & Unwin, London, 243 pp.

¹FISCHER, W.A. (1975): History of remote sensing. In: Manual of Remote Sensing (R.G. Reeves, ed.), Amer. Soc. Photogramm., Falls Church, Virginia, pp. 27-50.

¹HARRIS, R. (1987): Satellite Remote Sensing 1st Edition, Routledge and Kegan Paul, London, 220 pp.

³N. KERLE, L. L. F. JANSSEN, G. C. HUURNEMAN (Eds.) (2004): Principles of Remote Sensing: An introductory textbook. ITC, Enschede, 520p.

⁴LARSSON, R.A. and STROMQUIST, L.(1991): A Practical Approach to Satellite Image Analysis for Environmental Monitoring. Landfocus AB, Daderyd, Sweden, 115 pp.

^{1,2}LILLESAND T.M. & KIEFER, R.W. (1994): Remote Sensing and Image Interpretation, 3rd Edition, John Wiley & Sons, New York, 750 pp.

^{1,2}SABINS, F.F. (1978): Remote Sensing-- Principles and Interpretation. W.H. Freeman and Co., San Francisco, 426 pp.

Legend

- 1- Available in the University Library
- 2- Available in Departmental/School Libraries
- 3- Available on the Internet.
- 4- Available as Personal Collection
- 5- Available in local bookshops.

COURSE OUTLINE

Week	Topic	Remarks
1 & 2	Review of basic concepts in Remote Sensing.	Stereoscopic perception will be highlighted. Pocket stereoscopes will be used to view stereopairs.
3	Acquisition of remotely sensed data, image processing and enhancement. Interpretative techniques.	It will be ensured that almost all the students can see stereoscopically. Students will continue to use Pocket stereoscopes to view stereopairs.
4	Fundamentals of Aerial photo interpretation. Photogeological mapping.	Mirror stereoscopy will be used to view stereopairs. Practical exercise will involve geologic terrain identification.
5	Multispectral Scanning Systems (MSS); Landsat operation and interpretation of data.	Practical session will entail the identification of terrain features on photographic data.
6	Surface thermal properties; interpretation of infrared images.	Practical session will entail the acquisition of locational data of some land marks within the campus.
7 & 8	Imaging radars, techniques and applications.	Students will be exposed to the techniques of radar image interpretation.
		Mid-Semester Test
9, 10 & 11	Applications of remote sensing techniques to geologic problems; lithologic mapping, structural geology, geomorphology; search for geothermal energy; mineral exploration; engineering geology	Practical session will entail delineation of geological features and interpretation in understanding geological problems and proferring

	and hydrogeology.	solutions.
12	Applications of GIS.	Students will be exposed to data integration using common GIS software.
13 & 14	Introduction to the use of relevant computer packages for data analyses and graphical presentation.	Students will be exposed to the use of Grapher and Surfer software in drawing graphs, and 3D and contours respectively.
15	REVISION	Revision and make-up tests prior to examination.