THE FEDERAL UNIVERSITY OF TECHNOLOGY, AKURE
Department of Forestry and Wood Technology

FWT 324 – Remote Sensing

COURSE PARTICULARS

Course Code: FWT 324
Course Title: Remote Sensing
No. of Units: 2
Course Duration: One hour of theory and three hours of practical per week for 15 weeks.
Status: Compulsory
Course Email Address:
Course Webpage:
Prerequisite: NIL

COURSE INSTRUCTORS

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COURSE DESCRIPTION

This course is an introductory course in remote sensing designed primarily for students in forestry and allied disciplines. The course introduces students to the basics of remote sensing, characteristics of remote sensors and remote sensing applications in forestry. It details the physical principle upon which a variety of photographic and non-photographic sensors operate and describes the existing satellite systems used for remote sensing. Topics to be covered include the basics of remote sensing, electromagnetic spectrum, optical remote sensing and Landsat multispectral remote sensing

COURSE OBJECTIVES

The objectives of this course are to:
- provide students with an introduction to the principles and practices of digital remote sensing for use in environmental monitoring and natural resource management.
- intimate students with the source and factors affecting the characteristics of remotely sensed data

COURSE LEARNING OUTCOMES / COMPETENCIES

Upon successful completion of this course, the student will be able to:
(Knowledge based)
- Define remote sensing and explain its applications.
- Define and describe the basics of electromagnetic spectrum and interaction of electromagnetic radiation with atmosphere and targets on the earth surface
- Describe the basic characteristics of remote sensing and the imagery
- Describe sensors and image acquisition methods

GRADING SYSTEM FOR THE COURSE

This course will be graded as follows:

Class Attendance	10%
Assignments	10%
Test(s)	20%
Final Examination	60%
TOTAL	**100%**

GENERAL INSTRUCTIONS

Attendance: It is expected that every student will be in class for lectures and also participate in all practical exercises. Attendance records will be kept and used to determine each person's qualification to sit for the final examination. In case of illness or other unavoidable cause of absence, the student must communicate as soon as possible with any of the instructors, indicating the reason for the absence.

Assignments and Group Work: Students are expected to submit assignments as scheduled. Failure to submit an assignment as at when due will earn you zero for that assignment. Only under extenuating circumstances, for which a student has notified any of the instructors in advance, will late submission of assignments be permitted.

Code of Conduct in Lecture Rooms and Laboratories: Students should turn off their cell phones during lectures. Students are prohibited from engaging in other activities (such as texting, watching videos, *etc*.) during lectures. Food and drinks are not permitted in the laboratories.

READING LIST

[2,4]Geomarsca, M.A. (2009). *Basics of Geomatics.* Springer, Dordrect. Heidelberg. London. Newyork. 656 pages.

[2,4]Kohl M., Magussen S.J. and Marchett M. (2006). *Sampling Methods, Remote Sensing and GIS Multiresource Forest Inventory* . Springer-Verlag Berlin Heidelberg. 366 pages.

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	Introduction and Course Overview Definition and Elements of Remote Sensing	During this first class, the expectation of the students from the course will also be documented.
2	Electromagnetic Radiation Electromagnetic Spectrum	
3	Sources of Electromagnetic energy	The natural and artificial sources of electromagnetic energy will be discussed. This will also involve the discussion of active and passive remote sensing.
4	The earth's atmosphere	This will involve discussion of the constituents and horizontal layering of the earth's atmosphere
5	Interactions of Electromagnetic Radiation with the Atmosphere • Scattering • Absorption • Atmospheric window	
6	Basic characteristics of remote sensing Resolution • Spectral resolution • Radiometric resolution • Spatial resolution • Temporal resolution	

7	Spectral Reflectance signature	
8	Airborne Remote sensing	
		MID-SEMESTER TEST
9 & 10	Spaceborne Remote Sensing • Satellite orbits • Remote sensing satellites	
11 & 12	Optical Remote sensing	
13 & 14	Satellite Remote Sensing Systems • Landsat • NigeriaSat 1 • NigeriaSat 2	Students will be made to write a term paper on some other satellite remote sensing systems such as SPOT, Quickbird etc.
15	REVISION	This is the week preceding the final examination. At this time, evaluation will be done to assess how far the students' expectations for the course have been met.