

Programme	Semester 2	Course Code	RS-107	Credit Hours	3
Course Title	Introduction to Remote Sensing				
Course Introduction					
Define and describe the terms of Remote Sensing. Understand the basic principles of Remote Sensing. Evaluate the applications of Remote Sensing in various disciplines.					
Learning Outcomes					
On the completion of the course, the students will:					
<ul style="list-style-type: none"> Understand the concepts of Remote sensing and its uses. 					
Course Content				Assignments/Readings	
Week 1	History, Scope and Concept of Remote Sensing				
	Elements of Remote Sensing				
Week 2	Energy Sources or Illumination				
	Electromagnetic radiation its characteristics and different parts of spectrum				
Week 3	Radiation and the Atmosphere				
	Energy interaction with atmosphere				
Week 4	Scattering and its types, Absorption				
	Atmospheric Window				
Week 5	Energy interaction with earth surface features				
	Absorption, Transmission and Reflectance, Specular and Diffuse reflectance				
Week 6	Spectral Reflectance Curves, Water, Vegetation and Soil				
	Image Characteristics				
Week 7	Recording of Energy by the Sensor				
	Platforms (Types and Orbital Characteristics)				
	<ol style="list-style-type: none"> Sensor types and their characteristics Image resolution types Swath width 				
Week 8	Data reception and processing				
	Major components in digital image processing for radiometric correction				
Week 9	Image Rectification and registration,				
	Image Enhancement,				
Week 10	Mosaicking and sub-setting				
	Interpretation and Analysis				
Week 11	Visual Image Interpretation				
	Digital Image processing overview				

Week 12	Applications Overview	
	Introduction to labs	
Week 13	Overview of Image Processing Software (e.g. ERDAS Imagine, ENVI, Orfeo Toolbox)	
	Image Georeferencing	
Week 14	Layer stacking,	
	Image Mosaicing,	
Week 15	Extraction of AOI (Subsetting)	
	Color composites,	
Week 16	Various sensors data comparison,	
	Image classification <ul style="list-style-type: none"> 1. Unsupervised 2. Supervised 	
Textbooks and Reading Material		
<ol style="list-style-type: none"> 1. Campbell, J. B. (2011). Introduction to Remote Sensing, 5th Ed. The Guilford Press. 2. Foody, G.M. & Curran, P.J. (1994). Environmental Remote Sensing from Regional to Global scales. John, Wiley & Sons. Inc. 250 p. 3. Gibson, P. J (2000). Introductory Remote Sensing: Principles and Concepts Rutledge. 4. Lillesand, T. M. & Kiefer, R. W. (2010). Remote Sensing and Image Interpretation, 6th edition. John Wiley and Sons Inc. 5. Lulla, K.&Dessinov, L.V. (2000). Dynamic Earth Environmental: Remote Sensing Observations from shuttle Mir Mission John, Wiley & Sons. Inc.288 p. 6. Rancez, A.N. (1999). Remote Sensing for the Earth Sciences. John Wiley & Sons. Inc. 728 p. 		
Teaching Learning Strategies		
<ol style="list-style-type: none"> 1. Lectures 2. Written Assignments 3. Quizzes 4. Lab Work 		
Assignments: Types and Number with Calendar		
<ol style="list-style-type: none"> 1. Practical 2. Quiz 3. Presentation 4. Assignment 		