

H.L.G. GOVT. COLLEGE TAURU, DISTT. NUH (HRY.)
P.G. DEPARTMENT OF GEOGRAPHY

Lesson Plan for the Session 2025-26 Odd Semester (under NEP-2020)

Name of Teacher: **Dr. Mukesh Kumar**, Professor of Geography

Learning Objectives	Theory Paper	The main objectives of the course are designed to address emerging areas of recent technique-based, skill-oriented theoretical learning. It aims to build professional competence and enhance students' understanding and abilities in Remote Sensing and GIS in as per the requirements of present modern era. The course also provides strong theoretical knowledge of Sensing techniques remotely via various sensors of Satellites & GPS etc. for the Geospatial studies and analysis, in line with the objectives of intensive learning under NEP-2020.
	Practical Paper	Computer is a modern tool in Geospatial Technology. The main objective of the course is to develop adequate professional knowledge and computer skills so as to enable students to take up career in the field of Remote Sensing and GIS through different GIS softwares. The course provides strong practical training in the field of advanced land surveying using modern tools i.e. GPS, DGPS, Total Station, Drone (UAV), Image Interpretation, and Modern Cartographic techniques for the Geospatial studies and analysis, in line with the objectives of NEP-2020.
Learning Outcomes	Theory Paper	The students will be able to understand the basic concepts of Remote Sensing technique, Sensing process and EMR interaction with atmosphere and surface. They will learn about Satellite system, its significance and uses. They will also be able to understand the GPS system and Remote Sensing types with their application in different fields.
	Practical Paper	After the completion of course students will be able to understand the GIS software basic functioning and working with attribute data. They will be able to learn the uses of Drone (UAV) technology and its applications. The students will be able to learn the working of GPS, DGPS and Total Station modern surveying tools, their components, basic functions and the applications.
Teaching Methodologies used	Latest	ICT Based teaching-learning; PPT, A/V lectures, Field based and Laboratory teaching, Advanced land surveying tools GPS, DGPS, UAV's and Total Station, field works, Assignments, lab tests and Project.

PG DIPLOMA IN RS & GIS 1ST SEM.

Paper: Theory- Remote Sensing and GPS

Paper: Practical- Advanced Land Surveying

Sr	Class & Paper	Month/ week	Topic/Chapters to be Covered	Academic activities to be organized
1	Remote Sensing and GPS Theory Paper PGDRS01 (days 1-3) P-II,	Aug. 2025	▪ Remote Sensing: Concept, Basic Principles, ▪ Historical Development, Nature and Scope, Component, ▪ Process and Stages; ▪ Application of Remote Sensing in Geography and other Earth Sciences; ▪ Advantages and Disadvantages of Remote Sensing.	In class Group Discussion Educational Movie Tree Plantation
	Advanced Land Surveying Practical Paper PGDRS05 (days 5-6) Group-I P-3-6	Aug. 2025	▪ Introduction to Computer: Components of Computer-Hardware and software ▪ GIS Software (Paid/Open Source) Arc-GIS/QGIS etc.: Familiarization and Basic Functions. ▪ Coordinate System: Latitude and Longitude, Geodetic Datum, Projections. ▪ Georeferencing by adding GCP's and Projection on Raster data- Toposheets and Scanned Maps; Vector creation, Attribute data and their integration with Vector data.	Familiarization with Computer, Working with GIS data on Internet File Preparation

	Remote Sensing and GPS Theory Paper PGDRS01 (days 1-3) P-II,	Sept. 2025	▪ Electromagnetic Radiation (EMR); Concept, Properties of EMR; Electromagnetic Spectrum; ▪ Interaction of EMR with Atmosphere, Scattering: Concept, Types and Significance; ▪ Interaction of EMR with Surface, Atmospheric Window and Spectral Reflectance Curve; ▪ Sensors and Scanning System: Concept, Process, Types and Characteristics.	Essay writing Chart making Competition Class Tests Quiz contest
	Advanced Land Surveying Practical Paper PGDRS05 (days 5-6) Group-I P-3-6	Sept. 2025	▪ Advanced land Surveying: Concept, Types and Methods. ▪ GPS: Basic Functions, Waypoint Demarcation, Data Acquisition, Area Calculation through GPS ▪ Field Survey with GPS. ▪ DGPS: Basic Functions, Selection of Reference Station for Calibration and Point data collection (GCPs), ▪ Field Survey with DGPS.	Familiarization with GPS, DGPS and its functions, Lab & Field work File Preparation
3	Remote Sensing and GPS Theory Paper PGDRS01 (days 1-3) P-II,	Oct. 2025	▪ Remote Sensing Platforms: Types and Characteristics; ▪ Satellite: Concept, Orbit, Swath and Types; Geostationary Satellite: Characteristics, uses in different fields; ▪ Sun-Synchronous Satellite: Characteristics, uses in different fields; ▪ Major satellites of India and World: ▪ IRS Satellite Series, CARTOSAT, LANDSAT, Sentinel, SPOT, QUICKBIRD, IKONOS; Space Programs of India.	Poster making Ext. Lecture Project Work Class Tests
	Advanced Land Surveying Practical Paper PGDRS05 (days 5-6) Group-I P-3-6	Oct. 2025	▪ Scatter diagrams ▪ Drone (UAVs): Fundamentals, Components, ▪ Assembling and Calibration, Flight Planning, Controls ▪ Data Acquisition, ▪ Field Survey and Mapping with UAV ▪ Data Processing	Familiarization with UAV survey and its functions, File Preparation
4	Remote Sensing and GPS Theory Paper PGDRS01 (days 1-3) P-II,	Nov. 2025	▪ Types of Remote Sensing: Active and Passive, RADAR, LiDAR, Thermal, Microwave and Hyper spectral; ▪ GPS: Concept, Coordinate System, Satellite Constellations, Functional Segments of GPS, Significance, Accuracy and Errors; ▪ Major Global Navigation Satellite Systems (GNSS): GPS, GLONASS, Galileo, Compass; Regional Navigation Satellite System: IRNSS/NAVIC; ▪ Applications of GPS in different fields.	Essay writing Debate Competition Assignments Class Tests