SMRJ Government College, Siwani (Bhiwani)

(Affiliated to Chaudhary Bansi Lal University, Bhiwani)

Session: 2024-25

Lesson Plan

(Department of Geography)

Teacher: Mr. Mukesh Kumar
Class: M.Sc. Geo. I
Semester: 2nd
Maximum Marks: 100
End Term Exam Marks: 80

Course Type & Title: IT for Spatial Sciences
Course Code: 20 GEO 208
Credits: 4
Internal Assessment Marks: 20
Practical Marks: Nil

Course Outcomes:

At the end of the course students will be able to:

This course is to introduce the IT tools and its applications in Geography. It also aims to provide an understanding to the students about basic computing skills and its usefulness in GIS and other modern geographical technologies.

Sr. No.	Week/Month, 2025	Unit/ Topic/ Chapter to be covered	Assignment/Test/ Remarks, if any
1	01 Jan. to 04 Jan.	Familiar with Syllabus. Cartography: Geodesy, Photogrammetry, Remote Sensing, Geographical Information System (GIS);	
2	06 Jan. to 11 Jan.	Information & Communication Technologies- Global Positioning System(GPS)	
3	13 Jan. to 18 Jan.	Digital Image Processing; Map as Decision Tool; Conventional Symbols & Sign Survey Instruments, Traversing, Trilateration and Triangulation; Electronic (total station);	**Assignment**
4	20 Jan. to 25 Jan.	Aerial and Satellite based survey techniques (Photogrammetry, RADAR, LiDAR).	
5	27 Jan. to 01 Feb.	Map as a communication system - Theory of Perception, Symbolization:	**Test**
6	03 Feb. to 08 Feb.	Conventional signs and symbols: Quantitative, Qualitative Symbols, Use of colour;	
7	10 Feb. to 15 Feb.	Qualitative mapping technique: Choroschematic and Chorochromatic;	
8	17 Feb. to 22 Feb.	Quantitative mapping techniques: Choropleth, Isopleth; Physical surveying: GPS and Total Station, DGPS and GPR.	
9	24 Feb. to 01 March	Software: Definition and Types; Operating systems,	

		Application programmes; Information Technology: Introduction, Applications of IT in Cartography & GIS	
10	03 March to 08 March	Applications of IT in Remote Sensing and GPS; Open source software for GIS: QGIS,	**Assignment**
11	17 March to 22 March	Open source software for GIS: GoogleEarth, Google Earth Engine etc.; Geodata visualization and analysis: two, three, fourth dimension viewing, visualization by hyper map,	
12	24 March to 29 March	Virtual images & WebGIS.	
13	31 March to 05 April	Spatial database: Survey of India, NRSC, BHUVAN, NATMO	**Test**
14	07 April to 12 April	Spatial database: Geological Survey of India, Census of India, National Informatics Centre.	
15	14 April to 19 April	Spatial database: Cadastral maps, Openstreet map; Foreign sources of data:	
16	21 April to 26 April	USGS Earth Explorer, Earth Data Search; Physical surveying:	
17	28 April to 30 April	GPS and Total Station; Attribute database: Census of India, Statistical Abstracts, National Informatics Centre etc.	

Recommended Books/ E resources/ LMS:

- Clark, I. (1979). *Practical Geostatistics*. London: Applied Science Publishers
- Davis, J.C. (1973). *Statistics and Data Analysis in Geology*. New York: Wiley
- Keates, J. S. (2008). *Cartographic Design and Production*. London: Longman
- Misra, R.P., & Ramesh, A. (2002). *Fundamentals of Cartography*. New Delhi: Concept Publishing Company.
- Peterson, M. P. (1995). *Interactive and Animated Cartography*. Upper Sadde River, NJ: Prentice Hall.
- Ramesh, P. A. (2000). *Fundamentals of Cartography*. New Delhi: Concept Publishing Co.

Signature of the teacher concerned

Head of the Department

SMRJ Government College, Siwani (Bhiwani)

(Affiliated to Chaudhary Bansi Lal University, Bhiwani)

Session: 2024-25

Lesson Plan

(Department of Geography)

Teacher: Mr. Mukesh Kumar
Class: M.Sc. Geo. II
Semester: 4th
Maximum Marks: 100
End Term Exam Marks: 80

Course Type & Title: **Principles of GIS and Navigation System**
Course Code: 19 GEO 409
Credits: 4
Internal Assessment Marks: 20
Practical Marks: Nil

Course Outcomes:

At the end of the course students will be able to:

This course aims to familiarize and enhance the student's knowledge about the Remote Sensing and GIS techniques along with their application value in the Earth observation.

Sr. No.	Week/Month, 2025	Unit/ Topic/ Chapter to be covered	Assignment/Test/ Remarks, if any
1	01 Jan. to 04 Jan.	Familiar with Syllabus. GIS: Definition and Applications; Components and Elements of GIS.	
2	06 Jan. to 11 Jan.	Development of GIS technology; Geographic objects: point, line and area.	
3	13 Jan. to 18 Jan.	Geographic objects: analog and digital maps;	
4	20 Jan. to 25 Jan.	Theoretical models and framework for GIS, representation of geographic data-base; coordinate systems and map projections.	
5	27 Jan. to 01 Feb.	Data Input, Storage and Editing: Nature of geographic data: Spatial and Attribute Data,	**Assignment**
6	03 Feb. to 08 Feb.	Concept of vector and raster based models; data input devices:	
7	10 Feb. to 15 Feb.	Digitization; external data bases; storage and manipulation of GIS data bases.	
8	17 Feb. to 22 Feb.	GIS and Spatial Analysis: Neighbourhood analysis; Proximity analysis and buffers;	**Test**
9	24 Feb. to 01 March	Overlays Analysis – raster and vector based overlay and their applications; Presentation of GIS output.	
10	03 March to 08 March	Different GNSS Systems in Operation; How a GNSS system works;	

11	17 March to 22 March	Sources of error in a GNSS system,	
12	24 March to 29 March	Introduction to GIS: Concepts of Projection, datum and spheroid, mean sea level.	
13	31 March to 05 April	Introduction to GIS: Concepts of Projection, datum and spheroid, mean sea level.	**Assignment**
14	07 April to 12 April	Introduction to GIS: Concepts of orthometric height,	
15	14 April to 19 April	Geoid models; Formats of storing GIS Data,	
16	21 April to 26 April	Geographical Mapping with hand-held GPS, data downloading and visualization,	
17	28 April to 30 April	Import of GPS data in Google Earth.	**Test**

Recommended Books/ E resources/ LMS:

- Gupta, R. P. (2003) Remote Sensing Geology. Springer-Verlag.
- Curran, Paul J. (1985) Principles of Remote Sensing. Longman, London & New York.
- Jensen, J. R. (2004) Remote Sensing of the Environment: An Earth Resource Perspective. Pearson Education.
- Joseph, G. (2003) Fundamentals of Remote Sensing. University Press, Hyderabad.
- Lillesand, T. and Kiefer, R. (1999) Remote Sensing and Image Interpretation. Wiley, London.
- Singh, R. B. (ed.), (1991) Environmental Monitoring: Application of Remote Sensing and GIS. Geocarto Int. Centre, Hong Kong.
- Singh, R. B. and Murai, S. (eds.). (1998) Space Informatics for Sustainable Development. Oxford & IBH Pub., New Delhi.

Signature of the teacher concerned

Head of the Department

SMRJ Government College, Siwani (Bhiwani)

(Affiliated to Chaudhary Bansi Lal University, Bhiwani)

Session: 2024-25

Lesson Plan

(Department of Commerce)

Teacher: Mr. Mukesh Kumar
Class: M.Sc. Geo. II
Semester: 4th
Maximum Marks: 100
End Term Exam Marks:

Course Type & Title: Principles of GIS and Navigation System (Practical)
Course Code: 20 GEO 410
Credits: 4
Internal Assessment Marks: 20
Practical Marks: 80

Course Outcomes:

At the end of the course students will be able to:

This course aims to familiarize and enhance the student's knowledge about the Remote Sensing and GIS techniques along with their application value in the Earth observation.

Sr. No.	Week/Month, 2025	Unit/ Topic/ Chapter to be covered	Assignment/Test/ Remarks, if any
1	01 Jan. to 04 Jan.	Familiar with Syllabus. Map elements: scale, projection	
2	06 Jan. to 11 Jan.	Map elements: coordinate systems	
3	13 Jan. to 18 Jan.	Introduction to GIS software (open source) Data inputs scanning/acquiring data	**Assignment**
4	20 Jan. to 25 Jan.	Georeferencing a raster layer with GPS Points and an existing georeferenced layer,	
5	27 Jan. to 01 Feb.	Defining projection, re-project from one projection to another	
6	03 Feb. to 08 Feb.	Creating Vector layers through on-screen digitisation- Point.	
7	10 Feb. to 15 Feb.	Creating Vector layers through on-screen digitisation- Line.	
8	17 Feb. to 22 Feb.	Creating Vector layers through on-screen digitisation-Polygon.	
9	24 Feb. to 01 March	Creating Attribute Table: Add Fields for different data types, Joining and relating tables.	**Assignment**
10	03 March to 08 March	Simple query building Topology: error detection and correction	
11	17 March to 22 March	Data visualization, map layout design	
12	24 March to 29 March	Data visualization, symbology	
13	31 March to 05 April	Raster data manipulation: Resampling, Mathematical operations	**Assignment**

		using raster layers (Case Studies: Forest Planning for Sensitive Wildlife Species,	
14	07 April to 12 April	Raster data manipulation: Resampling, Mathematical operations using raster layers (Case Studies: Forest Planning for Sensitive Wildlife Species,	
15	14 April to 19 April	Raster data manipulation: Resampling, Mathematical operations using raster layers (Case Studies: Forest Planning for Sensitive Wildlife Species,	
16	21 April to 26 April	Raster data manipulation: Resampling, Mathematical operations using raster layers (Case Studies: Forest Planning for Sensitive Wildlife Species,	
17	28 April to 30 April	Population mapping and modelling, Delineation of Watersheds etc.)	**Assignment**

Recommended Books/ E resources/ LMS:

- **Quantum GIS (QGIS)**
- **Arc GIS**
- **Erdas Imagine**

Signature of the teacher concerned

Head of the Department

SMRJ Government College, Siwani (Bhiwani)

(Affiliated to Chaudhary Bansi Lal University, Bhiwani)

Session: 2024-25

Lesson Plan

(Department of Geography)

Teacher: Mr. Mukesh Kumar
Class: B.A. Geo Hons. III
Semester: 6th
Maximum Marks: 100
End Term Exam Marks:

Course Type & Title: GIS (Practical)
Course Code: 21 UGEOH 611
Credits: 4
Internal Assessment Marks: 20
Practical Marks: 80

Course Outcomes:

At the end of the course students will be able to:

The main aim of this course is to provide in hands on training to the students about basic concepts of GIS, Geo-processing and Geospatial Analysis.

Sr. No.	Week/Month, 2025	Unit/ Topic/ Chapter to be covered	Assignment/Test/ Remarks, if any
1	01 Jan. to 04 Jan.	Familiar with Syllabus. Data Capture, Preparation and Processing	
2	06 Jan. to 11 Jan.	Data Capture, Preparation and Processing	
3	13 Jan. to 18 Jan.	Collection of GPS Points	
4	20 Jan. to 25 Jan.	Importing Coordinates/GPS Readings	
5	27 Jan. to 01 Feb.	Georeferencing a Topographical Map	
6	03 Feb. to 08 Feb.	Digitizing: Points, Lines, Polygon	**Assignment**
7	10 Feb. to 15 Feb.	Capturing from Google Earth	
8	17 Feb. to 22 Feb.	Geo-processing - Clipping, Masking	
9	24 Feb. to 01 March	Buffering , Intersect	
10	03 March to 08 March	Editing, Formatting	
11	17 March to 22 March	Output, Query	
12	24 March to 29 March	Overlays	
13	31 March to 05 April	Geospatial Analysis Spatial Statistics, Gridding	**Assignment**
14	07 April to 12 April	Interpolation Methods	

15	14 April to 19 April	Application of GIS**:** Land Use Mapping	
16	21 April to 26 April	Application of GIS**:** Urban Sprawl Analysis	
17	28 April to 30 April	Application of GIS**:** Forests Monitoring.	**Assignment**

Recommended Books/ E resources/ LMS:

- **Quantum GIS (QGIS)**
- **Arc GIS**
- **Erdas Imagine**

Signature of the teacher concerned

Head of the Department

SMRJ Government College, Siwani (Bhiwani)

(Affiliated to Chaudhary Bansi Lal University, Bhiwani)

Session: 2024-25

Lesson Plan

(Department of Geography)

Teacher: Mr. Mukesh Kumar
Class: B.A. Geo. Hons. II
Semester: 4th
Maximum Marks: 100
End Term Exam Marks: 80

Course Type & Title: Environmental Geography
Course Code: 21 UGEOH 401
Credits: 4
Internal Assessment Marks: 20
Practical Marks: Nil

Course Outcomes:

At the end of the course students will be able to:

Main aim of this course is to familiarize the students with the understanding of our environment and associated ecological processes. This will sensitize the students for environmental pollution and their solution.

Sr. No.	Week/Month, 2025	Unit/ Topic/ Chapter to be covered	Assignment/Test/ Remarks, if any
1	01 Jan. to 04 Jan.	Familiar with syllabus.	
2	06 Jan. to 11 Jan.	Nature & Scope of Environmental Geography.	
3	13 Jan. to 18 Jan.	Basic Principles of Environmental Geography.	
4	20 Jan. to 25 Jan.	Approaches to Study Environmental Geography; Composition and Type of Environment.	
5	27 Jan. to 01 Feb.	Approaches to Study Environmental Geography - Man-environment Relationship.	**Assignment**
6	03 Feb. to 08 Feb.	Ecosystem: Concept and Components.	
7	10 Feb. to 15 Feb.	Food Chain and Food Webs,	
8	17 Feb. to 22 Feb.	Trophic Structure, Ecological Pyramids,	
9	24 Feb. to 01 March	Energy Flow and Bio-geo Chemical Cycles	Test

10	03 March to 08 March	Environmental Degradation: Concept, Meanings and their Types; Greenhouse Effect, Global Warming,	
11	17 March to 22 March	Environmental Pollution: Meaning and Types; Impact of Air, Water and Land Pollutions	
12	24 March to 29 March	Environmental Pollution: Meaning and Types; Impact of Air, Water and Land Pollutions	**Assignment**
13	31 March to 05 April	Environmental Pollution: Meaning and Types; Impact of Air, Water and Land Pollutions	
14	07 April to 12 April	Environmental Management: Concepts and Approaches,	
15	14 April to 19 April	Environmental Issues, Awareness and Movements in India,	
16	21 April to 26 April	Role of International and National Policies; Role of UNO: RIO summit, Kyoto protocol, Copenhagen summit.	
17	28 April to 30 April	Role of International and National Policies; Role of UNO: RIO summit, Kyoto protocol, Copenhagen summit.	Test

Recommended Books/ E resources/ LMS:

- Chandna, R.C. (1998). *Environmental Awareness*. New Delhi: Kalyani Publishers.
- Cunningham, W.P. and Cunningham, M.A. (2016). *Environmental Science: A global Concern*. New Delhi: McGraw Hill Education.
- Gupta, P.D. (2003). *Environmental Issues for the 21st Century*. New Delhi: Mittal Publications.
- Odum, E.P. (1971). *Fundamentals of Ecology.* Philadelphia: W B Saunders Co.
- Strahler, A.N. and Stahler, A.M. (1986). *Geography and Man's Environment.* New York: John Wiley and Sons.
- Agarwal, K.C. (2001). *Environmental Biology.* Bikaner: Nidhi publishers Ltd.
- Odum, E.P. (1971). *Fundamentals of Ecology.* London: WB Saunders Co.
- Saxena, H.M. (1999). *Environmental Geography.* Jaipur: Rawat Publications.
- Sharma, P.D. (1999). *Ecology and Environment.* New Delhi: Rastogi Publications.

Signature of the teacher concerned

Head of the Department

SMRJ Government College, Siwani (Bhiwani)

(Affiliated to Chaudhary Bansi Lal University, Bhiwani)

Session: 2024-25

Lesson Plan

(Department of Geography)

Teacher: Mr. Mukesh Kumar
Class: B.A. I
Semester: IInd
Maximum Marks: 70
End Term Exam Marks: 35

Course Type & Title: S.E.C, Remote Sensing
Course Code: 24UN-GEO-SEC-202
Credits: 3
Internal Assessment Marks: 20
Practical Marks: 15

Course Outcomes:

- Provide a comprehensive understanding of cartographic principles and map design.
- Develop skills in both traditional and digital map-making techniques.
- Explore thematic and analytical cartography for representing spatial data.
- Introduce students to digital tools for producing high-quality maps.
- understand the role of maps in communicating spatial information effectively

Sr. No.	Week/Month, 2025	Unit/ Topic/ Chapter to be covered	Assignment/Test/ Remarks, if any
1	14 Jan. to 18 Jan.	Familiar with Syllabus. Remote Sensing: Definition, History and Scope	
2	20 Jan. to 25 Jan.	Electromagnetic Spectrum:	
3	27 Jan. to 01 Feb.	Wavelengths and Frequencies	
4	03 Feb. to 08 Feb.	Interaction of EM Radiation with Atmosphere	
5	10 Feb. to 15 Feb.	Interaction of EM Radiation with Earth's Surface	
6	17 Feb. to 22 Feb.	Types of Remote Sensing: Active	
7	24 Feb. to 01 March	Types of Remote Sensing: Passive	
8	03 March to 08 March	Platforms and Sensors in Remote Sensing	***Assignment***
9	17 March to 22 March	Remote Sensing Software and Tools	

10	24 March to 29 March	Data Acquisition from Remote Sensing Portals (USGS Earth Explorer,	**Test**
11	31 March to 05 April	Data Acquisition from Remote Sensing Portals (USGS Earth Explorer,	***Assignment***
12	07 April to 12 April	Copernicus Open Access Hub, BHUVAN)	
13	14 April to 19 April	Remote Sensing Data Interpretation and Processing	
14	21 April to 26 April	Remote Sensing Data Interpretation and Processing	
15	28 April to 30 April	Applications of Remote Sensing	**Test**

Recommended Books/ E resources/ LMS:

- Lillesand, T.M., Kiefer, R. W., & Chipman, J. (2015) Remote Sensing and Image Interpretation, John Wiley & Sons, New York.
- Jensen, J.R. (2016) Introductory Digital Image Processing: A Remote Sensing Perspecti Pearson Education, Upper Saddle River.
- Campbell, J.B., & Wynne, R.H. (2011) Introduction to Remote Sensing, The Guilford Pr New York.
- Richards, J.A., & Jia, X. (2006) Remote Sensing Digital Image Analysis, Springer, Berlin
- Schowengerdt, R.A. (2007) Remote Sensing: Models and Methods for Image Processing Elsevier, Amsterdam.

Signature of the teacher concerned

Head of the Department