SMRJ Government College, Siwani (Bhiwani)
(Affiliated to Chaudhary Bansi Lal University, Bhiwani)
Department of Geography

LESSON PLAN - ODD SEMESTER (ACADEMIC SESSION 2026-27)

Teacher	Dr. Inder Kumar
Course Title	Basics of GEE (25UN-GEO-VOC-502)
Course Code & Type	Vocational Course (VOC) | Level 300-399
Program / Class	B.A. / B.Sc. / M.Sc. Geography (Semester V)
Credits & Hours	4 Credits (3 Theory + 1 Practical) | 5 Hours / Week
Max Marks	Max Marks: 100 (Internal: 30 | End Term Exam: 70)

COURSE LEARNING OUTCOMES (CLOs)

Outcome ID	Description
CLO 1	Understand the fundamentals, cloud computing architecture, and interface of Google Earth Engine (GEE).
CLO 2	Access, filter, and manage satellite data and vector datasets from the GEE Data Catalog.
CLO 3	Apply JavaScript-based tools in GEE for geospatial visualization, composite creation, and spatial operations.
CLO 4	Perform basic remote sensing analysis, compute spectral indices (NDVI, NDWI, NDBI), time-series analysis, and image classification.

Sr. No.	Week/Month, 2026	Unit/ Topic/ Chapter to be covered	Assignment/Test/ Remarks, if any
1	**Week 1 (01.08.2026 - 08.08.2026)**	Unit I: Fundamentals of GEE: Introduction to Earth Engine, cloud computing architecture, client vs. server-side processing.	Lab Orientation: Overview of GEE account sign-up & system environment.

2	**Week 2 (10.08.2026 - 15.08.2026)**	Unit I: Exploring the GEE Interface: Code Editor, Inspector panel, Console tab, Task Manager, and Asset Manager.	Lab Exercise 1: Navigating GEE interface & running sample scripts.
3	**Week 3 (17.08.2026 - 22.08.2026)**	Unit I: JavaScript Basics in GEE: Variables, data types, functions, objects, and dictionaries.	Lab Exercise 2: Writing JavaScript statements & printing console output.
4	**Week 4 (24.08.2026 - 29.08.2026)**	Unit I: Vector Data Handling: Geometries (ee.Geometry), Feature Collections (ee.FeatureCollection), attribute querying, and Map.addLayer.	Lab Exercise 3: Working with vector layers & custom ROI geometries.
5	**Week 5 (31.08.2026 - 05.09.2026)**	Unit II: GEE Data Catalog: Exploring Landsat, Sentinel, MODIS, DEMs (SRTM), and vector datasets.	Lab Exercise 4: Searching, filtering, and importing catalog data.
6	**Week 6 (07.09.2026 - 12.09.2026)**	Unit II: Image Processing (Part 1): Image and ImageCollection structures; filtering by date, geographic extent, and cloud cover.	Practical Record Submission 1: Verification of Exercises 1 & 2.
7	**Week 7 (14.09.2026 - 19.09.2026)**	Unit II: Image Processing (Part 2): Clipping rasters to ROI, mosaicking, band combinations, and visual stretching.	Lab Exercise 5: Generating cloud-free image composites & clipping.
8	**Week 8 (21.09.2026 - 26.09.2026)**	Unit II: Advanced Compositing: Cloud masking, spatial/temporal reductions, and composite optimization.	Assignment I: Comparative evaluation of Landsat & Sentinel datasets.
9	**Week 9 (28.09.2026 - 03.10.2026)**	Unit III: Raster Analysis (Part 1): Computing Spectral Indices — NDVI, NDWI, and NDBI using normalizedDifference and expressions.	Lab Exercise 6: Spectral index mapping & legend customization.
10	**Week 10 (05.10.2026 - 10.10.2026)**	Unit III: Raster Analysis (Part 2): Reducers, zonal statistics, and regional summary calculations over vector boundaries.	Lab Exercise 7: Extracting zonal statistics over administrative units.
11	**Week 11 (12.10.2026 - 17.10.2026)**	Unit III: Image Classification: Supervised (Random Forest, CART) and Unsupervised (K-Means) LULC classification.	Minor Practical Test: Hands-on image classification exercise.
12	**Week 12 (19.10.2026 - 24.10.2026)**	Unit III: Time-Series Analysis: Temporal compositing, change detection, and dynamic chart generation (ui.Chart.image.series).	Lab Exercise 8: Generating vegetation time-series graphs.

13	**Week 13 (26.10.2026 - 31.10.2026)**	Unit IV: Exporting Results: Exporting imagery, feature collections, and tables to Google Drive and Assets.	Assignment II: Time-series analysis report submission.
14	**Week 14 (02.11.2026 - 07.11.2026)**	Unit IV: Applications: Land Use/Land Cover Mapping, vegetation monitoring, and agricultural health evaluation.	Mini Project Work: Dataset collection and baseline image preparation.
15	**Week 15 (09.11.2026 - 14.11.2026)**	Unit IV: Applications: Disaster management (flood inundation/wildfire) and water resource dynamics.	Mini Project Execution: Running spatial indices & change assessment.
16	**Week 16 (16.11.2026 - 21.11.2026)**	Unit IV: App Development: Building interactive GEE User Interfaces using ui.Panel, ui.Label, and ui.Button widgets.	Practical Record Submission 2: Final submission of 8 exercises.
17	**Week 17 (23.11.2026 - 28.11.2026)**	Project Presentation & Final Record Evaluation: Presentation of GEE mini-projects, file evaluation, and Viva-Voce preparation.	Final Practical Exam & Viva-Voce Evaluation.

RECOMMENDED BOOKS & RESOURCES

1. Gorelick, N., et al. (2017). Google Earth Engine: Planetary-Scale Geospatial Analysis for Everyone. Remote Sensing of Environment.
2. Tamiminia, H., et al. (2020). Google Earth Engine for Geo-Big Data Applications: A Meta-Analysis and Systematic Review. ISPRS Journal of Photogrammetry and Remote Sensing.
3. Lillesand, T. M., Kiefer, R. W., & Chipman, J. W. Remote Sensing and Image Interpretation. Wiley.
4. Jensen, J. R. Introductory Digital Image Processing. Pearson.
5. Longley, P. A., Goodchild, M. F., Maguire, D. J., & Rhind, D. W. Geographic Information Systems and Science.

Signature of the teacher concerned

Head of the Department

SMRJ Government College, Siwani (Bhiwani)

(Affiliated to Chaudhary Bansi Lal University, Bhiwani)

Department of Geography

LESSON PLAN - ODD SEMESTER (ACADEMIC SESSION 2026-27)

Teacher	Dr. Inder Kumar
Course Title	Digital Cartography & Morphometric Analysis
Course Code & Type	25PG-GEO-105 | Core Course (CC-5)
Program / Class	M.Sc. Geography (1st Semester)
Credits & Hours	4 Practical Credits (8 Hours / Week)
Max Marks	100 (Internal: 30 | Exam: 50 Theory + 20 Practical)

Outcome ID	Description
CLO 1	Develop proficiency in digital mapping using GIS tools (QGIS, ArcGIS, Global Mapper) and cartographic principles.
CLO 2	Analyze terrain features using morphometric techniques with spatial datasets and DEMs.
CLO 3	Apply GIS-based tools and DEMs to interpret surface processes, hydrological corrections, and watershed dynamics.
CLO 4	Design high-quality cartographic outputs, layout publications, and quantitative morphometric assessment reports.

COURSE LEARNING OUTCOMES (CLOs)

Sr. No.	Week/Month, 2026	Unit/ Topic/ Chapter to be covered	Assignment/Test/ Remarks, if any
1	**01.08.2025 - 02.08.2025**	Unit I: Introduction to GIS Interface & Data Management: Exploring GIS software environments (QGIS, ArcGIS, Global Mapper); Overview of vector and raster data structures.	Lab Orientation
2	**04.08.2025 - 09.08.2025**	Unit I: Working with file formats: shapefiles (.shp), GeoTIFFs, and tabular CSVs. Managing layers, attribute table operations, and metadata creation.	**Lab Exercise 1**
3	**11.08.2025 - 16.08.2025**	Unit I: Coordinate Reference Systems (CRS): Understanding Geographic vs. Projected Coordinate Systems, Universal Transverse Mercator (UTM) zones.	**Lab Exercise 2**

4	**18.08.2025 - 23.08.2025**	Unit I: Map Scale types: Representative Fraction (RF), verbal, and graphical scales. Transformation, georeferencing, and reprojection of spatial data using EPSG codes and custom projections.	**Lab Exercise 3**
5	**25.08.2025 - 30.08.2025**	Unit II: Principles of Cartographic Design: Visual hierarchy, color theory, symbology, and typography in digital mapping.	**Lab Exercise 4**
6	**01.09.2025 - 06.09.2025**	Unit II: Preparation of Thematic Maps: Practical creation of land use, rainfall (isohyet), soil, and drainage density maps.	**Practical Record Submission 1**
7	**08.09.2025 - 13.09.2025**	Unit II: Data Classification Methods: Application of Natural Breaks (Jenks), Quantiles, Equal Interval, and Standard Deviation methods in thematic mapping.	**Lab Exercise 5**
8	**15.09.2025 - 20.09.2025**	Unit II: Map Layout Design: Adding essential map elements (legends, north arrows, graphical scale bars, inset maps); Map layout preparation and export formats (PDF/TIFF) for publication.	**Assignment I**
9	**22.09.2025 - 27.09.2025**	Unit III: Terrain Analysis Using Digital Elevation Models (DEMs): Data acquisition and sources of DEMs (SRTM, ASTER, ALOS PALSAR, LiDAR data).	**Lab Exercise 6**
10	**29.09.2025 - 04.10.2025**	Unit III: Surface Derivative Extraction: Generating slope, aspect, hillshade, and contour maps from DEMs using raster spatial analysis tools.	**Lab Exercise 7**
11	**06.10.2025 - 11.10.2025**	Unit III: Elevation Profiling & 3D Visualization: Constructing cross-sectional elevation profiles and 3D terrain models. Applications in hazard mapping, urban planning, and watershed studies.	**Minor Practical Test**
12	**13.10.2025 - 18.10.2025**	Unit IV: Linear Morphometric Analysis: Stream ordering schemes (Strahler and Horton methods), computation of stream length, stream length ratio, and bifurcation ratio (Rb).	**Lab Exercise 8**
13	**27.10.2025 - 01.11.2025**	Unit IV: Areal & Relief Morphometric Analysis: Computation of drainage density, stream frequency, texture ratio, form factor, circularity ratio, elongation ratio, basin relief, and ruggedness number.	**Assignment II / Record Review**
14	**03.11.2025 - 08.11.2025**	Unit IV: GIS-Based Automated Watershed Delineation: Pre-processing DEM (sink filling/hydrologic correction), computing flow direction, flow accumulation, stream network extraction, and boundary delineation.	**Lab Exercise 9**

15	**10.11.2025 - 15.11.2025**	Unit IV: Sub-watershed Analysis & Prioritization: Ranking sub-watersheds using compound morphometric parameter analysis for soil conservation and water management.	**Lab Exercise 10**
16	**17.11.2025 - 22.11.2025**	Practical Group Project Work: Small group project on digital mapping and morphometric assessment of a selected river basin/watershed. Integration with geology and land use datasets.	**Project Work Submission**
17	**24.11.2025 - 29.11.2025**	Project Presentation & Final Record Verification: Presentation of practical project outputs, interpretation of morphometric indices, comprehensive file evaluation, and Viva-Voce preparation.	**Final Record Evaluation & Viva**

RECOMMENDED BOOKS & LEARNING RESOURCES

- Burrough, P. A., & McDonnell, R. A. (1998). Principles of geographical information systems (2nd ed.). Oxford University Press.
- Dent, B. D., Torguson, J. S., & Hodler, T. W. (2008). Cartography: Thematic map design (6th ed.). McGraw-Hill.
- Field, K. (2018). Cartography. Esri Press.
- Kraak, M. J., & Ormeling, F. J. (2020). Cartography: Visualization of geospatial data (4th ed.). Routledge.
- Longley, P. A., Goodchild, M. F., Maguire, D. J., & Rhind, D. W. (2015). Geographic information science and systems (4th ed.). Wiley.
- Sarkar, A. (2015). Practical geography: A systematic approach (3rd ed.). Orient BlackSwan.
- Shukla, S., & Mishra, A. (2016). Morphometric analysis of a watershed using GIS. Applied Water Science, 6(1), 11-20.
- Slocum, T. A., McMaster, R. B., Kessler, F. C., & Howard, H. H. (2009). Thematic cartography and geovisualization (3rd ed.). Pearson.

Signature of the teacher concerned

Head of the Department

SMRJ Government College, Siwani (Bhiwani)

(Affiliated to Chaudhary Bansi Lal University, Bhiwani)

Department of Geography

LESSON PLAN - ODD SEMESTER (ACADEMIC SESSION 2026-27)

Teacher	Dr. Inder Kumar
Course Title	Geography of Disaster Management
Course Code & Type	25UN-GEO-DSE-505 | DSE-3
Program / Class	B.A./B.Sc. (Semester V)
Credits & Hours	4 Credits (3 Theory + 1 Practical) | 5 hrs/wk
Max Marks	100 (Internal: 30 | Exam: 50 Theory + 20 Practical)

COURSE LEARNING OUTCOMES (CLOs)

Outcome ID	Description
CLO 1	To understand the fundamental issues pertaining to disaster.
CLO 2	To understand the mechanism of disaster classification.
CLO 3	To understand the causes, effects and control measures of different hazards.
CLO 4	To evaluate the functioning of various agencies for disaster risk reduction in India.
CLO 5	To attain skills in solving practical problems associated with disaster and their management.

Sr. No.	Week/Month, 2026	Unit/ Topic/ Chapter to be covered	Assignment/Test/ Remarks, if any
1	**Week 1 (01.08.26 - 08.08.26)**	Unit 1: Natural hazards and disasters: Definition, concept, and nature. Practical: Orientation to disaster management lab & project file guidelines.	• 01 Aug: Saturday Working / Orientation

2	**Week 2 (10.08.26 - 15.08.26)**	Unit I: Classification of natural hazards and disasters. Practical Ex. 1: Mapping and demarcation of hazard prone areas in the district/state.	—
3	**Week 3 (17.08.26 - 22.08.26)**	Unit I: Geography and disasters: Spatial distribution and occurrence of major disasters in the World. Practical Ex. 1 (contd.): Finalization of district hazard zonation map.	—
4	**Week 4 (24.08.26 - 29.08.26)**	Unit I: Spatial distribution and occurrence of major disasters in India. Practical Ex. 2: Analysis of extreme rainfall events in district/state.	—
5	**Week 5 (31.08.26 - 05.09.26)**	Unit II: Tectonic hazards: Earthquakes - Causes, effects, and control/mitigation measures. Practical Ex. 3: Plotting of annual distribution of occurrence of cyclones in India.	**Assignment 1 Issued**
6	**Week 6 (07.09.26 - 12.09.26)**	Unit II: Tectonic hazards: Tsunamis - Mechanism, causes, effects, and early warning systems. Practical Ex. 3 (contd.): Cyclone track and frequency analysis plotting.	**Submission of Assignment 1**
7	**Week 7 (14.09.26 - 19.09.26)**	Unit II: Geological hazards: Landslides - Causes, environmental impacts, and control measures. Practical Ex. 4: Plotting of annual distribution of flood mortalities in Haryana since 2000.	—
8	**Week 8 (21.09.26 - 26.09.26)**	Unit II: Geological hazards: Volcanoes - Types, distribution, causes, effects, and management. Practical Ex. 5: Plotting of decadal distribution of flood prone and flood affected area in Haryana since 1966.	—
9	**Week 9 (28.09.26 - 03.10.26)**	Unit III: Meteorological hazards: Cyclones and Cloud Bursts - Causes, assessment, and effects. Practical Ex. 5 (contd.): Trend line construction for flood affected areas.	**Minor Test / Mid-Term Exam**
10	**Week 10 (05.10.26 - 10.10.26)**	Unit III: Meteorological hazards: Control and mitigation measures of cyclones and cloud bursts. Practical Ex. 6: Plotting of progress of flood forecasting stations in India.	—
11	**Week 11 (12.10.26 - 17.10.26)**	Unit III: Hydrological hazards: Floods - Causes, assessment, effects, and control/management. Practical Ex. 7: Mapping of district-wise heat wave mortalities in Haryana.	—
12	**Week 12 (19.10.26 - 24.10.26)**	Unit III: Hydrological hazards: Droughts - Types, causes, assessment, effects, and drought management. Practical Ex. 8: Mapping of district-wise cold wave mortalities in Haryana.	—

13	**Week 13 (26.10.26 - 31.10.26)**	Unit IV: Human induced disasters: Oil Spills - Causes, assessment, ecological effects, and control measures. Practical: Practical file compilation and verification (Exercises 1-8).	**Assignment 2 Issued**
14	**Week 14 (02.11.26 - 07.11.26)**	Unit IV: Human induced disasters: Stampedes - Causes, assessment, preventative strategies, and crowd control. Practical: Final corrections and thematic map styling in practical records.	—
15	**Week 15 (09.11.26 - 14.11.26)**	Unit IV: Disaster Management in India: National policy, organizational setup (NDMA, SDMA, DDMA), and institutional framework. Practical: Final practical record file submission.	**Submission of Assignment 2**
16	**Week 16 (16.11.26 - 21.11.26)**	Practical Examination Week: External practical evaluation, exercise solving, file assessment, and viva-voce. Practical: End-term Practical Exam (20 Marks).	**Practical Viva-Voce & Lab Exam**
17	**Week 17 (23.11.26 - 28.11.26)**	Course Wrap-up & Exam Prep: Review of previous year CBLU question papers, internal assessment score display, and doubt clearing.	—

RECOMMENDED BOOKS & REFERENCES

1. Alexander, D. (1993) Natural Disasters, Springer, Berlin.

2. Carter, N.W. (1991) Disaster Management: A Disaster Manager's Handbook, ADB, Manila.

3. Coch, N.K. (1994) Geohazards: Natural and Human, Pearson, New Delhi.

4. Cutter, S.L. (2006) Hazards Vulnerability and Environmental Justice, Routledge, London.

5. Gupta, H.K. (2013) Disaster Management, University Press, New Delhi.

6. Kapur, A. (2010) Vulnerable India: A Geographical Study of Disasters, Sage Publication.

7. National Policy on Disaster Management (2009) Ministry of Home Affairs, Govt. of India.

8. Singh, R.B. (2006) Natural Hazards and Disaster Management, Rawat Publications, Jaipur.

9. Singh, S. and Singh, J. (2013) Disaster Management, Pravalika Publications, Allahabad.

10. Smith, K. (1996) Environmental Hazards: Assessing Risks and Reducing Disasters, Routledge.

Signature of the teacher concerned

Head of the Department

SMRJ Government College, Siwani (Bhiwani)

(Affiliated to Chaudhary Bansi Lal University, Bhiwani)

Department of Geography

LESSON PLAN - ODD SEMESTER (ACADEMIC SESSION 2026-27)

Teacher	Dr. Inder Kumar
Course Title	Physical Geography
Course Code & Type	25UN-GEO101 - CC/MCC
Program / Class	B.A./B.Sc. (Semester I)
Credits & Hours	4 Credits (3 Theory + 1 Practical) | 5 hrs/wk
Max Marks	100 (Internal: 30 | Exam: 50 Theory + 20 Practical)

COURSE LEARNING OUTCOMES (CLOs)

Outcome ID	Description
CLO 1	Acquire knowledge about basic concepts of geo-tectonics.
CLO 2	Understand the agents and processes of change on the surface of the earth.
CLO 3	Enrich knowledge about atmosphere and its climate.
CLO 4	Attain knowledge about ocean surface configuration and circulation in oceanic water.
CLO 5	Attain skills in solving practical problems associated with physical geography.

Sr. No.	Week/Month, 2026	Unit/ Topic/ Chapter to be covered	Assignment/Test/ Remarks, if any
1	**Week 1 (01.08.26 - 08.08.26)**	Unit 1: Interior of the earth; Introduction to geological time scale. Practical: Introduction to physical geography lab & rock specimen identification techniques.	• 01 Aug: Saturday Working / Orientation

2	**Week 2** **(10.08.26 - 15.08.26)**	Unit I: Rocks and their types (Igneous, Sedimentary, Metamorphic). Practical Ex. 1: Identification and collection of 12 rock samples (Granite, Basalt, Laterite, Limestone, etc.).	
3	**Week 3** **(17.08.26 - 22.08.26)**	Unit I: Theory of Isostasy (Airy and Pratt concepts). Practical Ex. 2: Topographical map interpretation (SOI 1:50,000) Mountain region.	
4	**Week 4** **(24.08.26 - 29.08.26)**	Unit I: Continental drift theory and Plate tectonics. Practical Ex. 2 (contd.): Physical features identification on mountain topographic maps.	
5	**Week 5** **(31.08.26 - 05.09.26)**	Unit II: Degradational processes: Weathering (Physical, Chemical, Biological) and Mass wasting. Practical Ex. 3: Topographical map interpretation (SOI 1:50,000) - Plateau region.	• Assignment 1 Issued
6	**Week 6** **(07.09.26 - 12.09.26)**	Unit II: Landforms generated by geomorphic agents: Fluvial (River) erosional and depositional features. Practical Ex. 3 (contd.): Topographical map interpretation - Plain region.	• Submission of Assignment 1
7	**Week 7** **(14.09.26 - 19.09.26)**	Unit II: Landforms generated by Wind (Aeolian processes). Practical Ex. 4: Measurement of weather elements using analogue instruments (Max, Min, Mean Temp, RH, Rainfall).	
8	**Week 8** **(21.09.26 - 26.09.26)**	Unit II: Landforms generated by Glaciers. Practical Ex. 4 (contd.): Data collection and recording using weather instruments.	
9	**Week 9** **(28.09.26 - 03.10.26)**	Unit III: Weather and Climate; Atmosphere composition and structure. Practical Ex. 5: Construction and interpretation of Climograph.	• Minor Test / Mid-Term Exam
10	**Week 10** **(05.10.26 - 10.10.26)**	Unit III: Atmospheric temperature distribution (horizontal and vertical) and heat budget. Practical Ex. 5 (contd.): Construction and interpretation of Hythergraph.	
11	**Week 11** **(12.10.26 - 17.10.26)**	Unit III: Atmospheric pressure belts, wind systems, atmospheric moisture and precipitation. Practical Ex. 6: Construction and interpretation of Hyetograph.	
12	**Week 12** **(19.10.26 - 24.10.26)**	Unit IV: Surface configuration of ocean floors: Pacific and Atlantic Ocean. Practical Ex. 7: Interpretation of Daily Weather Map of India - Pre-Monsoon season.	

13	**Week 13 (26.10.26 - 31.10.26)**	Unit IV: Surface configuration of Indian Ocean floor; Ocean currents: Pacific Ocean. Practical Ex. 8: Interpretation of Daily Weather Map of India - Monsoon and Post-Monsoon seasons.	Assignment 2 Issued
14	**Week 14 (02.11.26 - 07.11.26)**	Unit IV: Ocean currents: Atlantic and Indian Ocean circulations. Practical: Practical file compilation and review.	
15	**Week 15 (09.11.26 - 14.11.26)**	Revision & Presentations: Unit I-IV concepts review and student seminars. Practical: Final demonstration and lab records completion.	• Submission of Assignment 2
16	**Week 16 (16.11.26 - 21.11.26)**	Practical Examination Week: Lab exercises evaluation, file submission, and viva-voce examination. Practical: End-term Practical Exam (20 Marks).	• Practical Viva-Voce & Lab Exam
17	**Week 17 (23.11.26 - 28.11.26)**	Course Wrap-up & Exam Prep: Review of previous year question papers, internal assessment score compilation, and doubt clearing.	

RECOMMENDED BOOKS & RESOURCES

- Barry, RG and Chorley, RJ (1998) Atmosphere, Weather and Climate, Routledge, London.
- Bunnett, RB (1987) Physical Geography in Diagrams, Pearson Education, New Delhi.
- Critchfield, H (2002) General Climatology, Prentice-Hall of India, New Delhi.
- Kale, V and Gupta, A (2001) Element of Geomorphology, Oxford University Press, Calcutta.
- Khullar, DR (2014) Physical Geography, Kalyani Publishers, New Delhi.
- Monkhouse, FJ (1960) Principles of Physical Geography, Hodder and Stoughton, London.
- Singh, S (1998) Geomorphology, Prayag Publication, Allahabad.
- Singh, S (2012) Physical Geography, Prayag Publication, Allahabad.
- Thornbury, WD (1969) Principles of Geomorphology, John Wiley and Sons, New York.
- Trewartha, GT (1981) An Introduction to Climate, McGraw Hill, New York

Signature of the teacher concerned

Head of the Department

SMRJ Government College, Siwani (Bhiwani)
(Affiliated to Chaudhary Bansi Lal University, Bhiwani)
Department of Geography

LESSON PLAN - ODD SEMESTER (ACADEMIC SESSION 2026-27)

Teacher	Dr. Inder Kumar
Course Title	Rural Development & Transformation
Course Code & Type	25PG GEO 313 | DEC 4
Program / Class	M.Sc. Geography (Semester III)
Credits & Hours	4 Credits (3 Theory + 1 Practicum) | 5 hrs/wk
Max Marks	100 (Internal: 30 | Exam: 50 | Practical: 20

COURSE LEARNING OUTCOMES (CLOs)

Outcome ID	Description
CLO 1	Understand the concepts, theories, and approaches related to rural development and transformation in diverse geographical contexts.
CLO 2	Analyze the socio-economic, demographic, and environmental processes shaping rural transformation and regional disparities.
CLO 3	Evaluate rural development policies, programmes, institutions, and strategies for promoting inclusive and sustainable development.
CLO 4	Apply field-based, statistical, and geospatial techniques for assessing rural development patterns, challenges, and planning interventions.

Sr. No.	Week/Month, 2026	Unit/ Topic/ Chapter to be covered	Assignment/Test/ Remarks, if any
1	**Week 1 (01.08.2026 - 08.08.2026)**	Unit I: Nature, scope, and significance of rural development; concepts of rurality, rural transformation, agrarian transition, and rural livelihoods. Practical: Introduction to secondary data sources and Census village directory.	• 01 Aug: Saturday Working / Orientation

2	**Week 2 (10.08.2026 - 15.08.2026)**	Unit I: Historical evolution of rural development approaches; theories and paradigms: modernization, dependency, and sustainable livelihoods. Practical Lab 1: Delineation and analysis of rural development indicators using Census data.	
3	**Week 3 (17.08.2026 - 22.08.2026)**	Unit I: Participatory development and territorial approaches; rural settlement systems and regional disparities. Practical Lab 1 (contd.): Computation of composite indices of development.	
4	**Week 4 (24.08.2026 - 29.08.2026)**	Unit I: Indicators and measurement of rural development; rural development in the context of globalization and sustainable development. Practical Lab 2: Preparation & interpretation of village resource maps using PRA techniques.	
5	**Week 5 (31.08.2026 - 05.09.2026)**	Unit II: Demographic transition and migration in rural areas; changing agrarian structure and agricultural transformation. Practical Lab 2 (contd.): Social mapping techniques for spatial inequality assessment.	• Assignment 1 Issued
6	**Week 6 (07.09.2026 - 12.09.2026)**	Unit II: Diversification of rural economy and non-farm employment; land reforms, tenancy, and agrarian relations. Practical Lab 3: Analysis of rural infrastructure and accessibility using GIS.	• Submission of Assignment 1
7	**Week 7 (14.09.2026 - 19.09.2026)**	Unit II: Rural infrastructure, connectivity, and service accessibility; poverty, inequality, social exclusion, and gender dimensions. Practical Lab 3 (contd.): Network analysis for rural road connectivity.	
8	**Week 8 (21.09.2026 - 26.09.2026)**	Unit II: Natural resource management and environmental sustainability in rural areas; rural-urban linkages and peri-urban transformation. Practical: Practical file compilation and review.	
9	**Week 9 (28.09.2026 - 03.10.2026)**	Unit III: Rural development policies and planning in India; decentralized planning and Panchayati Raj Institutions (PRI). Practical: Mid-term practical review.	• Minor Test / Mid-Term Exam
10	**Week 10 (05.10.2026 - 10.10.2026)**	Unit III: Major rural development programmes and schemes in India (MGNREGA, NRLM, PMGSY, PMAY-G, Watershed Development). Practical Lab 4: Field survey data collection on livelihood diversification.	
11	**Week 11 (12.10.2026 - 17.10.2026)**	Unit III: Community participation and local governance; rural entrepreneurship and livelihood enhancement. Practical Lab 4 (contd.): Tabulation and statistical analysis of field survey data.	
12	**Week 12 (19.10.2026 - 24.10.2026)**	Unit III: Digital transformation and smart villages; climate change adaptation and resilience in rural areas. Practical Lab 5: Preparation of a village development profile/report.	

13	**Week 13 (26.10.2026 - 31.10.2026)**	Unit III: Geospatial approaches in rural planning and development; contemporary challenges and future prospects. Practical Lab 6: Preparation of a thematic rural development map using GIS tools.	Assignment 2 Issued
14	**Week 14 (02.11.2026 - 07.11.2026)**	Revision & Practical Consolidation: Review of Unit I & II concepts; finalizing village profiles and GIS thematic mapping. Practical: Practical file checking.	
15	**Week 15 (09.11.2026 - 14.11.2026)**	Revision & Presentations: Student seminars on smart villages, climate resilience, and scheme evaluations. Practical: Final demonstration and lab records completion.	• Submission of Assignment 2
16	**Week 16 (16.11.2026 - 21.11.2026)**	Practical Examination Week: Lab exercises evaluation, file submission, and viva-voce examination. Practical: End-term Practical Exam (20 Marks).	• Practical Viva-Voce & Lab Exam
17	**Week 17 (23.11.2026 - 28.11.2026)**	Course Wrap-up & Exam Prep: Review of previous year question papers, internal assessment score compilation, and doubt clearing.	

RECOMMENDED BOOKS & RESOURCES

1. Chambers, R. (1983). Rural development: Putting the last first. Longman.

2. Singh, K., & Shishodia, Y. S. (2015). Rural development: Theory, policies and practices. Rawat Publications.

3. Ellis, F. (2000). Rural livelihoods and diversity in developing countries. Oxford University Press.

4. Government of India (Latest). Rural Development Report / Economic Survey. Ministry of Rural Development & NITI Aayog.

5. Longley, P. A., et al. (2015). Geographical Information Systems and Science (4th ed.). Wiley.

Signature of the teacher concerned

Head of the Department