



SMRJ Government College, Siwani (Bhiwani)

(Affiliated to Chaudhary Bansi Lal University, Bhiwani)

Session: 2024-2025

Lesson Plan

(Department of Geography)

Teacher: Dr. Mukesh Kumar

Class: M.Sc

Semester: III

Maximum Marks: 100

End Term Exam Marks: 80

Course Type & Title: Environmental Geography

Course Code: 19GEO305

Credits: 04

Internal Assessment Marks: 20

Practical Marks: ----

Course Outcomes:

- **This course aims to provide the understanding about the importance of biodiversity to maintain ecological balance and various environmental issues at national and international level.**

Sr. No.	Week/Month, 2024	Unit/ Topic/ Chapter to be covered	Assignment/Test/ Remarks, if any
1	01.08.2024 – 03.08.2024	Familiar with syllabus Environment Geography and its scope.	
2	05.08.2024 – 10.08.2024	Basic Principles of Environmental Geography: Composition and types of Environment,	
3	12.08.2024 – 17.08.2024	Ecological Principles, Man – Environment relationship, Restoration of Ecology.	
4	19.08.2024 – 24.08.2024	Ecosystem: Concept and components,	
5	26.08.2024 – 31.08.2024	Trophic levels, Food chains and food webs,	Assignment
6	02.09.2024 – 07.09.2024	Energy flow in the ecosystem, Ecosystem stability,	Test
7	09.09.2024 – 14.09.2024	high land – low land interactive system, human ecological adaptation.	
8	16.09.2024 – 21.09.2024	Concept of ecosystem, Environmental Degradation, Environmental Pollution (Air)	
9	23.09.2024 – 28.09.2024	Environmental Pollution (Water and Solid Waste), Ganga Pollution & Ganga action Plan,.	
10	30.09.2024 – 05.10.2024	Environmental Problems – Global Warming, Ozone Depletion and Green house effects, transformation of nature by man,	
11	07.10.2024 – 12.10.2024	Global ecological imbalances, wetland ecosystem with reference to Haryana	
12	14.10.2024 – 19.10.2024	Environmental Management: Concept and approaches: Ecosystem Management Strategies.	

13	21.10.2024 – 26.10.2024	Environmental Dimension in Planning – Sustainable Development, Eco- Development, Limits to growth,	
14	04.11.2024 – 09.11.2024	Environmental Consciousness, National Environmental Policies and Programmes.	
15	11.11.2024 – 16.11.2024	Environmental Impact assessment, Rio Summit, Kyoto Protocol.	Assignment
16	18.11.2024 – 23.11.2024	Environmental Impact assessment, Carbon Trading, Paris climate summit and environmental footprints.	Test
17	25.11.2024 – 30.11.2024	Seminar	

Recommended Books/ E resources/ LMS

- Singh, L.R. et al. (1983) Environmental Management, Allahabad Geographical Society, Allahabad.
- Arvil, R. (1983) Man and the Environment. Penguin Books.
- Singh, S. (2015) Environmental Geography. Pravalika Publications, Allahabad.
- Detwiler, T.R. (1971) Man's impact on the Environment. McGraw Hill, New York
- Adans, W.M. (2001) Green Development: Environment and Sustainability in the Third World. Routledge, London.

Signature of the teacher concerned

Head of the Department



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Session: 2024-2025

Lesson Plan

(Department of Geography)

Teacher: Dr. Mukesh Kumar

Class: M.Sc

Semester: III

Maximum Marks: 100

End Term Exam Marks: 80

Course Type & Title: Fundamentals of Remote Sensing

Course Code: 19 GEO 309

Credits: 04

Internal Assessment Marks: 20

Practical Marks: -----

Course Outcomes:

The aim of this course is to:

- Disseminate basic concepts and applications of Electromagnetic Spectrum in Remote Sensing, Energy Balance and Data acquisition platforms, sensors and their characteristics.
- Enhance student's knowledge about optical, thermal and microwaves based Remote Sensing and Applications for solving real life problems.
- Introduce students to digital image processing tools and techniques.

Sr. No.	Week/Month, 2024	Unit/ Topic/ Chapter to be covered	Assignment/Test/ Remarks, if any
1	01.08.2024 – 03.08.2024	Familiar with syllabus. Remote Sensing: History & Development.	
2	05.08.2024 – 10.08.2024	Remote Sensing: Definition, Concept & Principles, Electromagnetic Radiation (EMR) and Its Characteristics.	
3	12.08.2024 – 17.08.2024	EMR Wavelength Regions and their Significance.	
4	19.08.2024 – 24.08.2024	Interaction of EMR with Atmosphere Absorption, Reflectance and Scattering, Atmospheric Windows, Energy Balance Equation.	
5	26.08.2024 – 31.08.2024	Interaction of EMR with Earth's Surface: Absorption, Reflectance and Scattering, Energy Balance Equation.	
6	02.09.2024 – 07.09.2024	Imaging and Non-Imaging, Active and Passive, Multispectral, Superspectral and Hyperspectral Sensors,	
7	09.09.2024 – 14.09.2024	Electro-Optical Systems, Opto-Mechanical Scanners, Infrared Scanners, Scatterometer,	Assignment
8	16.09.2024 – 21.09.2024	Thermal Properties of Terrain, Thermal IR Environmental Considerations, Thermal Infrared and Thermal Scanners,	Test
9	23.09.2024 – 28.09.2024	Microwave Remote sensing concepts: Backscattering,	

		Range Direction, Azimuth Direction, Incident Angle,	
10	30.09.2024 – 05.10.2024	Microwave Remote sensing concepts: Depression Angle, Polarization, Dielectric Properties, Surface Roughness and Interpretation, Speckle and Its Reduction.	
11	07.10.2024 – 12.10.2024	Applications of optical, thermal and microwave remote sensing..	
12	14.10.2024 – 19.10.2024	Concepts about digital image and its characteristics, Sources of image degradation - Image restoration and Noise Abatement , Radiometric and Geometric correction technique,	
13	21.10.2024 – 26.10.2024	linear and non linear transformation for geometric corrections, Look-up Tables (LUT) and Types of image displays and FCC, Radiometric enhancement techniques, Spatial enhancement techniques,	
14	04.11.2024 – 09.11.2024	Contrast stretching: Linear and non-linear methods, Low Pass Filtering: Image smoothing, High Pass Filtering: Edge enhancement and Edge detection, Gradient filters, Directional and non-directional filtering.	
15	11.11.2024 – 16.11.2024	Concept of Pattern Recognition, Multi-spectral pattern recognition, Spectral discrimination, Signature bank, Parametric and Non-Parametric classifiers, Unsupervised classification methods, Supervised classification techniques, Limitations of standard classifiers.	
16	18.11.2024 – 23.11.2024	Parametric and Non-Parametric classifiers, Unsupervised classification methods.	Assignment
17	25.11.2024 – 30.11.2024	Supervised classification techniques, Limitations of standard classifiers.	Test

Recommended Books/ E resources/ LMS

- *Aggarwal, C.S. And Garg, P. K. (2000) Remote Sensing. A.H. Wheeler & Co. Ltd, New Delhi.*
- *Campbell, J. B. (2002) Introduction to Remote Sensing. 3rd ed., Taylor & Francis, New York, USA.*
- *Jensen, J.R. (1996). Introductory Digital Image processing a remote sensing perspective. Prentice Hall Seies in GIS , USA*
- *Bhatta, B. (2010). Remote Sensing and GIS. New Delhi: Oxford University Press.*
- *Chaunial, D. D. (2004). Remote Sensing and Geographical Information System. Allahabad: Sharda Pustak Bhawan.*
- *Nag, P. (1992). Thematic Cartography and Remote Sensing. New Delhi: Concept Publishing Company.*
- *Rampal, K.K. (1999). Handbook of Aerial Photography and Interpretation. New Delhi: Concept Publishing Company.*

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Lesson Plan

(Department of Geography)



Teacher: Dr. Mukesh Kumar

Class: M.Sc

Semester: III

Maximum Marks: 100

End Term Exam Marks: 80

Course Type & Title: Lab work on Aerial Photographs & Satellite Images

Course Code: 19 GEO 311

Credits: 04

Internal Assessment Marks: 20

Practical Marks: 80

Course Outcomes:

This course aims to make the student learn practical aspects related to:

- Usage of diverse remote sensing data for extracting needed geo-spatial information.
- Execution of various analogue and digital information extraction techniques, both manually and using computers.

Sr. No.	Week/Month, 2024	Unit/ Topic/ Chapter to be covered	Assignment/Test/ Remarks, if any
1	01.08.2024 – 03.08.2024	Familiar with syllabus & Software.	
2	05.08.2024 – 10.08.2024	Understanding Remote Sensing Data and Visual Interpretation	
3	12.08.2024 – 17.08.2024	Import / Export of Satellite Data, Display, Analysis, and Digital interpretation of earth surface features in Standard FCC	
4	19.08.2024 – 24.08.2024	Radiometric and atmospheric corrections	
5	26.08.2024 – 31.08.2024	Geo-referencing and Geo-coding	
6	02.09.2024 – 07.09.2024	Field Spectra Collection: vegetation, bare soil, and concrete using Spectro Radiometer	Assignment
7	09.09.2024 – 14.09.2024	Analysis of satellite derived spectral response and field spectra	
8	16.09.2024 – 21.09.2024	Study of the various contrast enhancement techniques Spectral Enhancement (Ratio images and PCA) Techniques Spatial Enhancement: Low Pass Filtering	
9	23.09.2024 – 28.09.2024	Study of the various contrast enhancement techniques Spectral Enhancement (Ratio images and PCA) Techniques	

		Spatial Enhancement: High Pass Filtering Techniques	
10	30.09.2024 – 05.10.2024	Unsupervised Classification	
11	07.10.2024 – 12.10.2024	Unsupervised Classification	
12	14.10.2024 – 19.10.2024	Supervised Classification	
13	21.10.2024 – 26.10.2024	Supervised Classification	
14	04.11.2024 – 09.11.2024	Supervised Classification	Assignment
15	11.11.2024 – 16.11.2024	Accuracy Evaluation	Test
16	18.11.2024 – 23.11.2024	Advance Classification	
17	25.11.2024 – 30.11.2024	Advance Classification	

Recommended Books/ E resources/ LMS

- **QGIS**
- **ERDAS IMAGINE**
- **Arc GIS**

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Lesson Plan

(Department of Geography)



Teacher: Dr. Mukesh Kumar
Class: Geo. Hons.
Semester: III
Maximum Marks: 100
End Term Exam Marks: 80

Course Type & Title: Geographical Thought
Course Code: 21UGEOH303
Credits: 04
Internal Assessment Marks: 20
Practical Marks: -----

Course Outcomes:

- Main aim of this course is to enlighten the students with the understanding of evolution of geographical knowledge and its place in the world of knowledge. The students will understand the contemporary approaches in the field of geography and major contributors of the discipline.

Sr. No.	Week/Month, 2024	Unit/ Topic/ Chapter to be covered	Assignment/Test/Remarks, if any
1	22.07.2024 – 27.07.2024	Familiar with syllabus, Founders of Modern Geography: Contributions of Alexander von Humboldt	
2	29.07.2024 – 03.08.2024	Contributions of Friederich Ratzel, Carl O. Sauer, Ellen Churchill.	
3	05.08.2024 – 10.08.2024	Contributions of Paul Vidal de La Blache, Ferdinand von Richthofen, Henry Guyot, Inge Lehmann.	
4	12.08.2024 – 17.08.2024	Contributions of Richard Hartshorn, Halford Mackinder, Spate, Wladimir Köppen.	
5	19.08.2024 – 24.08.2024	Contributions of Alfred Hettner, Yi-Fu Tuan, Edward Soja, David Harvey, Jean Gottmann etc	
6	26.08.2024 – 31.08.2024	Geography of Vedas and Puranas, Schools of Geographical Thought: French,	
7	02.09.2024 – 07.09.2024	Schools of Geographical Thought: British, German	Assignment
8	09.09.2024 – 14.09.2024	Schools of Geographical Thought: American, Indian. Major Contributions of Indian Geographers.	Class Test
9	16.09.2024 – 21.09.2024	Paradigms in Geography; Dichotomy and Dualism in Geography: Nomothetic and Ideographic.	
10	23.09.2024 – 28.09.2024	Dichotomy and Dualism in Geography: Contemporary and Historical geography; Physical and Human geography;	
11	30.09.2024 – 05.10.2024	Deterministic and Possibilistic Approach.	
12	07.10.2024 – 12.10.2024	Regional and Systematic Approach; Functional and Formal	Assignment

		Approach.	
13	14.10.2024 – 19.10.2024	Contemporary Trends in Geography: Positivism;	Class Test
14	21.10.2024 – 26.10.2024	Quantitative Revolution, Behaviouralism, Humanism and Radicalism, Feminism, Post Modernism; Changing Concept of Space and Time in Geography and Future of Geography.	
15	04.11.2024 – 09.11.2024	Humanism and Radicalism, Feminism,	
16	11.11.2024 – 16.11.2024	Post Modernism; Changing Concept of Space and Time in Geography and Future of Geography.	Assignment
17	18.11.2024 – 23.11.2024	Post Modernism; Changing Concept of Space and Time in Geography and Future of Geography.	Class Test

Recommended Books/ E resources/ LMS:

- Husain, M. (2014). *Evolution of Geographical Thought*. Jaipur: Rawat Publications.
- Adhikari, S. (2015). *Fundamentals of Geographical Thought*. New Delhi: Orient Blackswan.
- Dikshit, R. D. (1994). *The Art and Science of Geography: Integrated Readings*. New Delhi: Prentice Hall of India.
- Dikshit, R. D. (2018). *Geographical Thought: A Contextual History of Ideas*. New Delhi: Prentice-Hall of India Pvt Ltd.
- Husain, M. (2014). *Evolution of Geographical Thought*. Jaipur: Rawat Publications.

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Session: 2024-25

Lesson Plan

(Department of Geography)



Teacher: Dr. Mukesh Kumar
Class: Geo. Hons.
Semester: V
Maximum Marks: 100
End Term Exam Marks: 80

Course Type & Title: Fundamentals of Remote Sensing
Course Code: 21 UGEOH 501
Credits: 04
Internal Assessment Marks: 20
Practical Marks: -----

Course Outcomes:

- Main objective of this course is to understand the satellite images and aerial photographs and their application in different field.

Sr. No.	Week/Month, 2024	Unit/ Topic/ Chapter to be covered	Assignment/Test/ Remarks, if any
1	22.07.2024 – 27.07.2024	Familiar with syllabus, Remote Sensing: History; Concepts and Principles of Remote Sensing	
2	29.07.2024 – 03.08.2024	Remote Sensing: History; Concepts and Principles of Remote Sensing	
3	05.08.2024 – 10.08.2024	Classification of RS Satellites, Sensors and Platforms	
4	12.08.2024 – 17.08.2024	EMR Interaction with Atmosphere	
5	19.08.2024 – 24.08.2024	EMR Interaction with Earth Surface,	Assignment
6	26.08.2024 – 31.08.2024	Sensor Resolutions and their Applications	Class Test
7	02.09.2024 – 07.09.2024	History and Development of Photogrammetry;	
8	09.09.2024 – 14.09.2024	Acquisition, Types and Geometry of Aerial Photographs and their Applications.	
9	16.09.2024 – 21.09.2024	Comparison between Aerial Photographs and Satellite Images	
10	23.09.2024 – 28.09.2024	Image Interpretation: Principles of False Colour Composites (FCC)	
11	30.09.2024 – 05.10.2024	Image Interpretation: Principles of False Colour Composites (FCC),	
12	07.10.2024 – 12.10.2024	Elements of Image Interpretation	Assignment
13	14.10.2024 – 19.10.2024	Image Processing, Pre-processing; Enhancement Techniques.	Class Test

14	21.10.2024 – 26.10.2024	Image Classification Techniques: Supervised.	
15	04.11.2024 – 09.11.2024	Image Classification Techniques: Unsupervised and Object-based Image Analysis.	
16	11.11.2024 – 16.11.2024	Application of Remote sensing in Different Field of Geography	
17	18.11.2024 – 23.11.2024	Seminar	

Recommended Books/ E resources/ LMS:

- Bhatta, B. (2010). *Remote Sensing and GIS*. New Delhi: Oxford University Press.
- Chaunial, D. D. (2004). *Remote Sensing and Geographical Information System*. Allahabad: Sharda Pustak Bhawan.
- Nag, P. (1992). *Thematic Cartography and Remote Sensing*. New Delhi: Concept Publishing Company.
- Rampal, K.K. (1999). *Handbook of Aerial Photography and Interpretation*. New Delhi: Concept Publishing Company.
- Campbell, J. B. (2002). *Introduction to Remote Sensing*. London: Taylor & Francis.

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Lesson Plan

(Department of Geography)



Teacher: Dr. Mukesh Kumar
Class: Geo. Hons.
Semester: V
Maximum Marks: 100
End Term Exam Marks: 80

Course Type & Title: Remote Sensing (Practical)
Course Code: 21UGEOH511
Credits: 04
Internal Assessment Marks: 20
Practical Marks: 80

Course Outcomes:

- Main aim of this course is to familiarize the students with basic understanding of basic remote sensing techniques.

Sr. No.	Week/Month, 2024	Unit/ Topic/ Chapter to be covered	Assignment/Test/ Remarks, if any
1	22.07.2024 – 27.07.2024	Familiar with Syllabus Satellite Image: An Introduction	
2	29.07.2024 – 03.08.2024	Resolution (Spatial, Spectral and Temporal)	
3	05.08.2024 – 10.08.2024	Spectral Signature Layer Stacking (LS)	
4	12.08.2024 – 17.08.2024	Band Combination True Color Combination (TCC)	
5	19.08.2024 – 24.08.2024	Band Combination False Color Combination (FCC)	Assignment
6	26.08.2024 – 31.08.2024	Pre-Processing of Satellite Data Merge and Subset of Satellite Images	
7	02.09.2024 – 07.09.2024	Image Rectification	
8	09.09.2024 – 14.09.2024	Radiometric Correction	
9	16.09.2024 – 21.09.2024	Geometric Correction	
10	23.09.2024 – 28.09.2024	Image Enhancement Techniques	
11	30.09.2024 – 05.10.2024	Satellite Image Classification Indices (NDVI, NDWI, NDSI) Unsupervised Classification	
12	07.10.2024 – 12.10.2024	Satellite Image Classification Indices (NDVI, NDWI, NDSI)	

		Unsupervised Classification	
13	14.10.2024 – 19.10.2024	Satellite Image Classification Indices (NDVI, NDWI, NDSI) Supervised Classification	
14	21.10.2024 – 26.10.2024	Satellite Image Classification Indices (NDVI, NDWI, NDSI) Supervised Classification	
15	04.11.2024 – 09.11.2024	Change Detection	
16	11.11.2024 – 16.11.2024	Change Detection Accuracy Assessment	Assignment
17	18.11.2024 – 23.11.2024	Accuracy Assessment	Class Test

Recommended Books/ E resources/ LMS:

- QGIS
- ERDAS IMAGINE
- Arc GIS
- Nag, P. (1992). *Thematic Cartography and Remote Sensing*. New Delhi: Concept Publishing Company.

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Session: 2024-25

Lesson Plan

(Department of Geography)



Teacher: Dr. Mukesh Kumar
Class: B.A.
Semester: V
Maximum Marks: 75
End Term Exam Marks: 60

Course Type & Title: Environment Geography
Course Code: 20 UGEO 502
Credits: 04
Internal Assessment Marks: 15
Practical Marks: ---

Course Outcomes:

Main outcomes of this course are to develop the basic understanding of environmental processes and man environment relationship, contemporary issues and their importance for mankind.

Sr. No.	Week/Month, 2024	Unit/ Topic/ Chapter to be covered	Assignment/Test/ Remarks, if any
1	22.07.2024 – 27.07.2024	Familiar with syllabus.	
2	29.07.2024 – 03.08.2024	Nature & Scope of Environmental Geography.	
3	05.08.2024 – 10.08.2024	Basic Principles of Environmental Geography.	
4	12.08.2024 – 17.08.2024	Approaches to Study Environmental Geography; Composition and Type of Environment.	
5	19.08.2024 – 24.08.2024	Approaches to Study Environmental Geography - Man-environment Relationship.	
6	26.08.2024 – 31.08.2024	Ecosystem: Concept and Components.	
7	02.09.2024 – 07.09.2024	Food Chain and Food Webs,	
8	09.09.2024 – 14.09.2024	Trophic Structure, Ecological Pyramids,	Assignment
9	16.09.2024 – 21.09.2024	Energy Flow and Bio-geo Chemical Cycles	Class Test
10	23.09.2024 – 28.09.2024	Environmental Degradation: Concept, Meanings and their Types; Greenhouse Effect, Global Warming,	
11	30.09.2024 – 05.10.2024	Environmental Pollution: Meaning and Types; Impact of Air, Water and Land Pollutions	
12	07.10.2024 – 12.10.2024	Environmental Pollution: Meaning and Types; Impact of Air, Water and Land Pollutions	
13	14.10.2024 – 19.10.2024	Environmental Pollution: Meaning and Types; Impact of	

		Air, Water and Land Pollutions	
14	21.10.2024 – 26.10.2024	Environmental Management: Concepts and Approaches,	
15	04.11.2024 – 09.11.2024	Environmental Issues, Awareness and Movements in India,	
16	11.11.2024 – 16.11.2024	Environmental Management in India; Various Environmental Summits	Assignment
17	18.11.2024 – 23.11.2024	Environmental Management in India; Various Environmental Summits	Class Test

Recommended Books/ E resources/ LMS:

- [REDACTED], [REDACTED]. (2020). [REDACTED] [REDACTED]. [REDACTED]: [REDACTED] [REDACTED].
- [REDACTED],[REDACTED],[REDACTED],[REDACTED],[REDACTED],[REDACTED]. (2020). [REDACTED] [REDACTED] .[REDACTED]:[REDACTED].
- [REDACTED],[REDACTED]. (2020).[REDACTED] [REDACTED] (5[REDACTED] [REDACTED]).[REDACTED]:[REDACTED].[REDACTED] [REDACTED].
- Casper, J. K. (2010). *Changing ecosystems: Effects of global warming*. New York: InfobasePub.
- Hudson, T. (2011). *Living with Earth: An introduction to environmental geology* New Delhi: PHI Learning Private Limited.

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Lesson Plan

(Department of Geography)



Teacher: Dr. Mukesh Kumar
Class: B.A
Semester: V
Maximum Marks: 25
End Term Exam Marks: 25

Course Type & Title: Remote Sensing & GIS (P)
Course Code: Practical
Credits: 04
Internal Assessment Marks: ---
Practical Marks: 25

Course Outcomes:

- Main objective of this course is to enrich the students with basic understanding of aerial photographs and satellite imagery. It also aims to provide hands on training on GIS software and map making and application of GPS & TS in mapping.

Sr. No.	Week/Month, 2024	Unit/ Topic/ Chapter to be covered	Assignment/Test/ Remarks, if any
1	22.07.2024 – 27.07.2024	Familiar with syllabus & Software.	
2	29.07.2024 – 03.08.2024	Remote Sensing: Working Principles.	
3	05.08.2024 – 10.08.2024	Remote Sensing: Working Principles.	
4	12.08.2024 – 17.08.2024	Basic Characteristics and Interpretation of Aerial Photographs.	
5	19.08.2024 – 24.08.2024	Basic Characteristics and Interpretation of Aerial Photographs.	
6	26.08.2024 – 31.08.2024	Identification and Interpretation of various features on Satellite Images	
7	02.09.2024 – 07.09.2024	Identification and Interpretation of various features on Satellite Images	
8	09.09.2024 – 14.09.2024	GIS: Geo-referencing	
9	16.09.2024 – 21.09.2024	GIS: Geo-referencing	
10	23.09.2024 – 28.09.2024	Digitization.	Assignment
11	30.09.2024 – 05.10.2024	Digitization.	Class Test
12	07.10.2024 – 12.10.2024	Layout map,	
13	14.10.2024 – 19.10.2024	Map making and Choropleth Maps.	
14	21.10.2024 – 26.10.2024	Mapping with GPS Global Positioning System) and Total Station (TS).	
15	04.11.2024 – 09.11.2024	Mapping with GPS Global Positioning System) and Total	

		Station (TS).	
16	11.11.2024 – 16.11.2024	Assignment	
17	18.11.2024 – 23.11.2024	Class Test	

Recommended Books/ E resources/ LMS:

- QGIS
- ERDAS IMAGINE
- Arc GIS
- Nag, P. (1992). *Thematic Cartography and Remote Sensing*. New Delhi: Concept Publishing Company.

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