

GEOGRAPHY

SEMESTER – I

PAPER	: MIC-1 (T)	Full Marks: 100
TITLE OF THE PAPER	: GEOMORPHOLOGY	ESE: 70
CREDIT	: 2	CIA: 30

COURSE OBJECTIVES :

- 1.To understand the origin and internal structure of the Earth.
- 2.To examine various Geomorphic processes.
- 3.To understand earth movements and related features.

COURSE OUTCOMES :

After completion of the course students will be able to -

1. Understand the various Geomorphic Processes.
2. Understand the properties and types of Rocks.
3. Understand Earth movement and its resultant features.

Unit	Topics	No. of Lectures
I	Origin of the Earth- Gaseous Hypothesis, Binary Star Hypothesis, Internal Structure of the Earth	06
II	Geomorphic Process: Weathering and Erosion, Rocks and its Types.	06
III	Plate Tectonics, Earthquake and Volcanoes.	08
Total		20

Suggested Readings:-

- 1.Bridges E.M.(1990),World Geomorphology,Cambridge University Press,Cambridge.
- 2.Dyal,P. A Text Book of Geomorphology, Rajesh Publication, New Delhi.
- 3.Gautam Alka(2007), Bhuakriti Vigyan, Rastogi Publications.
- 4.Hussain M., (2002), Fundamentals of Physical Geography, Rawat Publication, Jaipur.
- 5.Kale V.S.and Gupta A., (2001), Introduction to Geomorphology,Orient Longman, Hyderabad.
- 6.Khullar D.R.(2011) .Physical Geography, Kalyani Publishers, New Delhi.
- 7.Monkhouse,F.J.(2009),Principles of Physical Geography,Platinum Publishers,Kolkata.
- 8.Singh Savindra(2017),Bhoutik Bhogol ,Vashundhara Prakashan,Gorakhpur.
- 9.Strahler A. N.and Strahler A.H,(2008). Modern Physical Geography,John Wiley & Sons, New York.
- 10.Thornbury W. D.(1968) ,Principles of Geomorphology, John Wiley & Sons, New York.

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GEOGRAPHY SEMESTER - I

PAPER : MIC-1 (P) Full Marks- 100
TITLE OF THE PAPER : GEOMORPHOLOGY ESE: 70
CREDIT : 1 CIA: 30

COURSE OBJECTIVES :

1. To study Topographical Maps with the help of conventional signs and symbols..
2. To understand contour lines.
3. To understand relief features.

COURSE OUTCOMES :

After completion of the course students will be able to-

1. Understand the concept and properties of various types of Rocks and Minerals.
2. Identify various types of Rocks and Minerals.
3. Understand the various land forms and other Geomorphic processes.

UNIT	Topics	No. of Lectures
I	Conventional signs and Symbols.	05
II	Contour Lines and representation of Relief: Plateau, Conical hill, U-shaped valley, Waterfall.	05
Total		10

Suggested Readings:-

1. Singh R.L., Singh Rana P.B. (2020), Elements of Practical Geography, Kalyani Publishers.
2. Sharma J.P., (1991-92) Prayogik Bhugol (Practical Geography) Rastogi & Company Meerut.
3. Sinha, MMP & Bala, Seema (2017) Uoch Cartography, Rajesh Publication, New Delhi.
4. Sarkar, A (2015) Practical Geography: A Systematic Approach, Orient Black Swan Private Ltd, New Delhi.

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GEOGRAPHY

SEMESTER – II

PAPER : MIC-2 (T) Full Marks- 100
TITLE OF THE PAPER : CLIMATOLOGY & OCEANOGRAPHY ESE: 70
CREDIT : 2 CIA: 30

COURSE OBJECTIVES :

1. To understand atmospheric pressure and wind system.
2. To understand the structure and composition of atmosphere.
3. To develop understanding of relief and properties of Oceans.

COURSE OUTCOMES :

After completion of the course students will be able to -

1. Understand the concept of structure and composition of Atmosphere.
2. Understand global atmospheric pressure and wind system.
3. Understand Relief and Properties of Oceans.

Unit	Topics	No. of Lectures
I	Composition and Structure of Atmosphere, Precipitation	06
II	Atmospheric Pressure, Winds and Cyclones	06
III	Relief of the Oceanic Bottom; Salinity of Ocean water	08
Total		20

Suggested Readings:-

1. Bary R. G. and Carleton A. M., (200) *Synoptic and Dynamic Climatology*, Routledge, UK.
2. Barry R. G. and Corley R. J., (1998) *Atmosphere, Weather and Climate*, Routledge, New York.
3. Critchfield H. J., (1987) *General Climatology*, Prentice-Hall of India, New Delhi.
4. Lutgens F. K., Tarback E. J. and Tasa D., (2009) *The Atmosphere: An Introduction to Meteorology*, Prentice-Hall, Englewood Cliffs, New Jersey.
5. Oliver J. E. and Hidore J. J., (2002) *Climatology: An Atmospheric Science*, Pearson Education, New Delhi.
6. Trewartha G. T. and Horns L. H., (1980) *An Introduction to Climate*, McGraw-Hill, US.
7. Gupta L. S., (2000) *Jalvayu Vigyan*, Hindi Madhyam Karyavay Nidishalya, Delhi Vishwa Vidhyalaya, Delhi.
8. Lal, D S., (2006) *Jalvayu Vigyan*, Prayag Pustak Bhawan, Allahabad.
9. Vatal, M., (1986) *Bhautik Bhugol*, Central Book Depot, Allahabad.
10. Singh, S (2009): *Jalvayu Vigyan*, Prayag Pustak Bhawan, Allahabad.


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GEOGRAPHY

SEMESTER -II

PAPER : MIC-2 (P) **Full Marks- 100**
TITLE OF THE PAPER : CLIMATOLOGY & OCEANOGRAPHY **ESE: 70**
CREDIT : 1 **CIA: 30**

COURSE OBJECTIVES :

1. To understand the importance of weather maps.
2. To understand the use of different weather instruments.
3. To get acquainted with different weather conditions through diagrams and instruments.

COURSE OUTCOMES :

After completion of the course students will be able to -

1. Understand the various weather phenomena.
2. Interpret weather conditions of a place.
3. Understand the functions of various weather instruments.

Unit	Topics	No. of Lectures
I	Interpretation of Weather Maps; Wind Rose	05
II	Functions of Wind Vane, Anemometer, Barometer and Rain Gauge	05
Total		10

Suggested Readings:-

1. Singh R.L., Singh Rana P.B. (2020), Elements of Practical Geography, Kalyani Publishers.
2. Sharma J.P. (1991-92) Prayogik Bhugol (Practical Geography) Rastogi & Company Meerut.
3. Sinha, MMP & Bala, Seema (2017) Uchch Cartography, Rajesh Publication, New Delhi.
4. Sarkar, A (2015) Practical Geography: A Systematic Approach, Orient Black Swan Private Ltd. New Delhi.

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GEOGRAPHY

SEMESTER -III

TYPE OF COURSE	:	MIC-3 (T)	Full Marks: 100
NAME OF COURSE	:	ECONOMIC GEOGRAPHY	ESE - 70 Marks
CREDIT	:	2	CIA - 30 Marks

COURSE OBJECTIVES:

1. To understand the concept and spatial distribution of economic activities in the world.
2. To analyse the factors affecting the economics activities.
3. To describe in details the spatial pattern of economic activities.

COURSE OUTCOMES:

After learning, students should be able to:

1. Distinguish to different types of economic activities and their utilities.
2. Examine the significance and relevance of economic activities for the progress of Mankind.

UNIT	TOPICS	No. of Lectures
I	Meaning and Scope of Economic Geography: Concept and Classification of Economic Activities- Primary, Secondary and Tertiary.	08
II	Intensive Subsistence Farming and Commercial Grain Farming, Major Industries - Iron and Steel, Cotton Textile Industry.	06
III	International Trade and WTO; Special Economic Zone (SEZ)	06
	TOTAL	20

Suggested Readings:-

1. Alexander J. W., (1963) *Economic Geography*, Prentice-Hall Inc., Englewood Cliffs, New Jersey.
2. Combes P., Mayer T. and Thisse J. F., (2008) *Economic Geography: The Integration of Regions and Nations*, Princeton University Press.
3. Wheeler J. O., (1998) *Economic Geography*, Wiley.
4. Bagchi-Sen S. and Smith H. L., (2006) *Economic Geography: Past, Present and Future*, Taylor and Francis.
5. Singh K.N. & Jagdish Singh (2020), *Aarthik Bhugol ke Mool Tatva*, Prayag Publication.
6. Jatt B.C., (2020) *Aarthik Bhugol*, Malik Book Company Jaypur.
7. Gautam Alka., (2022) *Aarthik bhugol ke mool tatv*, Sharda Pustak Bhawan, Prayagraj.
8. Maurya S.P., *Aarthik Bhugol*, Pravalika Publication.

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GEOGRAPHY

SEMESTER -III

TYPE OF COURSE	: MIC-3 (P)	Full Marks: 100
NAME OF COURSE	: ECONOMIC GEOGRAPHY	ESE - 70 Marks
CREDIT	: 1	CIA - 30 Marks

Course Objectives:

1. Create professional and aesthetically pleasing maps through thoughtful application of cartographic conventions;
2. Develop an understanding of the concepts regarding scale, map projections to suit map purposes;
3. Better understanding of the techniques for interpretation of topographical and weather maps.

Course Outcomes:

This is a practical, hands-on course; when students complete it, they will be able to:

1. Explain how diagram works.
2. Recognize the benefits and limitations of some common map projections.
3. To Understand how prismatic compass survey work.

UNIT	TOPICS	No. of Lectures
I	Scale, R.F and Maps.	05
II	Diagrams – Bar diagram and Pie diagram, Map Projection – Simpal Conical.	05
III	Record of Practical Work & Viva-voce.	--
	TOTAL	10

Suggested Readings:-

1. Anson R. and Ormelling F. J., (1994) *International Cartographic Association: Basic Cartographic Vol.* Pregmen Press.
2. Gupta K.K. and Tyagi, V. C., (1992) *Working with Map*, Survey of India, DST, New Delhi.
3. Maltiyar. K. K & Mattyar S. R., (2019) *Concept of Cartography, Remote Sensing and GIS*, Rajesh publication, New Delhi.
4. Mishra R.P. and Ramesh, A., (1989) *Fundamentals of Cartography*, Concept, N Resource & Economic Geography ew Delhi.
5. Monkhouse F. J. and Wilkinson H. R., (1973) *Maps and Diagrams*, Methuen, London.
6. Rhind D. W. and Taylor D. R. F., (eds.), (1989) *Cartography: Past, Present and Future*, Elsevier, International Cartographic Association.
7. Robinson A. H., (2009) *Elements of Cartography*, John Wiley and Sons, New York.
- Sharma J. P., (2010) *Prayogic Bhugol*, Rastogi Publishers, Meerut.
- Singh R. L. and Singh R. P. B., (1999) *Elements of Practical Geography*, Kalyani Publishers, New Delhi.

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10. Sinha. M.M. P., (2017) *Ucch Cartography*, Rajesh Publication, New Delhi.
11. Sarkar, A. (2015) *Practical geography: A systematic approach*. Orient Black Swan Private Ltd., New Delhi.
12. Singh R L & Singh Rana P B, (1991) *Prayogtmak Bhugol ke Mool Tatva*, Kalyani Publishers, New Delhi.
13. Sharma, J P (2010) *Prayogtmak Bhugol ki Rooprekha*, Rastogi Publications, Meerut.
14. Singh, R L & Dutta, P K (2012) *Prayogtmak Bhugol*, Central Book Depot, Allahabad.

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6. Lutz W., Warren C. S. and Scherbov S., (2004) *The End of the World Population Growth in the 21st Century*, Earthscan
7. Newbold, K. B., (2009) *Population Geography: Tools and Issues*, Rowman and Littlefield Publishers.
8. Pacione, M., (1986) *Population Geography: Progress and Prospect*, Taylor and Francis.
9. Wilson, M. G. A., (1968) *Population Geography*, Nelson.
10. Panda, B. P., (1988) *JansankhyaBhugol*, M P Hindi Granth Academy, Bhopal.
11. Maurya, S. D., (2009) *JansankhyaBhugol*, Sharda Putak Bhawan, Allahabad.
12. Chandna, R. C., (2006) *JansankhyaBhugol*, Kalyani Publishers, Delhi.

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GEOGRAPHY
SEMESTER - IV

TYPE OF COURSE	: MIC-5 (T)	Full Marks: 100
NAME OF COURSE	: Human Geography	ESE: 70
CREDIT	: 3	CIA: 30

COURSE OBJECTIVES:

1. To understand the concept of human communities, culture and its relationship with environment.
2. To examine the Contemporary relevance of environmental thoughts.
3. To give a detailed eye-view on migration and settlement pattern

COURSE OUTCOME:

After completion of the course students will be able to-

1. Get a complete idea of space and place
2. Conceptualize the trends and pattern of Migration and settlement types
3. Recent trend of urbanization level

Unit	Topics	No. of Lectures
I	Human Geography: Definition, Nature and Scope; Determinism, Possibilism and Neo Determinism	6
II	Population: Population Composition, Growth, Density and Distribution (World); Population Theory of Malthus; Demographic Transition Theory; Migration: Types, Causes and Consequences	12
III	Settlements: Types and Pattern of Rural Settlements; Classification of Urban Settlements based on Function and Size; Trends and Patterns of Urbanization	12
Total		30

Suggested Readings: -

1. Bergwan, Edward E., Human Geography: Culture, Connections and Landscape, Prentice Hall, New Jersey, 1995
2. Carr, M., Patterns, Process and change in Human Geography, MacMillan Education, London, 1987
3. Chandna R.C. 2022. Geography of Population, Part I: Concepts, Determinants and World Patterns, Kalyani Publishers.

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7. Singh, Jagdish 2003: *India - A Comprehensive & Systematic Geography*, GyanodayaPrakashan, Gorakhpur.
8. Spate O. H. K. and Learmonth A. T. A., 1967: *India and Pakistan: A General and Regional Geography*, Methuen.
9. Sinha, V.N.P et.al., (2013), *Bihar: Land, People and Economy*, Rajesh Publication, New Delhi
10. Sinha, V.N.P et.al., (2014), *Bihar Ka Bhugol*, Rajesh Publication, New Delhi
11. Sharma, Nandeshwar (2007), *Bihar ki BhaugolikSamisksha*, Vasundhara Prakashan, Gorakhpur

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GEOGRAPHY
SEMESTER -IV

TYPE OF COURSE	:	MIC-6 (P)	Full Marks: 100
NAME OF COURSE	:	Geography of India and Bihar	ESE: 70
CREDIT	:	1	CIA: 30

COURSE OBJECTIVES :

1. Introduce the basic graphical diagrams associated with the use of population data.
2. Use of Toposheet maps

COURSE OUTCOME:

After completion of the course students will be able to-

1. Learn different graphical diagrams associated with population data
2. Identify and Interpret the physical and cultural features on toposheet map

Unit	Topics	No. of Lectures
I	Bar Diagrams: Simple, Multiple and Compound; Pie Diagram and Band Graph	4
II	Graphical Presentation of Statistical Data: Age-Sex Pyramid, Dot Method, Proportionate Circle Diagram	4
III	Toposheet: Interpretation of Physical and Cultural Features	2
IV	Practical Record and Viva-Voce	-
Total		10

Suggested Readings:

1. Gupta K. K. and Tyagi V. C., (1992) *Working with Maps*, Survey of India, DST, New Delhi.
2. Kraak M.-J. and Ormeling F., (2003) *Cartography: Visualization of Geo-Spatial Data*, Prentice-Hall New Delhi.
3. Sharma J. P., (2010) *Prayogic Bhugol*, Rastogi Publishers, Meerut.
4. Singh R. L. and Singh R. P. B., (1999) *Elements of Practical Geography*, Kalyani Publishers, New Delhi.
5. Tyner J. A., (2010) *Principles of Map Design*, The Guilford Press.
6. Sarkar, A. (2015) *Practical geography: A Systematic Approach*. Orient Black Swan Private Ltd., New Delhi.

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7. Singh, L R & Singh R (1977): *Manchitra or PrayogatamekBhugol*. Central Book, Depot, Allahabad.
8. Bhopal Singh R L and Dutta P K (2012) *PrayogatamaBhugol*, Central Book Depot, Allahabad.

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GEOGRAPHY SEMESTER – VI

TYPE OF COURSE	: MIC-07 (T)	FULL MARKS: 100
NAME OF COURSE	: REGIONAL PLANNING AND DEVELOPMENT	ESE- 70 MARKS
CREDIT	: 04	CIA- 30 MARKS

Course Objectives:

1. To understand the concept of Region and Regional Planning;
2. To familiarize the students with Theories and Models for Regional Planning;
3. To develop understanding about concept of development and different programmes and policies of development and planning.

Course Outcomes:

After studying, students will be able to:

1. Conceptualize the Regional Planning and its theories.
2. Get the overview of Sustainable Regional Development.
3. Have sound knowledge for Development Policies and Programmes.

UNIT	TOPICS	NUMBER OF LECTURES
I	Concept of Region, Types of Regions. Need for Regional Planning.	11
II	Indicators of Development and Regional Disparity in India.	09
III	Growth Pole Model of Perroux; Concept of PURA; Planning Regions: Hilly Regions and Flood Prone Regions.	12
IV	Multilevel Planning; Panchayati Raj Institutions. Prime Ministers Gramin Sadak Yojna.	08
Total		40

Suggested Reading:

1. Blij H. J. De, (1971) *Geography: Regions and Concepts*, John Wiley and Sons.
2. Claval P.L, (1998) *An Introduction to Regional Geography*, Blackwell Publishers, Oxford and Massachusetts.
3. Friedmann J. and Alonso W. (1975) *Regional Policy - Readings in Theory and Applications*, MIT Press, Massachusetts.

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4. Gore C. G., (1984) *Regions in Question: Space, Development Theory and Regional Policy*, Methuen, London.
5. Gore C. G., Köhler G., Reich U-P. and Ziesemer T., (1996) *Questioning Development: Essays on the Theory, Policies and Practice of Development Intervention*, Metropolis- Verlag, Marburg.
6. Haynes J., (2008) *Development Studies*, Polity Short Introduction Series.
7. Johnson E. A. J., (1970) *The Organization of Space in Developing Countries*, MIT Press, Massachusetts.
8. Peet R., (1999) *Theories of Development*, The Guilford Press, New York.
9. UNDP (2001-04) *Human Development Report*, Oxford University Press, New York.
10. World Bank (2001-05) *World Development Report*, Oxford University Press, New York.

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8. Silk J., (1979) *Statistical Concepts in Geography*, Allen and Unwin, London.
9. Spiegel M. R.: *Statistics, Schaum's Outline Series*.
10. Yeates M., (1974) *An Introduction to Quantitative Analysis in Human Geography*, McGraw Hill, New York.
11. Shinha, Indira (2007) *Sankhyiki bhuget*. Discovery Publishing House, New Delhi

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Shingla 19/9/23

Suggested Readings:-

1. Chandna R. C., (2002)*Environmental Geography*, Kalyani, Ludhiana.
2. Cunningham W. P. and Cunningham M. A., (2004)*Principals of Environmental Science: Inquiry and Applications*, Tata Macgraw Hill, New Delhi.
3. Goudie A., (2001)*The Nature of the Environment*, Blackwell, Oxford.
4. Mal, Suraj., and Singh, R.B. (Eds.) (2009) *Biogeography and Biodiversity*. Rawat Publication, Jaipur.
5. Miller G. T., (2004)*Environmental Science: Working with the Earth*, Thomson BrooksCole, Singapore.
6. MoEF, (2006)*National Environmental Policy-2006*. Ministry of Environment and Forests, Government of India.
7. Singh, R.B. and Hietala, R. (Eds.) (2014) *Livelihood security in Northwestern Himalaya: Case studies from changing socio-economic environments in Himachal Pradesh, India*. Advances in Geographical and Environmental Studies, Springer.
8. Odum, E. P. et al, (2005)*Fundamentals of Ecology*, Cengage Learning India.
9. Singh S., (1997)*Environmental Geography*, PrayagPustakBhawan, Allahabad.
10. UNEP, (2007)*Global Environment Outlook: GEO4: Environment for Development*, United Nations Environment Programme.
11. Singh, M., Singh, R.B. and Hassan, M.I. (Eds.) (2014) *Climate change and biodiversity: Proceedings of IGU Rohtak Conference, Volume 1*. Advances in Geographical and Environmental Studies, Springer
12. Singh, R.B. (1998) *Ecological Techniques and Approaches to Vulnerable Environment*, New Delhi, Oxford & IBH Pub.
13. Singh, Savindra 2001. *ParyavaranBhugol*, PrayagPustakBhawan, Allahabad. (in Hindi).

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GEOGRAPHY
SEMESTER -VIII

TYPE OF COURSE : MIC-10 (T)
NAME OF COURSE : REMOTE SENSING AND GIS
CREDIT : 03

FULL MARKS: 100
ESE- 70 MARKS
CIA- 30 MARKS

Course Objectives:

1. The course aim is to give basic technical knowledge and practical experience in digital remote sensing;
2. Knowledge and practical experience in handling satellite images focusing on hands-on experience of image pre-processing, enhancement and classification;
3. Better understand the techniques for the study of land use land cover and urban study.

Course Outcomes:

This is a practical, hands-on course; after studying this course students will be able to:

1. Explain principles of remote sensing, different satellite systems and sensors;
2. Understand concept and methods of image processing, enhancement and classification and interpretation of satellite images;
3. Application of Image preprocessing techniques for land use land cover and urban studies.

UNIT	TOPICS	NO OF LECTURES
I	Remote Sensing, Meaning and Concepts, Historic Development, Significance and Utility of Remote Sensing.	07
II	Electromagnetic Spectrum, Types of Spectrums, Reflectance and Spectral Signature.	07
III	Sensors, Platforms, Application of Remote Sensing	07
IV	Geographic Information System (GIS): Definition, Basic Functions and Uses, Basic Elements of GIS, Application of GIS.	09
Total		30

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Suggested Readings:

1. Campbell J. B., (2007) *Introduction to Remote Sensing*, Guildford Press.
2. Jensen J. R., (2004) *Introductory Digital Image Processing: A Remote Sensing Perspective*, Prentice Hall.
3. Joseph, G. (2005) *Fundamentals of Remote Sensing*, United Press India.
4. Lillesand T. M., Kiefer R. W. and Chipman J. W., (2004) *Remote Sensing and Image Interpretation*, Wiley. (Wiley Student Edition).
5. Maltiyar. K. K & Maltiyar S. R., (2019) *Concept of Cartography, Remote Sensing and GIS*, Rajesh publication, New Delhi.
6. Nag P. and Kudra, M., (1998) *Digital Remote Sensing*. Concept, New Delhi.
7. Rees W. G., (2001) *Physical Principles of Remote Sensing*, Cambridge University Press.
8. Singh R. B. and Murai S., (1998) *Space-Informatics for Sustainable Development*, Oxford and IBH Pub.
9. Wolf P. R. and Dewitt B. A., (2000) *Elements of Photogrammetry: With Applications in GIS*, McGraw-Hill.
10. Sarkar, A. (2015) *Practical geography: A systematic approach*. Orient Black Swan Private Ltd., New Delhi.
11. Chauriyal, D.D. (2010) *Sudur Samvedan evam Bhogolik Suchana Pranali*, Sharda Pustak Bhawan, Allahabad.

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GEOGRAPHY
SEMESTER -VIII

TYPE OF COURSE : MIC- 10 (P)

FULL MARKS: 100

NAME OF COURSE : REMOTE SENSING AND GIS

ESE- 70 MARKS

CREDIT : 01

CIA- 30 MARKS

Course Objectives:

1. The course aim is to give basic technical knowledge and practical experience in digital remote sensing;
2. Knowledge and practical experience in handling satellite images focusing on hands-on experience of image pre-processing, enhancement and classification;
3. Better understand the techniques for the study of land use land cover and urban study.

Course Outcomes:

After studying this course students will be able to:

1. Understand and Interpret Aerial Photograph.
2. Know about the Application of Image preprocessing techniques for land use land cover and urban studies.

UNIT	TOPICS	NO OF LECTURES
I	Aerial Photo Interpretation, Elements of Interpretations.	3
II	Satellite Image Interpretation, Digital Image Processing.	3
III	Procedure of Geo-referencing and Digitization.	4
IV	Practical Record and Viva-voce	-
Total		10

Reading List

Campbell J. B., (2007) *Introduction to Remote Sensing*, Guildford Press.

Jensen J. R., (2004) *Introductory Digital Image Processing: A Remote Sensing Perspective*, Prentice Hall.

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M.P.H.
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Philo
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Vidya
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Santh
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Be. S.
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Shanika
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3. Joseph, G. (2005) *Fundamentals of Remote Sensing*, United Press India.
4. Lillesand T. M., Kiefer R. W. and Chipman J. W., (2004) *Remote Sensing and Image Interpretation*, Wiley. (Wiley Student Edition).
5. Maltiyar. K. K & Maltiyar S. R., (2019) *Concept of Cartography, Remote Sensing and GIS*, Rajesh publication, New Delhi.
6. Nag P. and Kudra, M., (1998) *Digital Remote Sensing*. Concept, New Delhi.
7. Rees W. G., (2001) *Physical Principles of Remote Sensing*, Cambridge University Press.
8. Singh R. B. and Murai S., (1998) *Space-informatics for Sustainable Development*, Oxford and IBH Pub.
9. Wolf P. R. and Dewitt B. A., (2000) *Elements of Photogrammetry: With Applications in GIS*, McGraw-Hill.
10. Sarkar, A. (2015) *Practical geography: A systematic approach*. Orient Black Swan Private Ltd., New Delhi.
11. Chauniyal, D.D. (2010) *Sudur Samvedan evam Bhogolik Suchana Pranali*, Sharda Pustak Bhawan, Allahabad.

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 Akai / 19.09.23
 Jyoti / 19/09/23
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 Bbaj / 19/09/23
 Vidyayada / 19/09/23
 Anshu / 19.09.23
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