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.Dayal.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 Bhougol ,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 Geomorophology, 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 Lecture
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) Ucch 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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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. Barry 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., Tarbuck 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 Horne L. H., (1980) *An Introduction to Climate*, McGraw-Hill, US.
7. Gupta L. S., (2000) Jalvayu Vigyan, Hindi Madhyam Karyanvay Nidishalya, Delhi Vishwa Vidhyalaya, Delhi.
8. Lal, D S., (2006) Jalvayu Vigyan, Prayag Pustak Bhavan, 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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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) Ucch 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, Secondry 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) *Aathik Bhugol*.. Mallik Book Company Jaypur.
7. Gautam Alka., (2022) *Aarthik bhugol ke mool tatv*, Sharda Pustak Bhawan, Prayagraj.
8. Maurya S.D., *Aarthik Bhugol*., Pravalika Publication.

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: BasicCartographic 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 & Maltiyar 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.
8. Sharma J. P., (2010) *Prayogic Bhugol*, Rastogi Publishers, Meerut.
9. Singh R. L. and Singh R. P. B., (1999) *Elements of Practical Geography*, Kalyani Publishers, New Delhi.

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) Prayogatmak Bhugol, Central Book Depot, Allahabad.

GEOGRAPHY

SEMESTER – IV

TYPE OF COURSE	**:**	**MIC-4 (T)**	**Full Marks: 100**
NAME OF COURSE	**:**	**Population Geography**	**ESE: 70**
CREDIT	**:**	**2**	**CIA: 30**

COURSE OBJECTIVES:

1. To bring an understanding among students about the relevant population data
2. To aware students about current population issues and its causes

COURSE OUTCOME:

Aftercompletionofthecoursestudents willbe able to–

1. Understand the various demographic data
2. Understand the role of population dynamics in shaping our countries population
3. Critically analyze the current contemporary population issues and its implication in our society

Unit	Topics	No. of Lectures
I	Population Geography: Meaning, Nature and Scope, Types and Sources of Population Data, Population Studies and Demography	6
II	Population Dynamics: Fertility, Mortality and Migration- Causes and effects	4
III	Population Composition: Age -Sex Structure, Rural and Urban Composition, Occupational Structure, Literacy, Religion and Language	4
IV	Contemporary Population Issues: Aging Population, Declining Sex Ratio, Declining Fertility, Invisible Population and Population Policies	6
Total		**20**

Suggested Readings:

1. Barrett H. R., (1995) *Population Geography*, Oliver and Boyd.
2. Bhende A. and Kanitkar T., (2000) *Principles of Population Studies*, Himalaya Publishing House.
3. Chandna R. C. and Sidhu M. S., (1980) *An Introduction to Population Geography*, Kalyani Publishers.
4. Clarke J. I., (1965) *Population Geography*, Pergamon Press, Oxford.
5. Jones, H. R., (2000) *Population Geography*, 3rd ed. Paul Chapman, London.

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) *JanasankyaBhugol*, M P Hindi Granth Academy,Bhopal.
11. Maurya, S. D., (2009) *JansankyaBhugol*, Sharda Putak Bhawan, Allahabad.
12. Chandna, R. C., (2006) *JansankhyaBhugol*, Kalyani Publishers, Delhi.

GEOGRAPHY

SEMESTER – IV

TYPE OF COURSE	:	**MIC-4 (P)**	**Full Marks: 100**
NAME OF COURSE	:	**Population Geography**	**ESE: 70**
CREDIT	:	**1**	**CIA: 30**

COURSE OBJECTIVES:

1. Introduce the basic graphical diagrams associated with the use of population data.
2. Various population projection methods

COURSE OUTCOME:

Aftercompletionofthecoursestudents willbe able to–

1. Learn different graphical diagrams associated with population data
2. Calculate the different population projection methods

Unit	Topics	No. of Lectures
I	Population Distribution: Age-Sex Pyramid, Dot Method, Choropleth Map	4
I	Methods of Population Projection, Doubling Time of Population	4
II	Representation of Population Data: Bar diagram, Pie Diagram	2
III	Practical Records 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)*PrayogikBhugol*, 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.
7. Singh, L R & Singh R (1977): *Manchitra or PryaogatamekBhugol*, Central Book, Depot, Allahabad.

8. Bhopal Singh R L and Dutta P K (2012) PrayogatamaBhugol, Central Book Depot, Allahabad.

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:

Aftercompletionofthecoursestudents willbe 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 Theoryof Malthus; Demographic Transition Theory; Migration: Types, Causes andConsequences	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 1: Concepts, Determinants and World Patterns,Kalyani Publishers.

4. Dorrel, D., Henderson, P. 2018. Introduction to Human Geography. University of Georgia Press.
5. Hassan, M. I. (2005) Population Geography, Rawat Publication, Jaipur.
6. Fouberg, E.H., Nash, A.B., Murphy, A.B., de Blij, H., 2015. Human Geography: People, Place, and Culture, 11th ed, Wiley.
7. Ghosh S. 1998. An Introduction to Settlement Geography, Sangam Books Ltd.
8. Gregory, D., Johnston, R., Pratt, G., Watts, K., Whatmore, S. (Eds) 2009. The Dictionary of Human Geography, 5th ed, Wiley-Blackwell.
9. Knox, P.L., Marston, S.A. 2014. Human Geography, Places and Regions in Global Context, 6th ed, Pearson Education.
10. Majumdar, P.K. 2013. India's Demography: Changing Demographic Scenario in India, RawatPublications
11. Mercier, M., Norton, W. 2019. Human Geography, 10th ed, Oxford University Press.
12. Paul, C., Crang, P., Goodwine, M.G. 2014, Introducing Human Geographies, 3rd ed, Routledge.
13. Rubenstein J.M., 2018, Contemporary Human Geography, 4th ed, Pearson.
14. Rubenstein, J.H. and Bacon, R.S., The Cultural Landscape -A Introduction to Human geography, Prenice Hall, India, New Delhi, 1990
15. Short, R.J. 2017. Human Geography: A Short Introduction, 2nd ed, Oxford University Press.
16. Sing, R.Y. 2009, A Geography of Settlements, Rawat Publications.
17. Census of India, Tribes (2011), https://censusindia.gov.in/census.website/

GEOGRAPHY

SEMESTER –IV

TYPE OF COURSE	**:**	**MIC-6 (T)**	**Full Marks: 100**
NAME OF THE COIURSE:		**Geography of India and Bihar**	**ESE: 70**
CREDIT	**:**	**2**	**CIA: 30**

COURSE OBJECTIVES :

1. Various dimensions of the geographical features of India and their spatial distribution.
2. Detailed analysis of Natural resources of India
3. Understanding of regional divisions of India

COURSEOUTCOMES :

Aftercompletionofthecoursestudents willbe able to-

1. Get an overview of Geography of India and Bihar
2. Able to learn the India's rich minerals and industrial assets
3. Able to link the current economic development of India
4. Comprehensive knowledge about Bihar with facts and figures

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Unit	Topics	No. of Lectures
I	India: Relief and Structure; Major Drainage System: Himalayan and Peninsular rivers	6
II	Climate: Origin and Mechanism of Monsoon; Type of Soils and Natural Vegetation	4
III	Agricultural Industry: Jute, Cotton, Sugar and Paper Industry	4
IV	Geography of Bihar: Structure and Physiography, Population: Growth and Distribution, Agriculture Regions, Flood and Drought	6
Total		**20**

Suggested Readings:

1. Deshpande C. D., 1992: *India: A Regional Interpretation*, ICSSR, New Delhi.
2. Johnson, B. L. C., ed. 2001. *Geographical Dictionary of India*. Vision Books, New Delhi.
3. Mandal R. B. (ed.), 1990: *Patterns of Regional Geography – An Intenational Perspective. Vol. 3 – Indian Perspective.*
4. Sdyasuk Galina and P Sengupta (1967): *Economic Regionalisation of India*, Census of India.
5. Sharma, T. C. 2003: India - Economic and Commercial Geography. Vikas Publ., New Delhi.
6. Singh R. L., 1971: *India: A Regional Geography*, National Geographical Society of India.

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 BhaugoalikSamisksha, Vasundhara Prakashan, Gorakhpur

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:

Aftercompletionofthecoursestudents willbe 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) *PrayogicBhugol*, 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.

7. Singh, L R & Singh R (1977): *Manchitra or PryaogatamekBhugol,* Central Book, Depot, Allahabad.

8. Bhopal Singh R L and Duttta P K (2012) PrayogatamaBhugol, Central Book Depot, Allahabad.

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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. ClavalP.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.

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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SEMESTER –VI

TYPE OF COURSE	**:**	**MIC-8 (P)**	**Full Marks: 100**
NAME OFCOURSE	**:**	**Statistical Methods in Geography**	**ESE: 70**
CREDIT	**:**	**2**	**CIA: 30**

COURSE OBJECTIVES:

1. To enable the students to differentiate between quantitative and qualitative information
2. To enable students with the nature of various data, different sources and methods of data collection
3. To apply the sampling methods for data collection

COURSE OUTCOME:

After completion of the course students will be able to-

1. Present statistical data in diagrammatic and graphical form
2. Distinguish between dependent and independent variable

Unit	Topics	No. of Lectures
I	Measurement of Central Tendency: Mean, Median, Mode and Centro-Graphic Techniques- Histogram and Frequency Polygon	6
II	Measures of dispersion: Range, Mean Deviation, Standard Deviation, Quartile Deviation	6
III	Correlation - Karl Pearson's Coefficient of Correlation, Spearman's Rank Correlation and Scatter Diagram; Regression Analysis	8
IV	Practical Record and Viva-Voce	-
Total		**20**

Suggested Readings:

1. Berry B. J. L. and Marble D. F. (eds.): *Spatial Analysis – A Reader in Geography.*
2. Ebdon D., (1977) *Statistics in Geography: A Practical Approach.*
3. Hammond P. and McCullagh P. S., (1978) *Quantitative Techniques in Geography: An Introduction,* Oxford University Press.
4. King L. S., (1969) *Statistical Analysis in Geography*, Prentice-Hall.
5. Mahmood A., (1977) *Statistical Methods in Geographical Studies,* Concept.
6. Pal S. K., (1998) *Statistics for Geoscientists*, Tata McGraw Hill, New Delhi.
7. Sarkar, A. (2013) Quantitative geography: techniques and presentations. Orient Black Swan Private Ltd., New Delhi

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 bhugol. Discovery Publishing House, New Delhi

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SEMESTER –VII

TYPE OF THE COURSE : **MIC-9 (T)** — **Full Marks: 100**
NAME OF THE COURSE : **ENVIRONMENTAL GEOGRAPHY** — **ESE: 70**
CREDIT : **3** — **CIA: 30**

COURSE OBJECTIVES :

1. To understand the Environmental Geography, its concepts and Components.
2. To critically examine Environmental pollution.
3. To provide a theoretical and empirical framework for understanding environmental law.

COURSE OUTCOMES :

Aftercompletionofthecoursestudents willbe able to-

1: Develop an idea about Environment and different fundamental concepts
2: Understand different process of pollution.
3: Assess the role of anthropogenic activities producing pollution.
4: Explain different types of environmental crisis.
5: Understand the processes of natural hazards and disasters.

UNIT	TOPICS	No. of Lectures
I	Environmental Geography : Meaning and Scope, Ecology and Eco-system, Terrestrial and Aquatic Eco-system	8
II	Environmental pollution : Air pollution, Water pollution, Noise pollution, Soil pollution, and their remedial measures, International standard of Drinking water	8
III	Environmental crisis: causes and mitigation, Major global Environmental issues with special reference to India: Ozone layer Depletion, Natural disasters: Drought, Flood.	8
IV	Cleaning of rivers, Contamination of water: Arsenic and Fluorides, Natural hazards and disasters, Radiation Hazards, Acid rain.	6
	Total	**30**

Suggested Readings:-

1. Chandna R. C., (2002)*Environmental Geography*, Kalyani, Ludhiana.
2. Cunninghum W. P. and Cunninghum M. A., (2004)*Principals of EnvironmentalScience: 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 andForests, 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,* Ceneage 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 –VII

TYPE OF THE COURSE : **MIC-9 (P)** **Full Marks: 100**

NAME OF THE COURSE : **ENVIRONMENTAL GEOGRAPHY** **ESE: 70**

CREDIT : **1** **CIA: 30**

COURSE OBJECTIVES :

1. To understand the Environmental issues, its concepts and Components.
2. To examine Environmental issues critically.
3. To provide a theoretical and empirical framework for understanding environmental law.

COURSE OUTCOMES :

Aftercompletionofthecoursestudents willbe able to-

1: Develop an idea about Environment and different fundamental concepts

2: Understand different process of pollution.

3: Assess the role of anthropogenic activities producing pollution.

UNIT	TOPICS	No.of Lectures
I	Interpretation of Weather map, Hythergraph, Climograph, Wind Rose	5
II	Field work and Preparation of Project Report on local environmental issues	5
III	Record of Practical work and Viva -voce	
	Total	**10**

Suggested Readings:-

1. Chandna R. C., (2002)*Environmental Geography*, Kalyani, Ludhiana.
2. Cunninghum W. P. and Cunninghum M. A., (2004)*Principals of EnvironmentalScience: 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 andForests, 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,* Ceneage 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)**	**FULL MARKS: 100**
NAME OF COURSE	:	**REMOTE SENSING AND GIS**	**ESE- 70 MARKS**
CREDIT	:	**03**	**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

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. Chauniyal, D.D. (2010) Sudur Samvedan evam Bhogolik Suchana Pranali, Sharda Pustak Bhawan, Allahabad.

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

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. Chauniyal, D.D. (2010) Sudur Samvedan evam Bhogolik Suchana Pranali, Sharda Pustak Bhawan, Allahabad.