To,

The Principal Secretary
Rajbhavan, Bihar, Patna.

Sub.- Regarding submission of proposed course structure and uniform syllabus of GEOGRAPHY for 3rd To 8th Semester of 4-Year undergraduate.

Ref- Letter No.-BSU(UGC)-02/2023-1457/GS(I), Dated-14-09-2023.

Sir,

In Compliance with your letter no-BSU(UGC)-02/2023-1457/GS(I). dated 14-09-2023 followed by above mentioned letter no, we are submitting the proposed Course structure and syllabus of GEOGRAPHY for Semester 3rd to 8th semester of the 4 year, under graduate course system as per UGC Regulations.

Enclosed-as above.

Yours faithfully,

Professor (Dr.) R.B.P Singh
Former Vice-Chancellor
Patna University, Patna

Professor (Dr.) Bibha Singh
Gaya College,Gaya

Professor (Dr.) Narendra Singh
VKSU, Ara

Professor (Dr.) Md. Nazim
Head, P. G. Dept. of Geography
Patna University, Patna

Professor (Dr.) Ram Pravesh Yadav
Retd. Head, BRA Bihar University,
Muzaffarpur.

Professor (Dr.) Usha Singh
Head, University Dept. of Geography
J. P. University, Chapra.

Dr. Ganesh Prasad
Associate Professor & Head,
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Dr. Anoop Kumar Singh
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Dr. Sunil Kumar Singh A
Assistant Professor
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Md Raiyaj Ansari
Assistant Professor
P.G. Dept. of Geography
R.K. College, Madhubani

Dr. Vidya Yadav
Assistant Professor
P.G Dept. of Geography
College of Commerce(A&C), Patna

Syllabus

For

Bachelor of Arts / Science Programme

In

GEOGRAPHY

Under Choice Based Credit System (CBCS)

(2023-24 onwards)

of

NEW EDUCATION POLICY-2020

(Semester-III To Semester-VIII)

GEOGRAPHY

(A) Major Core Course

Sl. No.	Sem.	Type of Course	Name of Course	Credits	Marks
1.	I	MJC-1 (T)	Geomorphology (T)	4	100
		MJC-1 (P)	Geomorphology (P)	2	100
2.	II	MJC-2 (T)	Climatology and Oceanography (T)	4	100
		MJC-2(P)	Climatology and Oceanography (P)	2	100
3.	III	MJC-3 (T)	Economic Geography (T)	5	100
		MJC-4 (T)	Cartograms, Map Projection and Surveying (T)	3	100
		MJC-4(P)	Cartograms, Map Projection and Surveying (P)	1	100
4.	IV	MJC-5(T)	Human Geography (T)	5	100
		MJC-6(T)	Geography of India and Bihar (T)	5	100
		MJC-7(T)	Statistical Methods in Geography (T)	3	100
		MJC-7(P)	Statistical Methods in Geography (P)	2	100
5.	V	MJC-8(T)	Environmental Geography (T)	5	100
		MJC-9(T)	Cartographic Techniques (T)	3	100
		MJC-9 ()	Cartographic Techniques (P)	2	100
6.	VI	MJC-10(T)	Evolution of Geographical Thought (T)	5	100
		MJC-11(T)	Research Methodology and Field Work	4	100
		MJC-12(T)	Remote sensing and GIS (T)	3	100
		MJC-12(P)	Remote Sensing and GIS (P)	2	100
7.	VII	MJC-13(T)	Regional Planning and Development (T)	5	100
		MJC-14(T)	Research Methodology (T)	5	100
		MJC-15(T)	Disaster Management (T)	4	100
		MJC-15(P)	Disaster Management (P)	2	100
8.	VIII	MJC-16(T)	Social Geography (T)	4	100
			TOTAL	**80**	

(B)Minor Courses to be offered by the Department for students of other Departments of Social Science

Sl.No.	Sem	Type of Course	Name of Course	Credit	Marks
1.	I	MIC-1(T)	Geomorphology(T)	2	100
		MIC-1(P)	Geomorphology(P)	1	100
2.	II	MIC-2(T)	Climatology and Oceanography(T)	2	100
		MIC-2(P)	Climatology and Oceanography(P)	1	100
3.	III	MIC-3(T)	Economic Geography(T)	2	100
		MIC-3(P)	Economic Geography(P)	1	100
4.	IV	MIC-4(T)	Population Geography(T)	2	100
		MIC-4(P)	Population Geography(P)	1	100
5.	V	MIC-5(T)	Human Geography(T)	3	100
		MIC-5(T)	Geography of India and Bihar(T)	2	100
		MIC-6(P)	Geography of India and Bihar(P)	1	100
6.	VI	MIC-7(T)	Regional Planning and Development (T)	4	100
		MIC-8(P)	Statistical Method in Geography (P)	2	100
7.	VII	MIC-9(T)	Environmental Geography (T)	3	100
		MIC-9(P)	Environmental Geography (P)	1	100
8.	VIII	MIC -10(T)	Remote Sensing and GIS (T)	3	100
		MIC-10(P)	Remote Sensing and GIS (P)	1	100
			TOTAL	**32**	

Note: The Department may reduce the syllabus of the Minor Courses as per the credit distribution. The Department concerned may also decide practical courses.

Question Paper Pattern

The Question paper pattern shall consists of three parts-

Part-A-Comulsory- consisting of objective/multiple choice type- each carrying two marks 10x2 = 20 marks

Part-B- Short Answer Type- Four questions to be answered out of six questions- each carrying five marks 04x5 = 20 marks

Part-C-Long Answer Type- Three questions to be answered out of five questions- each carrying ten marks 03x10 = 30 marks

Note- Examinations shall not be held on OMR Sheet strictly.

We are submitting the syllabus of Bachelor of Arts / Science Programme in GEOGRAPHY for Semester-III and Semester-VIII.

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GEOGRAPHY

SEMESTER – I

PAPER	:	**MJC-1 (T)**	**Full Marks: 100**
TITLE OF THE PAPER	:	**GEOMORPHOLOGY**	**ESE: 70**
CREDIT	:	**4**	**CIA: 30**

COURSE OBJECTIVES :

1. To understand the concept of various landforms and physical features.
2. To examine and correlate information about Geomorphic processes.
3. To provide a theoretical and empirical framework for understanding landscapes evolution.

COURSE OUTCOMES :

After completion of the course students will be able to -

1. Develop an idea of Geomorphology and its fundamental concepts.
2. Understand various theories regarding the origin of the earth.
3. Understand various processes of natural and anthropogenic factors.
4. Understand the role of structure, process and stages in shaping the landforms.
5. Explain different types of Geomorphic processes like weathering and cycle of erosion.
6. Understand the processes of erosion, deposition and resulting landforms.

Unit	Topics	No. of Lectures
I	Nature and Scope of Geomorphology, Origin of the Earth: Nebular, Tidal and Big Bang Theory, Internal Structure of the Earth	10
II	Isostasy: Concept of Airy and Pratt, Wegner's Continental Drift Theory, Plate Tectonics.	10
III	Mountain Building: Theories of Kober and Holmes, Earthquake and Volcanoes.	08
IV	Geomorphic Processes: Weathering and Erosion, Normal Cycle of Erosion-Davis and Penck, Evolution of Landforms:- Glacial, Arid and Karst Topography.	12
Total		**40**

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	**:**	**MJC-1 (P)**	**Full Marks- 100**
TITLE OF THE PAPER	**:**	**GEOMORPHOLOGY**	**ESE: 70**
CREDIT	**:**	**2**	**CIA: 30**

COURSE OBJECTIVES :

1. To understand the basic characteristics of Rocks and Minerals for their identification.
2. To understand various land forms, relief and Geomorphic process .
3. To understand Topographical Maps through Conventional signs and Symbols.

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'
4. Understand and interpret Topographical maps.

Unit	Topics	No. of Lectures
I	Scale and its types; Rocks and Minerals: Properties and Identification.	04
II	Contour lines, Cross-Sections and Representation of Relief.	08
III	Interpretation of Topographical Maps and Use of Conventional Signs and Symbols.	08
	Total	**20**

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 – II

PAPER : **MJC-2 (T)** **Full Marks- 100**
TITLE OF THE PAPER : **CLIMATOLOGY & OCEANOGRAPHY** **ESE: 70**
CREDIT : **4** **CIA: 30**

COURSE OBJECTIVES :

1.To understand different layers and composition of atmosphere.
2.To critically examine various aspects of climate and its classification.
3.To understand oceanic relief features and composition of ocean water.

COURSE OUTCOMES :

After completion of the course students will be able to -

1. Understand the structure and composition atmosphere.
2. Understand the various climatic phenomena.
3. Understand causes of climate change.
4. Understand Ocean, its features and properties.

Unit	Topics	No. of Lectures
I	Composition and Structure of Atmosphere, Insolation.	08
II	Air Masses and Fronts- Concepts, Classification and Properties; Tropical and Temperate Cyclones.	10
III	Classification of Climate: Koppen's and Thornthwaite's, Climatic Change: Causes and evidences.	10
IV	Relief of the Ocean floor: Continental Shelf, Slope and Deep Sea Plain, Bottom Relief of Indian and Atlantic Ocean, Factors of Salinity of Oceans.	12
Total		**40**

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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GEOGRAPHY

SEMESTER –II

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

COURSE OBJECTIVES :

1. To understand different weather phenomena through graph and diagrams.
2. To get acquainted with different weather measuring instruments. .
3. To understand and analyse spatial weather conditions.

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 or region.
3. Understand the functions of various weather instruments.

Unit	Topics	No. of Lectures
I	Graphical Representation of Wind Rose, Cyclone and Anticyclone	06
II	Interpretation of Weather Map; Climograph and Hythergraph	06
III	Metrological Instruments - Functions of Wind Vane and Anemometer, Barometer, Dry and Wet Bulb Thermometer	08
Total		**20**

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	:	**MJC-3 (T)**	**Full Marks: 100**
NAME OF COURSE	:	**ECONOMIC GEOGRAPHY**	**ESE - 70 Marks**
CREDIT	:	**5**	**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 activity focusing on Von Thunen and Weber theory.
3. To describe in the details the regionalization of different economic activities.

COURSE OUTCOMES:

After learning, students will be able to:

1. Distinguish to different types of economic activities and their significance.
2. Identify the factors responsible for the location and distribution of activities.
3. Examine the significance and relevance of various locational theories.

UNIT	TOPICS	No. of Lectures
I	Meaning and Scope of Economic Geography: Concept and Classification of Economic Activities- Primary, Secondry and Tertiary.	12
II	Locational Theory of Agriculture (Von Thunen); Intensive Subsistence Farming, Commercial Grain Farming and Dairy Farming	12
III	Industrial Location Theory (Weber); Major Industries - Iron and Steel, Cotton Textile, Automobile Industry and Information Technology.	14
IV	Major Oceanic Routes- Suez and Panama. International Trade and WTO; Special Economic Zone(SEZ)	12
	TOTAL	**50**

Suggested Readings:-

1. Alexander J. W., (1963) *Economic Geography*, Prentice-Hall Inc., Englewood Cliffs, New Jersey.
2. Coe N. M., Kelly P. F. and Yeung H. W., (2007) *Economic Geography: A Contemporary Introduction*, Wiley-Blackwell.
3. Combes P., Mayer T. and Thisse J. F., (2008) *Economic Geography: The Integration of Regions and Nations*, Princeton University Press.
4. Wheeler J. O., (1998) *Economic Geography*, Wiley..
5. Bagchi-Sen S. and Smith H. L., (2006) *Economic Geography: Past, Present and Future*, Taylor and Francis.
6. Willington D. E., (2008) *Economic Geography*, Husband Press.
7. Singh K.N.& Jagdish Singh (2020)., *Aarthik Bhugol ke Mool Tatva*, Prayag Publication.
8. Jatt B.C., (2020) *Aathik Bhugol*.. Mallik Book Company Jaypur.
9. Gautam Alka., (2022) *Aarthik bhugol ke mool tatv*, sarda pustak bhawan, prayagraj.
10. Maurya S.D., *Aarthik Bhugol*., Pravalika Publication.

GEOGRAPHY

SEMESTER –III

TYPE OF COURSE : MJC-4 (T) **Full Marks: 100**

NAME OF COURSE : CARTOGRAMS, MAP PROJECTION AND SURVEYING **ESE - 70 Marks**

CREDIT : 3 **CIA - 30 Marks**

Course Objectives:

1. Develop an understanding for construction of maps through cartographic conventions.
2. Develop an understanding of the concepts regarding map projections to suit map purposes.
3. Better understanding of survey and surveying.

Course Outcomes:

This is a theory paper, when students complete it, they will be able to:

1. Explain how maps work, conceptually and technically and will be able to understand science and art of cartography
2. Recognize the benefits and limitations of some common map projections and their uses.
3. Develop an understanding and importance of surveying.

UNIT	TOPICS	No. of Lectures
I	Nature and Scope of Cartography, Bar Diagram -Types and Uses,	06
II	Map and its Types, Distribution Maps - Dot, Choropleth and Isopleth.	08
III	Map Projection : Concept, Classification and Properties.	08
IV	Surveying – Concept, Types and its significance.	08
	TOTAL	30

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 –III

TYPE OF COURSE : MJC-4 (P) **Full Marks: 100**

NAME OF COURSE : CARTOGRAMS, MAP PROJECTION AND SURVEYING

ESE - 70 Marks

CREDIT : 1 **CIA - 30 Marks**

Course Objectives:

1. Learning to construct maps through 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 Prismatic Compass Survey.

Course Outcomes:

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

1. Construct maps and various Diagrams.
2. Learn the construction and use of some common map projections.
3. Understand and perform Prismatic Compass Survey.

UNIT	TOPICS	No. of Lectures
I	Bar Diagram, Pie Diagram and Choropleth.	03
II	Map Projection : Simpal Conical One Standard Parallel, Cylindrical Equidistant Projection. Zenithal Equidistant Projection.	04
III	Prismatic Compass Survey: Open and Closed Traverse.	03
IV	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	**:**	**MJC-5 (T)**	**Full Marks: 100**
NAME OF COURSE	**:**	**Human Geography**	**ESE: 70**
CREDIT	**:**	**5**	**CIA: 30**

COURSE OBJECTIVES:

1. To understand the concept of human communities, culture and its relationship with environment.
2. To examinethe Contemporary relevance of environmental thoughts.
3. To provide an in-depth knowledge of Indianraces and tribes.
4. To give a detailed eye-view on migration and settlement pattern

COURSEOUTCOMES:

Aftercompletionofthecoursestudents willbe able to-

1. Get a complete idea of space and place
2. Able to know the types and distribution of tribes in India and Bihar with reference to Census data
3. Conceptualize the trends and pattern of Migration and settlement types

Unit	Topics	No. of Lectures
I	Human Geography: Definition, Nature and Scope; FundamentalConcepts in Human Geography, Contemporary relevance of Determinism, PossibilismandNeo-Determinism	15
II	Population: Population Composition, Growth, Density and Distribution (World); Malthus Population theory, Demographic Transition Theory;Migration: Causes and types	15
III	Races and Tribes:Major Tribal Groups of India and Bihar; Race, Religion and Language	10
IV	Settlements: Types and Pattern of Rural Settlements; Classification of Urban Settlements based on Function and Size; Christaller Central Place Theory; Trends and Pattern of Urbanization (India and World)	10
Total		**50**

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	**:**	**MJC-6 (T)**	**Full Marks: 100**
NAME OF COURSE	**:**	**Geography of India and Bihar**	**ESE: 70**
CREDIT	**:**	**5**	**CIA: 30**

COURSE OBJECTIVES:

1. To acquire the students' basic facts and figures about the spatial distribution of the country
2. To appreciate the vastness and diversity of India as a Nation
3. To know the rich physical and cultural resource of India

COURSEOUTCOMES :

Aftercompletionofthecoursestudents willbe able to-

1. Get an overview of Geography of India and Bihar
2. Learn the India's rich minerals and industrial assets
3. Understand the current economic development of India
4. Gain comprehensive knowledge about Bihar with facts and figures

Unit	Topics	No. of Lectures
I	India: Relief and structure, Major Drainage system: Himalayan and Peninsularrivers	12
II	Climate: Origin and Mechanism of Monsoon, Soil Types and Distribution;NaturalVegetation:Types, Characteristics, and Distribution	12
III	Mineral and Industries: Types of Natural resource, Distribution of Minerals-Iron ore, Manganese, Mica; Power resource -Coal, Petroleum and Hydro Power; Selected Industries: Iron and steel, Cotton textile and Sugar, Automobile and Information Technology	12
IV	Geography of Bihar: Structure and Physiography, Important Rivers of Bihar, Problems of Flood and Drought; Population: Growth, Density and Distribution, Trends of Urbanization	14
Total		**50**

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 : **MJC-7 (T) Full Marks: 100**
NAME OF COURSE : **Statistical Methods in Geography ESE: 70**
CREDIT : **3CIA: 30**

COURSE OBJECTIVES :

1. Enable the students to differentiate between quantitative and qualitative information
2. To understand the various data sets, its sources and methods of data collection
3. To enhance the study of Geography in quantitative terms with the use of statistical methods

COURSEOUTCOMES :

Aftercompletionofthecoursestudents willbe able to-

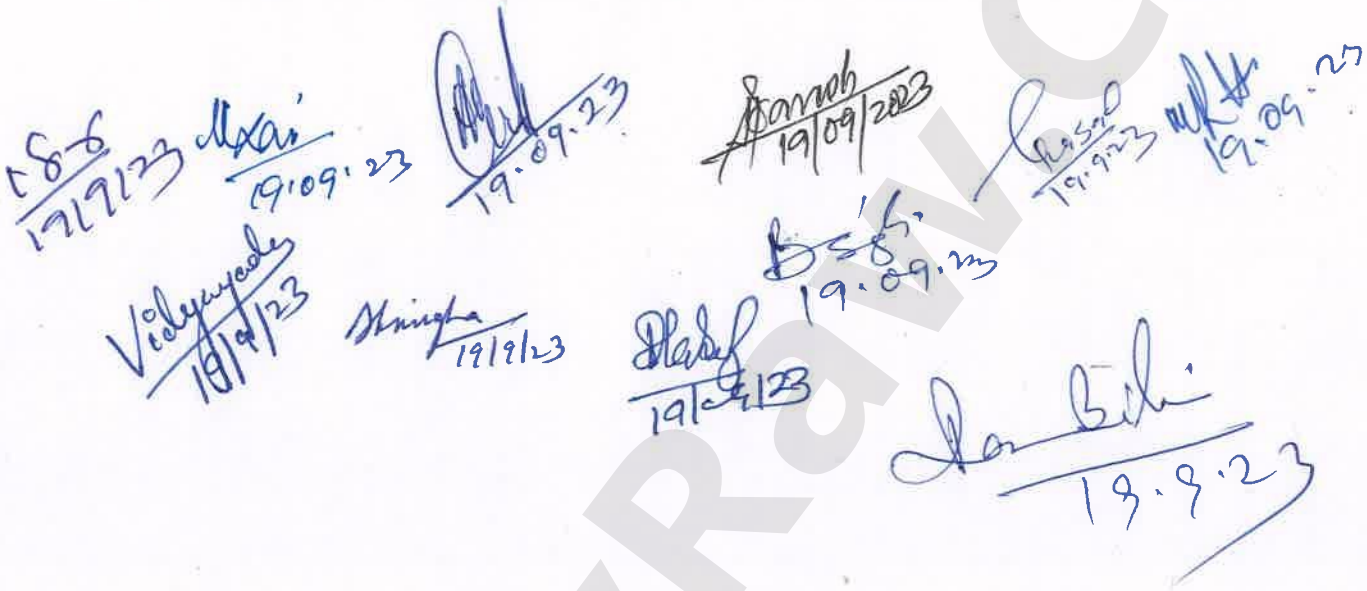
1. Know the various types of data and its sources
2. Present data in graphical and pictorial form
3. Produce various types of data tabulation

Unit	Topics	No. of Lectures
I	Use of Data in Geography: Significance of Statistical Methods in Geography, Sources and Types of Data, Scale of Measurement,	8
II	Measures of Central Tendency: Mean, Median, Mode - Concept and Properties;Measures of Dispersion	8
III	Sampling Methods: Types of Sampling- Probability & Non-Probability Sampling	6
IV	Correlation: Meaning and Types -Karl Pearson's Coefficient of Correlation, Spearman's Rank Correlation Coefficient and Scatter Diagram; Regression Analysis	8
Total		**30**

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) Sankhyikibhugol. Discovery Publishing House, New Delhi



GEOGRAPHY

SEMESTER –IV

TYPE OF COURSE	:	**MJC-7 (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:

Aftercompletionofthecoursestudents willbe 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-GraphicTechniques- 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	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) Sankhyikibhugol. Discovery Publishing House, New Delhi

GEOGRAPHY

SEMESTER –V

TYPE OF THE COURSE : MJC-8 (T) **Full Marks: 100**
NAME OF THE COURSE : ENVIRONMENTAL GEOGRAPHY **ESE: 70**
CREDIT : 5 **CIA: 30**
COURSE OBJECTIVES :

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

COURSE OUTCOMES :

After completion of the course, students will be able to-

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

UNIT	TOPICS	No.of Lectures
I	Environmental Geography: meaning and concept, Environmental degradation, Bio-diversity: Hot Spots, Heat island, Components of environment and their inter-relationship, Concepts and types of Eco-system, Ecological balance, Bio-energy Cycle.	12
II	Environmental pollution : Air pollution, Water pollution, Noise pollution, Sound pollution, and their remedial measures, International standard of Drinking water	12
III	Environmental Degradation: Causes and Impacts, Natural disa Drought, Flood and Earthquake, Environmental Pollution : Air Poll Water Pollution, Environmental management and policies.	14
IV	Sewage disposal, Cleaning of rivers, Natural hazards and disasters, Radiation hazards, Gas leak, Acid rain, Environmental laws.	12
	Total	**50**

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).

GEOGRAPHY

SEMESTER –V

TYPE OF THE COURSE : MJC-9 (T) **Full Marks: 100**
NAME OF THE COURSE : CARTOGRAPHIC TECHNIQUES **ESE: 70**
CREDIT : 3 **CIA: 30**
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 maps work, conceptually and technically and will be able to understand science and art of cartography
2. Recognize the benefits and limitations of some common map projections and their use.
3. Understand and perform interpretation of topographical maps and weather maps.

UNIT	TOPICS	No.of Lectures
I	Nature and Scope of Cartography, Scale- Concept and Application, Graphical Construction of Simple, Comparative and Diagonal Scales.	8
II	Weather Map – Difference between Climate and Weather, Significance of weather maps,Study and Interpretation of Weather Maps. Cloud types, Methods of interpretation of daily weather maps, Development of weather forecasting technology	8
III	Map Projections - Concept, Classification and Properties, Graphical Construction of Cylindrical Equidistant and Equal AreaProjection, Conical Projection with One and Two Standard Parallels, Zenithal Equi-Distant and Equal Area Projection.	8
IV	Topographical Map – Development of topographical mapping in India, Maps of Survey of India, Methods of study of the Topographical maps, Interpretation of Topographical Maps.	6
	Total	**30**

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, NResource & Economic Geographyew 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) PrayogicBhugol, 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) PrayogtmakBhugolkeMoolTatva, Kalyani Publishers, New Delhi.
13. Sharma, J P (2010) PrayogtmakBhugolkiRooprekha, Rastogi Publications, Meerut.
14. Singh, R L & Dutta, P K (2012) PrayogatmakBhugol, Central Book Depot, Allahabad.

GEOGRAPHY

SEMESTER –V

TYPE OF THE COURSE : **MJC-9 (P)** **Full Marks: 100**
NAME OF THE COURSE : **CARTOGRAPHIC TECHNIQUES** **ESE: 70**
CREDIT : **3** **CIA: 30**
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.

COURSEOUTCOMES :

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

1. Explain how maps work, conceptually and technically and will be able to understand science and art of cartography
2. Recognize the benefits and limitations of some common map projections and their use.
3. Understand and perform interpretation of topographical maps and weather maps.

UNIT	TOPICS	No.of Lectures
I	Nature and Scope of Cartography, Scale- Concept and Application, Construction of Simple, Comparative and Diagonal Scales.	15
II	Topographical Map – Study and Interpretation of Topographical Maps. Map Projection: Cylindrical Equidistant and Equal Area Projection, Conical Projection with One and Two Standard Parallels, Zenithal Equi-Distant and Equal Area Projection.	15
III	Practical Record and Viva-voce	
	Total	**30**

GEOGRAPHY
SEMESTER - VI

TYPE OF COURSE	:	MJC- 10 (T)	FULL MARKS: 100
NAME OF COURSE	:	EVOLUTION OF GEOGRAPHICAL THOUGHT	ESE- 70 MARKS
CREDIT	:	5	CIA- 30 MARKS

Course Objectives:

1. Understanding historical evolution of geographic thought;
2. Detailed analysis of different paradigms in geography;
3. Evaluating the contemporary trends in geographical studies

Course Outcomes:

After studying, students will be able to:

1. Understand the evolution of geographical thought and relation of Geography with other Sciences.
2. Detailed knowledge about the paradigms and debates in the geographical studies.
3. Understanding of recent traditions in geography.

UNIT	TOPICS	NUMBER OF LECTURES
I	Meaning and Definition of Geography, Relation of Geography with Other Sciences.	10
II	Contribution of Geographers: Eratosthenes, Ptolemy, Stabo, Al-Idrisi, Al-Masudi, Humbolt, Ritter, Ratzel, Blache and Mackinder.	15
III	Dualism in Geography- Physical Vs Human Geography, Determinism Vs Possiblism, Neo-Determinism, Systematic Vs Regional.	10
IV	Concept and Methodological development in Geography, Quantitative Revolution, Behaviouralism, Applied Geography,	15

	Spatial Analysis, Inductive and Deductive Approachs, Changing Paradigm, Recent Trends in Geography.	
Total		**50**

Suggested Readings:

1. Adhikari, S., (2015) *Fundamental of Geographical Thoughts, Orient Black Swan, New Delhi.*
2. Arentsen M., Stam R. and Thuijis R., 2000: *Post-modern Approaches to Space*, ebook.
3. Bhat, L.S. (2009) Geography in India (Selected Themes). Pearson
4. Bonnett A., (2008) *What is Geography?* Sage.
5. Dikshit R. D., (1997) Geographical Thought: A Contextual History of Ideas, Prentice– Hall India.
6. Hartshone R., (1959) *Perspectives of Nature of Geography*, Rand MacNally and Co.
7. Holt-Jensen A., (2011) *Geography: History and Its Concepts: A Students Guide*, SAGE.
8. Husain Majid, (2014) *Evolution of Geographical Thought,* Rawat Publ., Jaipur and New Delhi.
9. Johnston R. J., (Ed.): *Dictionary of Human Geography*, Routledge.
10. Johnston R. J., (1997) *Geography and Geographers, Anglo-American Human Geography since 1945*, Arnold, London.
11. Kapur A., (2001) *Indian Geography Voice of Concern*, Concept Publications.
12. Kaushik, S.D, (2012) *Bhaugoolik Vichardhara Avam Vidhitantra,* Rastogi Publication, Meerut.
13. Martin Geoffrey J., (2005) *All Possible Worlds: A History of Geographical Ideas*, Oxford.
14. Soja, Edward (1989) *Post-modern Geographies,* Verso, London. Reprinted 1997: Rawat Publ., Jaipur and New Delhi.

GEOGRAPHY
SEMESTER – VI

TYPE OF COURSE	:	MJC- 11 (T)	FULL MARKS: 100
NAME OF COURSE	:	RESEARCH METHODOLOGY AND FIELD WORK	ESE- 70 MARKS
CREDIT	:	4	CIA- 30 MARKS

Course Objectives:

1. To understand concept and various techniques of research methodology in geography;
2. Detailed analysis of different field survey techniques.
3. Understanding of the report writing and field tools.

Course Outcomes:

After learning, students will be able to:

1. Detailed exposure of new geographical landscape as study area.
2. In-depth knowledge of different field techniques.
3. Understanding the field ethics and different tools of field study.

UNIT	TOPICS	NUMBER OF LECTURES
I	Research - Meaning and its Types, Hypothesis, Research Methodology: Merits and demerits of Quantitative and Qualitative techniques.	12
II	Field Techniques: Merits, Demerits and Selection; Observation, Questionnaire, Schedule and Interview Method. Sampling and its Types.	10
III	Case Study Method of Research: Definition, Nature and Field Tools.	8
IV	Field Report: Aims and Objectives, Data Analysis, Interpretation and Report Writing. Bibliography.	10
	Total	40

Suggested Readings

1. Creswell J., (1994) *Research Design: Qualitative and Quantitative Approaches* Sage Publications.
2. Dikshit, R. D. (2003) The Art and Science of Geography: Integrated Readings. Prentice-Hall of India, New Delhi.
3. Evans M., (1988) "Participant Observation: The Researcher as Research Tool" in *Qualitative Methods in Human Geography*, eds. J. Eyles and D. Smith, Polity.
4. Kothari C.R., (2004) *Research Methodology Methods and Techniques*. New Age: New Delhi.
5. Mukherjee, Neela, (1993) *Participatory Rural Appraisal: Methodology and Application*. Concept Publs. Co., New Delhi.
6. Mukherjee, Neela (2002) *Participatory Learning and Action: with 100 Field Methods.* Concept Publs. Co., New Delhi
7. Robinson A., (1998) "*Thinking Straight and Writing That Way*", in *Writing Empirical Research Reports: A Basic Guide for Students of the Social and Behavioural Sciences*, eds. by F. Pryczak and R. Bruce Pryczak, Publishing: Los Angeles.
8. Special Issue on *"Doing Fieldwork" The Geographical Review* 91:1-2(2001).
9. Stoddard R. H., (1982) *Field Techniques and Research Methods in Geography*, Kendall/Hunt.
10. Wolcott, H. (1995) *The Art of Fieldwork*. Alta Mira Press, Walnut Creek, CA.

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 &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, NResource & Economic Geographyew 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) PrayogicBhugol, 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 Mooltatva, Kalyani Publishers, New Delhi.
13. Sharma, J P (2010) PrayogtmakBhugolkiRooprekha, Rastogi Publications, Meerut.
14. Singh, R L & Dutta, P K (2012) PrayogatmakBhugol, Central Book Depot, Allahabad.

GEOGRAPHY

SEMESTER -VI

TYPE OF COURSE	:	MJC-12 (T)	FULL MARKS: 100
NAME OF COURSE	:	REMOTE SENSING AND GIS	ESE: 70
CREDIT	:	3	CIA: 30

Course Objectives:

1. The course aimsare 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 understanding 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. 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: Basic Concept, Historic Development and Significance, Elements of Satellite Imageries.	07
II	Process and Stages of Remote Sensing: Electromagnetic Spectrum, Interaction of EMR with Earth Surface Features.	07
III	Sensors and their Types; Platforms; Application of Remote Sensing.	06
IV	Geographic Information System (GIS): Definition, Basic Elements, Functions and Uses, Raster and Vector data Structure, Application of GIS.	10
	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 SamvedanevamBhogolik Suchana Pranali, Sharda Pustak Bhawan, Allahabad.

GEOGRAPHY

SEMESTER -VI

TYPE OF COURSE	:	MJC-12 (P)	FULL MARKS: 100
NAME OF COURSE	:	REMOTE SENSING AND GIS	ESE- 70 MARKS
CREDIT	:	2	CIA- 30 MARKS

Course Objectives:

1. The course aim is to give basic technical knowledge and practical experience in digital remote sensing and GIS;
2. Knowledge and practical experience in handling spatial data;
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. Learning the use of GIS technique for image interpretation.

2. Create line, point and Polygon using GIS technique.

3. Application of Image processing technique for land use and land cover for urban studies.

UNIT	TOPICS	NO OF LECTURES
I	Geo-referencing, Aerial Photo Interpretation.	6
II	Creating Point, Line and Shape files.	6
III	Creating Point Data from table; Creating Buffer,Choropleth Map, Satellite Image Classification and Interpretation.	8
IV	Practical Record and Viva-voce	-
	Total	**20**

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.

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.

GEOGRAPHY
SEMESTER – VII

TYPE OF COURSE	:	MJC- 13 (T)	FULL MARKS: 100
NAME OF COURSE	:	REGIONAL PLANNING AND DEVELOPMENT	ESE- 70 MARKS
CREDIT	:	5	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, Regional Hierarchy, Need for Regional Planning.	10
II	Indicators of Development, Regional Disparity in India. Planning Region: Characteristics of an Ideal Planning Region. Regionalization: Concept and Methods of Delineation.	15
III	Planning of Remote and Problem Regions: Hilly Regions, Tribal Region and Flood Prone Region.	10
IV	Model of Regional Planning - Growth Pole Model of Perroux, Rostow's Model;Concept of PURA; Public participation in regional Planning;Panchayati Raj System.	15
	Total	**50**

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

GEOGRAPHY

SEMESTER –VII

TYPE OF THE COURSE	**:**	**MJC-15 (T)**	**Full Marks: 100**
NAME OF THE COURSE	**:**	**DISASTER MANAGEMENT**	**ESE: 70**
CREDIT	**:**	**4**	**CIA: 30**

COURSE OBJECTIVES :

1. Understanding the basic concepts of disaster management;
2. Detailed analysis about the different types of disasters in India;
3. Evaluating the role of institutional frameworks to mitigate the disasters in the country.

COURSE OUTCOMES :

Aftercompletionofthecoursestudents willbe able to–

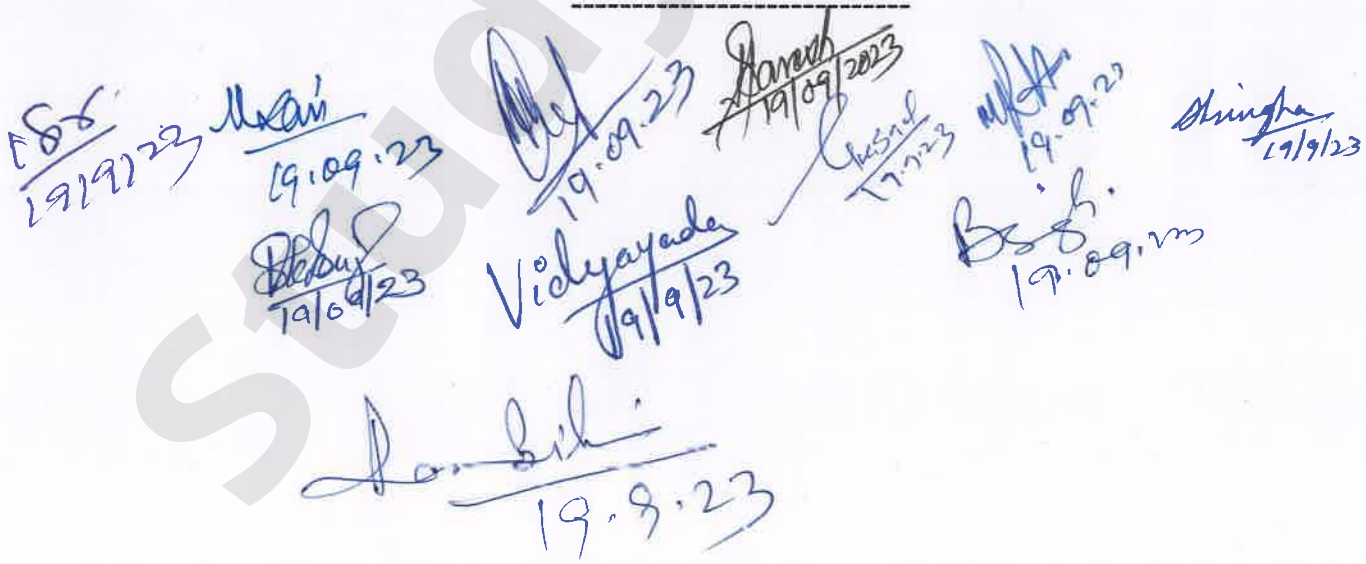
1. Understanding about the various disasters in the country.
2. Providing thorough understanding about the human responses to the disasters.
3. Human responses and mitigating measures to both natural and manmade disasters.
4. Understanding the processes of natural hazards and disasters.
5. Assessing the role of anthropogenic activities producing pollution.
6. Explaining different types of environmental crisis.

Learning Outcomes:

UNIT	TOPICS	No.of Lectures
I	Disasters: Definition and Concepts, Hazards and Disasters, Classification and Principles of disaster management, Components of disaster management, Risk and Vulnerability of disaster.	10
II	Natural Disasters in India: Causes, Impact and Distribution; Flood, Drought, Earthquake and Cyclone.	10
III	Human Induced Disasters: Technological and Industrial disasters, Moral disasters, Fire, Road Accidents; their responsible Causes and Impact.	10
IV	Response and Mitigation to Disasters: Mitigation and Preparedness, NDMA and NIDM; Indigenous Knowledge and Community-Based Disaster Management; Do's and Don'ts During and Post Disasters, Disaster Warning System.	10
	Total	**40**

SUGGESTED READING:

1. Government of India. (1997) Vulnerability Atlas of India. New Delhi, Building Materials & Technology Promotion Council, Ministry of Urban Development, Government of India.
2. Kapur, A. (2010) Vulnerable India: A Geographical Study of Disasters, Sage Publication, New Delhi.
3. Modh, S. (2010) Managing Natural Disaster: Hydrological, Marine and Geological Disasters, Macmillan, Delhi.
4. Singh, R.B. (2005) Risk Assessment and Vulnerability Analysis, IGNOU, New Delhi. Chapter 1, 2 and 3
5. Singh, R. B. (ed.), (2006) Natural Hazards and Disaster Management: Vulnerability and Mitigation, Rawat Publications, New Delhi.
6. Sinha, A. (2001). Disaster Management: Lessons Drawn and Strategies for Future, New United Press, New Delhi.
7. Stoltman, J.P. et al. (2004) International Perspectives on Natural Disasters, Kluwer Academic Publications. Dordrecht.
8. Singh Jagbir (2007) "Disaster Management Future Challenges and Oppurtunities", 2007. Publisher- I.K. International Pvt. Ltd. S-25, Green Park Extension, Uphaar Cinema Market, New Delhi, India (www.ikbooks.com).



GEOGRAPHY

SEMESTER –VII

TYPE OF THE COURSE	**:**	**MJC-15 (P)**	**Full Marks: 100**
NAME OF THE COURSE	**:**	**DISASTER MANAGEMENT**	**ESE: 70**
CREDIT	**:**	**2**	**CIA: 30**

COURSE OBJECTIVES :

1. Understanding the basic concepts of disaster management;
2. Detailed analysis about the different types of disasters in India;
3. Evaluating the role of institutional frameworks to mitigate the disasters in the country.

COURSE OUTCOMES :

After completion of the course, students will be able to–

1. Understanding about the various disasters in the country.
2. Providing thorough understanding about the human responses to the disasters.
3. Human responses and mitigating measures to both natural and manmade disasters.
4. Understanding the processes of natural hazards and disasters.
5. Explaining different types of environmental crisis.

ESE will consists of 70 marks out of which 40 marks will be on written test and 30 marks for Viva-voce on Project Report.

UNIT	TOPICS	No.of Lectures
I	Field Work and Preparation of Project Report on any one of the following: Flood, Drought, Earthquake, Erosion by rivers, Human Induced Disasters: Fire Hazards, Electric shorts, Bursting of domestic Gas Cylinder, Chemical disasters, Industrial accidents, Road – Rail accidents, Problem of solid Waste.	10
II	Natural Disasters in India: Causes, Impact and Distribution; Flood, Drought, Earthquake and Cyclone.	10
III	Project Report and Viva -voce	
	Total	**20**

Suggested Reading :

1. Government of India. (1997) *Vulnerability Atlas of India.* New Delhi, Building Materials & Technology Promotion Council, Ministry of Urban Development, Government of India.
2. Kapur, A. (2010) *Vulnerable India: A Geographical Study of Disasters*, Sage Publication, New Delhi.
3. Modh, S. (2010) *Managing Natural Disaster: Hydrological, Marine and Geological Disasters,* Macmillan, Delhi.
4. Singh, R.B. (2005) *Risk Assessment and Vulnerability Analysis*, IGNOU, New Delhi. Chapter 1, 2 and 3
5. Singh, R. B. (ed.), (2006) *Natural Hazards and Disaster Management: Vulnerability and Mitigation*, Rawat Publications, New Delhi.
6. Sinha, A. (2001). *Disaster Management: Lessons Drawn and Strategies for Future,* New United Press, New Delhi.
7. Stoltman, J.P. et al. (2004) *International Perspectives on Natural Disasters,* Kluwer Academic Publications. Dordrecht.
8. Singh Jagbir (2007) *Disaster Management Future Challenges and Opportunities*. Publisher- I.K. International Pvt. Ltd. S-25, Green Park Extension, Uphaar Cinema Market, New Delhi, India (www.ikbooks.com).
9. Singh, R. B. (ed.), (2006) Natural Hazards and Disaster Management: Vulnerability and Mitigation, Rawat Publications, New Delhi.
10. Sinha, A. (2001). Disaster Management: Lessons Drawn and Strategies for Future, New United Press, New Delhi.

GEOGRAPHY

SEMESTER –VII

TYPE OF COURSE	**:**	**MJC-16 (T)**	**Full Marks: 100**
NAME OF COURSE	**:**	**SOCIAL GEOGRAPHY**	**ESE - 70 Marks**
CREDIT	**:**	**4**	**CIA - 30 Marks**

COURSE OBJECTIVES:

1. To familiarise the student with the theoretical foundations and conceptual grounding of unique of social geography.
2. To appreciate the roles of geographic factors in socio-cultural diversity in terms of caste, class, religion etc.
3. To analyse in details the social wellbeing, problems and welfare programmes and policies.

COURSE OUTCOMES:

After studying, students will be able to:

1. Get Knowledge of the social geography and social diversity.
2. Appraise the key concepts of social geography in regional context; geographic factors underlying patterns of social well-being and inclusive development.
3. Explain the social problems and the welfare programs and policies.

UNIT	TOPICS	No. of Lectures
I	Social Geography: Concept, Nature and Scope, Migration: Causes and Consequences.	10
II	Social Categories: Caste, Religion, Race - their Spatial distribution.	10
III	Geography of Welfare and Social Wellbeing: Concept and Components, Healthcare, Housing and Education –Concept and Problems.	10
IV	Geography of Social Inclusion and Exclusion, Slums & Social Conflicts, Social Planningin india.	10
	TOTAL	40

Suggested Readings:-

1. Ahmed A., (1999) *Social Geography*, Rawat Publications.
2. Casino V. J. D. Jr., (2009) *Social Geography: A Critical Introduction*, Wiley Blackwell.
3. Cater J. and Jones T., (2000) *Social Geography: An Introduction to Contemporary Issues*, Hodder Arnold.
4. Holt L., (2011) *Geographies of Children, Youth and Families: An International Perspective*, Taylor & Francis.
5. Panelli R., (2004) *Social Geographies: From Difference to Action*, Sage.
6. Rachel P., Burke M., Fuller D., Gough J., Macfarlane R. and Mowl G., (2001) *Introducing*

Social Geographies, Oxford University Press.

7. Smith D. M., (1977) *Human geography: A Welfare Approach*, Edward Arnold, London.
8. Smith D. M., (1994) *Geography and Social Justice*, Blackwell, Oxford.
9. Smith S. J., Pain R., Marston S. A., Jones J. P., (2009) *The SAGE Handbook of Social Geographies*, Sage Publications.
10. Sopher, David (1980): *An Exploration of India*, Cornell University Press, Ithasa
11. Valentine G., (2001) *Social Geographies: Space and Society*, Prentice Hall.

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 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) 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 – 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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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) 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 –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.

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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

GEOGRAPHY

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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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-econoinic 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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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.

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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.

Question Paper Pattern

The Question paper pattern shall consists of three parts-

Part-A- Comulsory- consisting of objective/multiple choice type-
each carrying two marks 10x2= 20 marks

Part-B- Short Answer Type- Four questions to be answered out of six questions-
each carrying five marks 04x5= 20 marks

Part-C- Long Answer Type- Three questions to be answered out of five questions-
each carrying ten marks 03x10= 30 marks

Note- Examinations shall not be held on **OMR Sheet** strictly.

14.06.23 14.06.2023 14/06/2023