

J B COLLEGE:: JORHAT
(AUTONOMOUS)

SYLLABUS: UNDER CBCS

(UG SECTION)

G E O G R A P H Y

First & second
semester

*(Passed by the UNDERGRADUATE BOARD OF STUDIES in GEOGRAPHY,
First Sitting held on the Second May, 2016)*

To be effected from the Odd Semester 2016
at Department of Geography
J B College (Autonomous), Jorhat

Under
Chairmanship
of
Dr. M. P. Hazarika
HoD. & Convener
Board of Studies
GEOGRAPHY
J B College :: Jorhat Assam

First Semester :: CORE ::
Paper-101 :: Credit-6 Full Marks = 100
GEOMORPHOLOGY

Theory Marks-80; Internal Assessment- 20; No. of Classes-70

COURSE CONTENT	MARKS	No. of Classes
UNIT-I: Introduction: 1. Nature and Scope: Trends of development; Fundamental Concepts in Geomorphology.	16	14
UNIT-II. Endogenic processes 1. Earth's interior: internal structure; seismological evidence with regard to earth's structure. 2. Earth movement: Orogenic and Epeirogenic movement; Folding, Faulting and associated landforms; 3. Continental drift and Plate tectonics; earthquake and volcanoes.	32	28
UNIT-III. Exogenic processes 1. Geomorphic Processes: Weathering and Mass wasting; Cycle of Erosion (Davis and Penck). 2. Evolution of Landforms: Fluvial, Karst, Aeolian, Glacial and Coastal (Erosional and Depositional). 3. Drainage Basin Study: Patterns, Basin Parameters, Drainage basin as a geomorphic unit.	32	28

Selected Readings:

1. Ahmed E, 1996, *Physical Geography*, Kalyani Publisher, New Delhi.
2. Bloom Arther, 2011, *Geomorphology: A Systematic Analysis of*
3. Bridges E M, 1990, *World Geomorphology*, Cambridge University Press, Cambridge.
4. Dayal P, 2001, *A Text book of Geomorphology*, Shukla Book Depot, Patna.
5. Christopherson R, *Geosystems: An Introduction to Physical Geography*, 8 Ed, Macmillan Publishing Company.
6. Gregory K J, 1985, *The Nature of Physical geography*, Edward Arnold
7. Kale V S and A Gupta, 2001, *Introduction to Geomorphology*, Oriental Longman, Hyderabad.
8. Knighton A D, 1984, *Fluvial Forms and Processes*, Edward Arnold Publishers, London.
9. Lal D S, 2009, *Physical Geography*, Sarada Pustak Bhawan.
10. Leopold, Wolmen, Miller, 2005, *Fluvial Process in Geomorphology*, S. Chand & Co. New Delhi.
11. Richards K S, 1982, *Rivers: Forms and Processes in Alluvial Channels*, Methuen, London.
12. Selby M J, 2005, *Earth's Changing Surface*, Indian Edition, Oxford University Press.
13. Skinner B J and C P Stephen, 2000, *The Dynamic Earth: An Introduction to Physical Geology*, 4th Edition, John Willey & Sons.
14. Singh S, 2009, *Fundamentals of Physical Geography*, Prayag Pustaka Mahal, Allahabad.
15. Singh S, 2011, *Geomorphology*, Prayag Pustaka Mahal, Allahabad.
16. Steer J A, 2008, *The Unstable Earth*, Indian Edition, Kalyani Publishers, Ludhiana.
17. Strahler A N, 2012, *Physical Geography*, John Willey & Sons.
18. Thornbury W D, 2006, *Principles of Geomorphology*, John Willey & Sons.
19. Thorn E C, *Introduction to Theoretical Geomorphology*, Unwin Hayman.
20. Tikha R N, 2003, *Physical Geography*, Kedarnath Ramnath & Co., Meerut.
21. Talukdar S, 2014, *Introduction to Map Projection*, Eastern Book House Publication, Guwahati.

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First Semester :: CORE ::
Paper-102 :: Credit-6
CARTOGRAPHIC TECHNIQUES (Practical)

Full Marks-100; Internal Assessment- 20; No. of Classes-50

COURSE CONTENT	MARKS	No. of Classes
UNIT-I. Concept of Cartography and Scale for Mapping 1. Cartography: Concept of map and Cartogram (<i>Two Illustrative exercises</i>). 2. Types of scales, Construction of graphical scale (linear, comparative and diagonal), Conversion of scale from one form to another. 3. Application of Scale in Cartograms (Linear, areal and volumetric representation of geographical events)	16	2X5
UNIT-II. Fundamentals of Map Projection: 1. Map Projection and its classification system 2. Drawing of Projections, Properties, uses and limitations: <ol style="list-style-type: none"> i. Polar Zenithal Stereographic ii. Polar Zenithal Orthographic iii. Simple Cylindrical iv. Cylindrical Equal- Area v. Conical Projection (one standard parallel) vi. Conical Projection with 2 standard parallels vii. Bonne's Projection 	24	2X9
UNIT-III. Interpretation of Topographical maps: 1. Interpretation of Mountainous and plain areas 2. Difference of Contours and drainage distribution pattern in plain and mountain areas. 3. Long profile of rivers 4. Transact Chart	24	2X7
UNIT-IV. Interpretation of Topographical maps and Slope/Relief analysis : 1. Slope and Relief analysis by (1) Wentworth's Method and (2) Smith's Method	16	2X4

Selected Readings:

1. Gupta K K and V C Tyagi, 1992, *Working With Map*, Survey of India, DST, New Delhi
2. Misra R P and A Ramesh, 1989, *Fundamentals of Cartography*, Concept Publishing Company, New Delhi.
3. Monkhouse F J and H R Wilkinson, 1973, *Maps and Diagrams*, Methuen, London.
4. Robinson A H, 2009, *Elements of Cartography*, John Willey & Sons.
5. Sarkar A, 2015, *Practical Geography*, Orient Black Swan Pvt. Ltd, New Delhi.
6. Singh R L and R P B Singh, 2013, *Elements of Practical Geography*, Kalyani Publishers, Ludhiana.
7. Talukdar S, 2014, *Introduction to Map Projection*, Eastern Book House Publication, Guwahati.

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**Second Semester :: CORE ::
Paper-201 :: Credit-6
HUMAN GEOGRAPHY**

Full Marks-100; Internal Assessment- 20; No. of Classes-70

COURSE CONTENT	MARKS	No. of Classes
UNIT-I: Introduction: 1. Field of Human Geography: Nature and Scope; Development trend. 2. Branches of Human Geography.	12	10
UNIT-II. Human Geographic Approaches 1. Approaches to Human Geography: Determinism; Possibilism; Positivism 2. Human Ecology; Welfare Approach, Behaviourism.	16	15
UNIT-III. Global Population Study from Geographical Perspective 1. Population growth: Components and determinants 2. Population distribution 3. Demographic transition theory 4. Migration.	24	20
UNIT-IV. Geography of settlement 1. Origin and Characteristics of Settlement — Rural and Urban settlement 2. Classification of Urban settlement 3. Trend and spatial pattern of Urbanization.	16	15
UNIT-V. Population-Resource Relationship 1. Man-land Ratio 2. Concept of Optimum Population; Under Population and Over population	12	10

Selected Readings:

1. Chandra R C, 2010, *Geography of Population*, Kalyani Publisher, New Delhi
2. Daniel P A and M F Hopkinson, 1989, *The Geography of Settlement*, Oliver & Boyd, London.
3. Das M (ed.), 2006, *Population Resource and Development*, Eastern Book House Publications, Guwahati.
4. Husain M, 2005, *Human Geography*, Rawat Publications, Jaipur.
5. Hassan Md. Izhar, 2005, *Population Geography*, Rawat Publications, Jaipur.
6. Jhingan M L et al., 2007, *Demography*, Vrinda Publishers Pvt. Ltd.
7. Johnston R et al. 2008, *The Dictionary of Human Geography*, Blackwell Publication.
8. Jones A, 2012, *Human geography : The Basis*, Routledge Taylor & Francis Group, London.
9. Mahto K, 1985, *Population Mobility and economic Development in Eastern India*, Inter-India Publication, Delhi.
10. Negi B S, 2010, *Human Geography*, Kedarnath Ramnath, Meerut.
11. Ramachandran R, 2012, *Urbanization and Urban System in India*, Oxford India.
12. Singh L R, 2005, *Fundamentals of Human Geography*, Sarada Pustak Bhawan.
13. Singh R N, 2003, *Geography of Settlement*, Rawat Publications, Jaipur.

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Second Semester :: CORE ::
Paper-202 :: Credit-6
THEMATIC CARTOGRAPHY (Practical)
Full Marks-100; Internal Assessment- 20; No. of Classes-50

COURSE CONTENT	MARKS	No. of Classes
UNIT-I. Fundamentals of Maps and Cartograms: 1. Introduction to maps: their characteristics and classification. (Illustrative type) 2. Introduction to Cartogram and its characteristics and Classification.	16	2x5
UNIT-II. Cartographic Representation: 1. Cartographic representation of geographical data with the help of line, bar, Circles. 2. Mapping of complex themes (variability, isochrones, Flow maps) <i>(Three manual and three computer drawing)</i>	24	2x7
UNIT-III. Thematic Mapping Techniques: 1. Properties, uses and limitations of Thematic mapping 2. Choropleth mapping of areal data	20	2x7
UNIT-IV. Mapping Practices: 1. Presentation of geographical data using point, area, circle and three dimensional figures on maps. <i>(one exercise of each type)</i> 2. Preparation and interpretation of thematic maps. <i>(two exercises preferably on complex thematic maps prepared one on physical and one from human geographic database)</i>	20	2x6

Selected Readings:

1. Cuff J D and M T Mattson, 1982, *Thematic Maps: Their Design and Production*, Methuen Young Books
2. Dent B D et al, 2008, *Cartography: Thematic Map Design*, Mcgraw-Hill Higher Education.
3. Gupta K K and V C Tyagi, 1992, *Working With Map*, Survey of India, DST, New Delhi
4. Misra R P and A Ramesh, 1989, *Fundamentals of Cartography*, Concept Publishing Company, New Delhi.
5. Monkhouse F J and H R Wilkinson, 1973, *Maps and Diagrams*, Methuen, London.
6. Robinson A H, 2009, *Elements of Cartography*, John Willey & Sons.
7. Sarkar A, 2015, *Practical Geography*, Orient Black Swan Pvt. Ltd, New Delhi.
8. Singh R L and R P B Singh, 2013, *Elements of Practical Geography*, Kalyani Publishers, Ludhiana.
9. Tyner J A, 2010, *Principles of Map Design*, The Guilford Press.

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**First Semester :: Generic Elective ::
Paper-101 :: Credit-4
DISASTER MANAGEMENT**

Full Marks-70; Internal Assessment- 14; No. of Classes-50

COURSE CONTENT	MARKS	No. of CLASSES
UNIT-I: Introduction: 1. Disasters: Definition and Concepts of Hazards and Disasters 2. Risk and Vulnerability of Disasters 3. Classification of Disasters	20	18
UNIT-II. Disasters in India (Causes and Impact): 1. Flood; Landslide and Drought 2. Earthquake; Tsunami and Cyclone 3. Manmade Disasters	20	18
UNIT-III. Response and Mitigation to Disasters 1. Mitigation and Preparedness, NDMA and NIDM; 2. Indigenous knowledge and Community-based Disaster Management; <i>(During and Post Disasters Do's Don'ts)</i> 3. Act of Disaster Management	16	14

Selected Readings:

1. Dikshit KR and J Dikshit , *NE India, Land, People & Economy*, Springer Publishers.
2. Gautam A, 2010, *Environmental Geography*, Sarada Pustak Bhawan
3. Government of India, 1977, *Vulnerability Atlas of India*, New Delhi, Building Materials & Technology Promotion Council, Ministry of Urban Development, Government of India.
4. Kapur A, 2010, *Vulnerable India: A Geographical Study of Disasters*, Sage Publication, New Delhi.
5. Kar M, *Brahmaputra*, Nowgong College, Nagaon, Assam.
6. Khullar, D R, 2014, *India: A Comprehensive Geography*, Kalyani Publisher, Ludhiana.
7. Modh S, 2010, *Managing Natural Disaster: Hydrological, Marine and Geological Disasters*, Macmillan, Delhi, India.
8. Rao, K L, 1976, *India's Water Wealth*, Oriental Longman, New Delhi.
9. Sharma J N, 1995, *Axomor Nod-Nodi*, (in Assamese), Asom Sahitya Sabha, Jorhat.
10. Singh R B, 2005, *Risk Assessment and Vulnerability Analysis*, IGNOU, New Delhi, Chapter 1, 2 & 3.
11. Singh R B (ed), 2006, *Natural and Disaster Management: Vulnerability and Mitigation*, Rawat Publications, New Delhi
12. Sinha A, 2001, *Disaster Management: Lessons Drawn and Strategies for Future*, New United Press, New Delhi.
13. Stoltman J P et al, 2004, *International Perspectives on Natural Disasters*, Kluwer Academic Publications, Dordrecht.
14. Singh Jagbir, 2007, *Disaster Management Future Challenges and Opportunities*, Publisher- IK International Pvt. Ltd. S-25, Green Park Extensions, Uphaar Cinema Market, New Delhi, India (www.ikbooks.com)

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First Semester :: Generic Elective ::

Paper-102 :: Credit-2

DISASTER MANAGEMENT (Practical)

Full Marks-30; Internal Assessment- 00; No. of Classes-20

COURSE CONTENT	MARKS	No. of Classes
UNIT-I. Preparation of Disasters Distribution Maps: 1. Flood Distribution Map of India. 2. Drought affected areas of India 3. India's Cyclone affected Areas 4. The World's Earthquake Belts. 5. The World's Distribution of Tsunami belts	20	2X6
UNIT-II. Workshop cum Demonstrations: 1. Workshop cum Demonstration in collaboration with NIDM (National Institute of disaster management), ASDMA (Assam State Disaster Management Association) and DDMA.(District Disaster Management Association). Each student is to prepare a Brief Report on such Workshop/Demonstration as the case may be	10	2X4

Selected Readings:

1. Khullar, D R, 2014, *India: A Comprehensive Geography*, Kalyani Publisher, Ludhiana.
2. Monkhouse F J and H R Wilkinson, 1973, *Maps and Diagrams*, Methuen, London.
3. Oxford India, 2015, *Oxford School Atlas (44th ed.)*, Oxford University Press,
4. Singh R L and R P B Singh, 2013, *Elements of Practical Geography*, Kalyani Publishers, Ludhiana.
5. Singh S, 2009, *Environmental Geography*, Prayag Pustak Bhawan, Allahabad.
6. Vadivelu S et al, 1999, *Soil Map of Assam*, NBSS & LUP (ICAR).
7. Vadivelu S et al, 2002, *Soil Map of Northeast India*, NBSS & LUP (ICAR).

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Second Semester :: Generic Elective ::

Paper-201 :: Credit-4

REGIONAL DEVELOPMENT

Full Marks-70;

Internal Assessment- 14;

No. of Classes-50

COURSE CONTENT	MARKS	No. of Classes
UNIT-I: General Concept of a Region: 1. Region: its Definition, Evolution and types (formal, functional and planning regions) 2. Regional Imbalances and Problems of Functional Regions.	16	14
UNIT-II. Pre-requisites of Planning and Development: 1. Need of Regional planning and Development. 2. Choice of a region for planning; characteristics of an ideal planning region	20	18
UNIT-III. Regional Planning and Development: 1. Strategies/Models for regional planning; Growth Pole Model of Perroux; Growth Centre Model in Indian Context; Village Cluster. 2. Problem Regions & Regional Planning; Backward regions and regional plans- special area development plans in India; DVC- The success story and the failures, NE region of India and role of NEC.	20	18

. Selected Readings:

1. Chand Mahesh and V K Puri, 2009, *Regional Planning in India*, Allied Publishers Pvt. Ltd., New Delhi.
2. Chandana, RC , 1994 ; *Regional Planning*, Kalyani Publishers, New Delhi.
3. Misra R P (ed), 2002 , *Regional Planning : Concept, Techniques, Policies and Case Studies*, Concept Publishing Company, New Delhi.
4. Adell, German, 1999, Literature Review: *Theories and Models of the Peri-Urban Interface; A Changing Conceptual Landscape*, Peri-urban Research Project Team, Development Planning Unit, University College London.
5. Bhatt, L.S. 1976, *Micro Level Planning in India*, KB Publication, Delhi.
6. Deshpande, C.D. 1992,; *India: A Regional Interpretation*, ICSSR, New Delhi.
7. Mohapatra A C and C R Pathak, (ed), 2003, *Economic Liberalization and Regional Disparities in India, Special Focus on the Northeast region*, Star Publishing House, Rynjah, Shillong.
8. Sundaram K V, 2000, *Urban & Regional Planning in India*, Vikas Publishing House Pvt. Ltd.
9. Tiwari P C, 1988, *Regional Development and Planning in India*, Criterion Publications, 136 Raja Garden, New Delhi.
10. Dreze, J and A. Sen, 1996; *Indian Development: Select Regional Perspectives*, Oxford: Oxford University Press.
11. Sen, Amartya, 2000; *Development as Freedom*, Random House, Toronto.
12. Raza, M., Ed. 1998; *Regional Development: Contribution to Indian Geography*. New Delhi, Heritage Publishers.
13. Rapley, John, 2007; *Understanding Development: Theory and Practice in the 3rd World*. Lynne Rienner, London.
14. Schmidt, Kallert, Einhard, 2005; *A Short Introduction to Micro Regional Planning*, Food and Agriculture Organization of the United Nations (FAO).
15. Sdyask G and P Sengupta, 1967, *Economic Regionalization of India*, Census of India.

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Second Semester :: Generic Elective ::

Paper-202 :: Credit-2

REGIONAL DEVELOPMENT (Practical)

Full Marks-30; Internal Assessment-00; No. of Classes-20

COURSE CONTENT	MARKS	No. of Classes
UNIT-I. Preparation of Disparity Maps: 1. Regional Imbalances : Disparity Map to show imbalances in India 2. Delineation of Planning Region: Based on economic, social and physical criteria along with the scheme adopted by Town & Country Planning Organization 3. Agro-Ecological Zones of India.	20	2X6
UNIT-II. Problem Regions: 1. Hill area Mapping and developmental programmes. 2. Tribal Area Mapping & developmental programmes.	10	2X4

Selected Readings:

1. Chand M and V K Puri , 2009, *Regional Planning in India*, Allied Publishers Pvt. Ltd., New Delhi.
2. Chandana, RC , 1994; *Regional Planning*, Kalyani Publishers, New Delhi.
3. Cuff J D and M T Mattson, 1982, *Thematic Maps: Their Design and Production*, Methuen Young Books
4. Dent B D et al, 2008, *Cartography: Thematic Map Design*, Mcgraw-Hill Higher Education.
5. Monkhouse F J and H R Wilkinson, 1973, *Maps and Diagrams*, Methuen, London.
6. Singh Jasbir and S S Dhillon, 1994, *Agricultural Geography*, Tata McGraw-Hill's.
7. Singh R L and R P B Singh, 2013, *Elements of Practical Geography*, Kalyani Publishers, Ludhiana.

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SEM-III + SEM-IV

**J B COLLEGE:: JORHAT.
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SYLLABUS (UNDER CBCS)

::UG SECTION ::

G E O G R A P H Y

Third & Fourth Semester

(Passed by the UNDERGRADUATE BOARD OF STUDIES in GEOGRAPHY,

First Sitting held on the Second MRCH-2017)

To be effected from the Odd Semester 2016

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Dr. M. P. Hazarika

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Board of Studies

GEOGRAPHY

J B College :: Jorhat Assam

Third Semester :: CORE ::
Paper-301 :: Credit-6 Full Marks=100
CLIMATOLOGY

Theory Marks-80 Internal : Assessment-20; Total No. of Classes-70

COURSE CONTENT	MARKS	No. of Classes
UNIT-I : Composition and Structure of Atmosphere: 1. Atmospheric composition 2. Atmospheric structure 3. Variation of atmospheric composition with altitude, latitude and season.	10	8
UNIT-II : Insolation and Atmospheric Temperature: 1. Heat Budget 2. Temperature Inversion 3. Factors of Atmospheric temperature variation	10	8
UNIT-III : Atmospheric Moisture: 1. Concept of Global Hydrological Cycle 2. Evaporation, Humidity, Condensation, Fog and Clouds, Types of Precipitation.	10	10
UNIT-IV : Atmospheric pressure and winds: 1. Planetary winds, Forces affecting planetary winds, Global Circulation of Permanent Wind System, Jet streams. 2. Concept and classification of Airmass and Fronts	20	16
UNIT-V : Classification of World's Climates 1. Vladimir Koppen's Scheme 2. Thornthwait's Scheme. 3. Global, Regional and Local changes of Climate	18	16
UNIT-VI : Cyclone as an Atmospheric Disturbance : 1. Tropical cyclone 2. Extra-tropical cyclone 3. Origin and Mechanism of Monsoon	12	12

Selected Readings:

1. Barry R. G. and Carleton A. M., 2001; Synoptic and Dynamic Climatology, Roulledge, 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 Home L. H., 1980; An Introduction to Climate, McGraw-Hill.
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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Third Semester :: CORE ::
Paper-302 :: Credit-6 Full Marks=100
STATISTICAL METHODS IN GEOGRAPHY (Practical)
Theory Marks-80; Internal Assessment-20; Total No. of Classes-50

COURSE CONTENT	MARKS	No. of Classes
UNIT-I : Central Tendency Measures: 1. Cartographic application of Mean, Median and Mode	10	2×3
UNIT-II : Measures of Dispersions: 1. Mapping or Cartographic presentation of mean deviation and standard deviation 2. Co-efficient of Variation	20	2×7
UNIT-III : Application of Sampling Techniques : 1. Unrestricted Random Sampling 2. Convenient Sampling 3. Judgment Sampling	15	2×5
UNIT-IV : Measures of Inequalities: 1. Lorenz Curve 2. Location Quotient 3. Nearest Neighbour Analysis	15	2×5
UNIT-V: Association and Correlation Practices: 1. Karl Pearson's Correlation Index 2. Rank Correlation 3. Simple Regression 4. Regression Residuals	20	2×5

Selected Readins:

1. Berry B. J. L. and Marble D. F. (eds.): Spatial Analysis - A Reader in Geography.
2. Ebdon D., 1977: Statistics in Geography: A Practical Approach.
3. Hammond P. and McCullagh P. S., 1978: Quantitative Techniques in Geography: An Introduction. Oxford University Press.
4. King L, S., 1969: Statistical Analysis in Geography, Prentice-Hall.
5. Mahmood A., 1977: Statistical Methods in Geographical Studies, Concept.
6. Pal S. K., 1998: Statistics for Geoscientists, Tata McGraw Hill, New Delhi.
7. Sarkar, A. (2013) Quantitative geography: techniques and presentations. Orient Black Swan Private Ltd., New Delhi
8. Silk J., 1979: Statistical Concepts in Geography, Allen and Unwin, London.
9. Spiegel M. R.: Statistics, Schaum's Outline Series.
10. Yeates M., 1974: An Introduction to Quantitative Analysis in Human Geography, McGraw Hill, New York.
11. Shinha, Indira (2007) Sankhyiki bhugol. Discovery Publishing House, New Delhi

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Third Semester :: CORE ::
Paper-303 :: Credit-6 Full Marks=100
GEOGRAPHY OF INDIA

Theory Marks-80; Internal Assessment-20; Total No. of Classes-70

COURSE CONTENT	MARKS	No. of Classes
UNIT-I : Physical Background of India: Characteristics and Classification aspects of: 1. Stratigraphy and Physical Divisions 2. Climate 3. Drainage System and National Watershed	20	18
UNIT-II : Population Study: 1. Growth and Density aspect 2. Social aspects of people in context to: (a) Racial distribution (b) Distribution by caste (c) Linguistic distribution.	15	12
UNIT-III : Economic Activities: 1. <u>Mineral and Power Resources</u> — Distribution and Utilization of iron ore, coal, petroleum and Natural Gas 2. <u>Agricultural Activities:</u> Regional Distribution and Production of Rice, Wheat and Cotton 3. <u>Industrial development:</u> Automobile and Information Technology	20	18
UNIT-IV : Regionalization of India: 1. Physiographic Regions after Ram Lakhan Singh 2. Socio-cultural Regions after Hemlota Rao 3. Economic Regions after Sengupta	15	12
UNIT-V : Physic Background of Assam: 1. Physiographic Lay-out 2. Climate 3. Drainage 4. Natural vegetation System.	10	10

Selected 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, Gyanodaya Prakashan, Gorakhpur.
8. Spate O. H. K. and Learmonth A. T. A., 1967: India and Pakistan: A General and Regional Geography. Methuen. »
9. Tirtha. Ranjit 2002: Geography of India, Rawat Pubis., Jaipur & New Delhi.
10. Pathak, C. R. 2003: Spatial Structure and Processes of Development in India. Regional Science Assoc., Kolkata.
11. Tiwari, R.C. (2007) Geography of India. Prayag Pustak Bhawan, Allahabad
12. Sharma, T.C. (2013) Economic Geography of India. Rawat Publication, Jaipur

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Third Semester :: Generic Elective ::
Paper-301 :: Credit-4 Full Marks=65
CLIMATE CHANGE: VULNERABILITY AND ADAPTATION
Theory Marks-50; Internal Assessment-15; Total No. of Classes-50

COURSE CONTENT	MARKS	No. of Classes
UNIT-I : Climate Change: 1. Understanding Climate Change 2. Greenhouse Gases and Global Warming	10	10
UNIT-I I: Climate Change and Vulnerability: 1. Physical Vulnerability 2. Economic Vulnerability 3. Social Vulnerability	15	15
UNIT-III : Impact of Climate Change on Selected Aspects: 1. Water Resource and Agriculture 2. Flora and Fauna 3. Human Health	15	15
UNIT-IV : Adaptation and Migration: 1. Climate Change & Global Initiative (with Particular Reference to South India)	10	10

Selected Readings:

1. IPCC. (2007) Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group 11 to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change.
2. IPCC (2014) Climate Change 2014: Impacts, Adaptation and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.
3. IPCC (2014) Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.
4. Palutikof, .1. P., van der Linden, P. J. and Hanson, C. E. (eds.), Cambridge University Press, Cambridge, UK-.
5. OECD. (2008) Climate Change Mitigation: What Do we Do? Organisation and Economic Co-operation and Development.
6. UNEP. (2007) Global Environment Outlook: GE04: Environment for Development, United Nations Environment Programme.
7. Singh, M, Singh, R.B. and Hassan, M.I. (Eds.) (2014) Climate change and biodiversity: Proceedings of IGU Rohtak Conference, Volume I. Advances in Geographical and Environmental Studies, Springer
8. S. Sen Roy. S. and Singh, R.B. (2002) Climate Variability, Extreme Events and Agricultural Productivity in Mountain Regions, Oxford & IBH Pub., New Delhi.

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**Third Semester :: Generic Elective ::
Paper-302 :: Credit-2 Full Marks=35
CLIMATIC DATA STUDY (Practical)**

Theory Marks-30; Internal Assessment-05; Total No. of Classes-20

COURSE CONTENT	MARKS	No. of Classes
UNIT-I : Weather Symbols and Indian Daily Weather Maps: 1. Introduction to Weather Symbols 2. Interpretation of Indian daily weather Maps (Summer and Winter Seasons)	15	10
UNIT-I I: Representation of Climatic data: 1. Preparation and interpretation of Hythergraph, Climograph and Ergographs 2. Construction of Rainfall variability Map	15	10

Selected Readings:

1. Misra R P and A Ramesh, 1989, *Fundamentals of Cartography*, Concept Publishing Company, New Delhi.
2. Monkhouse F J and H R Wilkinson, 1973, *Maps and Diagrams*, Methuen, London.
3. Sarkar A, 2015, *Practical Geography*, Orient Black Swan Pvt. Ltd, New Delhi.
4. Singh R L and R P B Singh, 2013, *Elements of Practical Geography*, Kalyani Publishers, Ludhiana.
5. Singh, M, Singh, R.B. and Hassan, M.I. (Eds.) (2014) Climate change and biodiversity: Proceedings of IGU Rohtak Conference, Volume I. Advances in Geographical and Environmental Studies, Springer
6. S. Sen Roy. S. and Singh, R.B. (2002) Climate Variability, Extreme Events and Agricultural Productivity in Mountain Regions, Oxford & 1BH Pub., New Delhi.

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**Third Semester :: Skill Enhancement ::
Paper-301 :: Credit-2 Full Marks=50
REMOTE SENSING (Practical)**

Full Marks-40; Internal Assessment-10; Total No. of Classes-20

COURSE CONTENT	MARKS	No. of Classes
UNIT-I : Remote Sensing: 1. Definition, 2. Concept of Platform and its Types, Photogrammetry. 3. Determination of Scale for Air -photography	8	2X2
UNIT-II : Satellite Remote Sensing: 1. Principles 2. EMR interaction with atmosphere and Earth surface 3. Satellites (Landsat and IRS); 4. Sensors	8	2X2
UNIT-III : Image Processing (Digital and Manual): 1. Pre-processing (Radiometric and Geometric correction) 2. Enhancement (Filtering); 3. Classification (supervised and Un-supervised)	8	2X2
UNIT-IV : Satellite Image Interpretation: 1. Interpretation of two Images of different Scale and Resolution	8	2X2
UNIT-V : Application of Remote Sensing: 1. Land use and Land cover.	8	2X2

PRACTICAL RECORD: A PROJECT FILE CONSISTING OF 5 EXERCISES ON USING ANY METHOD ON ABOVE MENTIONED THEMES.
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Selected Readings:

1. Bhatta, B. (2008) Remote Sensing and GIS, Oxford University Press, New Delhi.
2. Campbell J. B., 2007: Introduction to Remote Sensing, Guildford Press
3. Jensen, J. R. (2005) Introductory Digital Image Processing: A Remote Sensing Perspective, Pearson Prentice-Hall.
5. Joseph, G, 2005: Fundamentals of Remote Sensing. United Press India.
6. Lillesand T. M., Kiefer R, W, and Chipman J, W., 2004: Remote Sensing and Image Interpretation, Wiley, (Wiley Student Edition).
7. Li, Z., Chen, J. and Batsavias, E. (2008) Advances in Photogrammetry, Remote Sensing and Spatial Information Sciences CRC Press, Taylor and Francis, London
8. Mukherjee, S. (2004) Textbook of Environmental Remote Sensing, Macmillan, Delhi.
9. Nag P. and Kudra, M., 1998: Digital Remote Sensing, Concept, New Delhi.
10. Singh R. B. and Murai S., 1998: Space-informatics for Sustainable Development, Oxford.

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**Fourth Semester :: Core ::
Paper-401 :: Credit-6 Full Marks=100
ECONOMIC GEOGRAPHY**

Theory Marks-80; Internal Assessment-20; Total No. of Classes-70

COURSE CONTENT	MARKS	No. of Classes
UNIT-I : Introduction to the Geography of Economic Activities: 1. Concept and Classification of Economic Activities—Primary, Secondary, Tertiary, Quaternary and Quinary activities 2. General observation upon Influence of geographical environment over economic activities.	10	8
UNIT-II : Factors affecting Location of Economic Activities: 1. Agriculture (Von Thunen Theory of Agricultural Land use 2. Weber’s Theory of Industry Localization	10	8
UNIT-III : Primary Activities (Common Characters & world distribution): 1. Subsistence and Commercial Farming Practices 2. Mining, Forestry and Fishing	15	12
UNIT-IV : Secondary Activities (Common Characters & world distribution): 1. Global distribution pattern of Cotton Textiles and Iron & Steel Manufacturing 2. Concept of Manufacturing Regions, 3. Special Economic Zones and Technology Parks.	15	14
UNIT-V : Tertiary Activities (Geography of Transport): 1. Relative advantages of Road, Rail, IWT, Marine Shipping and Air Transport 2. Concept of Transport Co-ordination 3. Transport Network Analysis — Geometric Shape and Mobility Function study on Transport Network.	15	14
UNIT-VI : Tertiary Activities(Geography of Trade and Services): 1. World’s International Trade and Trade Zones 2. Major Ocean Trade routes— North Atlantic Route, Mediterranean-Suez-Asiatic Route and Cape Route 3. Outline of Interregional and International flow of Skill & Semi-skill Workers	15	14

Selected 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. Hodder B. W. and Lee Roger, 1974: Economic Geography, Taylor and Francis.
4. Combes P., Mayer T. and Thisse J. F., 2008: Economic Geography: The Integration of Regions and Nations, Princeton University Press.
5. Wheeler J. O., 1998: Economic Geography, Wiley..
6. Durand L., 1961: Economic Geography, Crowell.
7. Bagchi-Sen S. and Smith H. L., 2006: Economic Geography: Past, Present and Future. Taylor and Francis.
8. Willington D. E., 2008: Economic Geography, Husband Press.
9. 9 Clark, Gordon L.; Feldman, M.P. and Gertler, M.S., eds. 2000: The Oxford



Fourth Semester :: Core ::
Paper-402 :: Credit-6 Full Marks=100
FIELD WORK & RESEARCH METHODOLOGY (Practical)
Theory Marks-80; Internal Assessment-20;
(Duration-16 classes + 60 hours Field Work & Report Designing)

COURSE CONTENT	MARKS	No. of Classes
UNIT-I : Field Work in Geographical Study: 1. Role, Value, Data and Ethics of Field-Work.	10	2×3
UNIT-II: Defining Case Study and Identification of Field: 1. Significance of Case Study 2. Selection of one Physical/Environmental /Human aspect from a suitable Rural or Urban Area for Case Study	10	2×3
UNIT-III: Field-Work Techniques: 1. Selection of appropriate Techniques for Field data Collection 2. Questionnaires (Open/Closed/Structured/ Non Structured) 3. Interview with Special Focus on Focused Group Discussions 4. Space Survey (Transects and Quadrants, Constructing a Sketch)	20	2×6
UNIT-IV: Use of Field Tools: 1. Collection of Material for Physical and Socio-Economic Surveys.	20	30hours
UNIT-V: Designing of Field Report: 1. Objective, Methodology, Analysis, Finding and Suggestion. 2. Presentation of Final Report.	20	30hours

Practical Record

- ❖ Each student will prepare an individual report based on primary and secondary data collected during field work.
- ❖ The duration of the field work should not exceed 10days.
- ❖ The word count of the report should be about 8000 to 12000 excluding figures, tables, photographic maps, references and appendices.
- ❖ One copy of the report on A4 size paper should be submitted in soft binding.
- ❖ There shall be a Continuous Evaluation in each step.

Selected 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. Mukherjee, Neela 1993. Participatory Rural Appraisal: Methodology and Application. Concept Pubis. Co., New Delhi.
5. Mukherjee, Neela 2002. Participatory Learning and Action: with 100 Field Methods. Concept Pubis.Co., New Delhi
6. Robinson A., 1998: "Thinking Straight and Writing Thai 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.
7. Special Issue on "Doing Fieldwork" The Geographical Review 91:1-2 (2001).
8. Stoddard R. H., 1982: Field Techniques and Research Methods in Geography. Kendall/Hunt.
9. Wolcott, H. 1995. The Art of Fieldwork. Alta Mira Press, Walnut Creek, CA.

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Fourth Semester :: Core ::
Paper-403 :: Credit-6 Full Marks=100
ENVIRONMENTAL GEOGRAPHY

Theory Marks-80; Internal Assessment-20; Total No. of Classes-70

COURSE CONTENT	MARKS	No.of Classes
UNIT-I : Fundamentals of Environmental Geography: 1. Concept and Relevance. 2. Man-Environment Relationship in phases (use of fire, domestication of animals & plants, application of wheels) 3. Root Cause of Man-induced Environmental Degradation	12	11
UNIT-II : Adaptation of Man to Environment: 1. Tropical Rainforest 2. Tropical Desert 3. Temperate Grassland 4. Hilltops & plateaus 5. Fertile River-valley Plains	14	12
UNIT-III : Ecosystem Study: 1. Concept, Structure and Function of Ecosystem 2. Concept of Biodiversity and relevance of its preservation 3. Conflict of Environment vs. Development (as problem) and Sustainable Development Concept (as solution)	14	12
UNIT-IV : Environmental Problems: 1. Pollution, Desertification and Deforestation 2. Environmental crisis in Industrial and Urban areas 3. Natural Hazards— flood, drought, cyclone	14	12
UNIT-V : Environmental Impact Study: 1. Approaches to assessment and management of Environmental Impact 2. Disaster and Disaster management	14	12
UNIT-VI : Environmental Programmes and Policies: 1. Environmental Management Programmes from Global, Regional and Local perspectives 2. Function of World Summits 3. India's National Environment Policy	12	11

Selected Readings:

1. Chandna R. C, 2002; Environmental Geography, Kalyani, Ludhiana.
2. Cunningham W. P. and Cunningham M. A., 2004; Principals of Environmental Science: Inquiry and Applications, Tata McGraw Hill, New Delhi.
3. Goudie A., 2001: The Nature of the Environment, Blackwell, Oxford.
4. Singh, R.B. (Eds.) (2009) Biogeography and Biodiversity. Rawat Publication, Jaipur
5. Miller G. T., 2004; Environmental Science: Working with the Earth, Thomson BrooksCole, Singapore.
6. MoEF, 2006; National Environmental Policy-2006. Ministry of Environment and Forests, Government of India.
7. Singh, R.B. and Hietala, R. (Eds.) (2014) Livelihood security in Northwestern Himalaya; Case studies from changing socio-economic environments in Himachal Pradesh, India. Advances in Geographical and Environmental Studies, Springer
8. Odum, E. P. et al, 2005: Fundamentals of Ecology, Ceneage Learning India.
9. Singh S., 1997; Environmental Geography, Prayag Pustak Bhawan. Allahabad.
10. UNEP, 2007; Global Environment Outlook: GE04: Environment for Development. United Nations Environment Programme-II. 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
11. Singh, R.B. (1998) Ecological Techniques and Approaches to Vulnerable Environment, New Delhi, Oxford & IBH Publications.

**Fourth Semester :: Generic Elective ::
Paper-401 :: Credit-4 Full Marks=65
SUSTAINABLE DEVELOPMENT**

Theory Marks-50; Internal Assessment-15; Total No. of Classes-50

COURSE CONTENT	Marks	No. of Classes
UNIT-I : Sustainable Development: 1. Concept & Definition 2. Limitations and Historical Background.	10	10
UNIT-II : Sustainable Regional Development: 1. Need of Sustainable Regional Development 2. Examples Sustainable Regional Development from Different Ecosystems a) Tropical Rainforest b) Temperate Grassland c) Hilltops & plateaus d) Fertile River Valley	15	15
UNIT-III : Inclusive Development Concept: 1. With Reference to Health; Climate Change 2. Role of Higher Education in Sustainable Development	15	15
UNIT-IV : Sustainable Development Policies and Programmes: 1. The Proposal for SDGs at Rio Summit 2. <u>Illustrative</u> SDGs Goal based Development	10	10

Selected Readings:

1. Agyeman. Julian, Robert D. Bullard and Bob Evans (Eds.) (2003) Just Sustainabilities: Development in an Unequal World. London: Earthscan. (Introduction and conclusion.).
2. Ayers. Jessica and David Dodman (2010) "Climate change adaptation and development 1: the state of the debate". Progress in Development Studies 10 (2): 161-168.
3. Baker, Susan (2006) Sustainable Development. Milton Park, Abingdon, Oxon; New York, N.Y.;Routledge. (Chapter 2, "The concept of sustainable development").
4. Brosius, Peter (1997) "Endangered forest, endangered people: Environmentalist representations of indigenous knowledge", Human Ecology 25: 47-69.
5. Lohman, Larry (2003) "Re-imagining the population debate". Corner House Briefing 28.
6. Martinez-Alier, Joan et al (2010) "Sustainable de-growth: Mapping the context, criticisms and future prospects of an emergent paradigm" Ecological Economics 69: 1741-1747.
7. Merchant, Carolyn (Ed.) (1994) Ecology. Atlantic Highlands, N.J: Humanities Press. (Introduction, pp I-25.)
8. Osorio, Leonardo et al (2005) "Debates on sustainable development: towards a holistic view of reality".Environment, Development and Sustainability 7: 501-518.
9. Robbins, Paul (2004) Political Ecology: A Critical Introduction. Blackwell Publishing.
10. Singh, R.B. (Eds.) (2001) Urban Sustainability in the Context of Global Change, Science Pub., Inc.,Enfield (NH), USA and Oxford & 1BH Pub., New Delhi.

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**Fourth Semester :: Generic Elective ::
Paper-402 :: Credit-2 Full Marks=35
BACKGROUND OF SUSTAINABLE DEVELOPMENT
(Practical)**

Theory Marks-30; Internal Assessment-05; Total No. of Classes-20

COURSE CONTENT	Marks	No. of Classes
UNIT-I : Natural Lay-out Study: 1. Concept & Definition 2. Limitations and Historical Background.	15	10
UNIT-II : Cultural Background of Development: 1. Preparation of Land use Map 2. Construction of Maps showing Density and Growth of population	15	10

Selected Readings:

1. Misra R P and A Ramesh, 1989, *Fundamentals of Cartography*, Concept Publishing Company, New Delhi.
2. Monkhouse F J and H R Wilkinson, 1973, *Maps and Diagrams*, Methuen, London.
3. Sarkar A, 2015, *Practical Geography*, Orient Black Swan Pvt. Ltd, New Delhi.
4. Singh R L and R P B Singh, 2013, *Elements of Practical Geography*, Kalyani Publishers, Ludhiana.
5. Singh, M, Singh, R.B. and Hassan, M.I. (Eds.) (2014) Climate change and biodiversity: Proceedings of IGU Rohtak Conference, Volume I. Advances in Geographical and Environmental Studies, Springer
6. S. Sen Roy. S. and Singh, R.B. (2002) Climate Variability, Extreme Events and Agricultural Productivity in Mountain Regions, Oxford & 1BH Pub., New Delhi.

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**Fourth Semester :: Skill Enhancement Course ::
Paper-401 :: Credit-2 Full Marks=50
GEOGRAPHICAL INFORMATION SYSTEM (Practical)**

Theory Marks-40; Internal Assessment-10; Total No. of Classes-20

COURSE CONTENT	MARKS	No. of Classes
UNIT-I : Geographic Information System (GIS): 1. Definition and Components.	8	2×2
UNIT-II : Global Positioning System (GPS): 1. Principles and Uses; 2. DGPS.	8	2×2
UNIT-III : GIS Data Structure: 1. Types (spatial and non-spatial), 2. Raster and Vector Data Structure.	8	2×2
UNIT-IV : GIS Data Analysis: 1. Input; Geo Referencing; Editing, 2. Output and Query; Overlays.	8	2×2
UNIT-V : Application of GIS: 1. Land Use Mapping; 2. Urban Sprawl Analysis; 3. Forests Monitoring.	8	2×2

Practical Record: A project file consisting of five exercises on using any GIS software on above mentioned themes.

Selected Readings:

1. Bhatta , B. (2008) Remote Sensing and GIS, Oxford University Press, New Delhi.
2. Campbell J. B., 2007: Introduction to Remote Sensing, Guildford Press
3. Jensen, J. R. (2005) Introductory Digital Image Processing: A Remote Sensing Perspective, Pearson Prentice-Hall.
4. Joseph, G, 2005: Fundamentals of Remote Sensing. United Press India.
5. Lillesand T. M., Kiefer R, W, and Chipman J, W., 2004: Remote Sensing and Image Interpretation, Wiley, (Wiley Student Edition).
6. Li, Z., Chen, J. and Batsavias, E. (2008) Advances in Photogrammetry, Remote Sensing and Spatial Information Sciences CRC Press, Taylor and Francis, London
7. Mukherjee, S. (2004) Textbook of Environmental Remote Sensing, Macmillan, Delhi.
8. Nag P. and Kudra, M., 1998: Digital Remote Sensing, Concept, New Delhi.
9. Singh R. B. and Murai S., 1998: Space-informatics for Sustainable Development, Oxford.