

Choice Based Credit System (CBCS)

**NOWGONG COLLEGE
(AUTONOMOUS)**



SYLLABUS

DEPARTMENT OF GEOGRAPHY

Learning Outcomes-based Curriculum Framework (LOCF) of
Undergraduate Programme

BACHELOR OF ARTS/ SCIENCE IN GEOGRAPHY

(Effective from Academic Year 2020-21)

Syllabus as approved by Academic Council, Nowgong College (Autonomous)

**Details of Courses in the Programme of Department of Geography, Nowgong College
(Autonomous)**

Honours Course

Course Structure Semester 1

Paper Type	Paper Code	Paper Name	Credit	Marks
Honours Core	GEOG-HCC-1016	Geomorphology	4+2	100
	GEOG-HCC-1026	Cartographic Techniques	4+2	100

Course Structure Semester 2

Paper Type	Paper Code	Paper Name	Credit	Marks
Honours Core	GEOG-HCC-2016	Human Geography	4+2	100
	GEOG-HCC-2026	Climatology and Biogeography	4+2	100

Course Structure Semester 3

Paper Type	Paper Code	Paper Name	Credit	Marks
Honours Core	GEOG-HCC-3016	Economic Geography	4+2	100
	GEOG-HCC-3026	Geography of India with special reference to N.E. India	4+2	100
	GEOG-HCC-3036	Quantitative Methods in Geography	4+2	100

Course Structure Semester 4

Paper Type	Paper Code	Paper Name	Credit	Marks
Honours Core	GEOG-HCC-4016	Environmental Geography and Disaster Management	4+2	100
	GEOG-HCC-4026	Population and Settlement Geography	4+2	100
	GEOG-HCC-4036	Thematic Cartography	4+2	100
Skill Enhancement	GEOG-SEC-4014	Remote Sensing GIS and GPS	2+2	100

Course Structure Semester 5

Paper Type	Paper Code	Paper Name	Credit	Marks
Honours Core	GEOG-HCC-5016	Social and Political Geography	4+2	100
	GEOG-HCC-5026	Hydrology and Oceanography	4+2	100
Discipline Elective	GEOG-HDS-5016	Regional Development and Planning	4+2	100
	GEOG-HDS-5026	Surveying Techniques	4+2	100

Course Structure Semester 6

Paper Type	Paper Code	Paper Name	Credit	Marks
Honours Core	GEOG-HCC-6016	Geographical Thought	4+2	100
	GEOG-HCC-6026	River Basin Studies	4+2	100
Discipline Elective	GEOG-HDS-6016	Geography of Health	4+2	100
	GEOG-HDS-6026	Project work/ Dissertation	4+2	100

UG Geography Course Structure Semester 1

Paper Type	Paper Code	Paper Name	Credit	Marks
Honours Core	GEOG-HCC-1016	Geomorphology	4+2	100
	GEOG-HCC-1026	Cartographic Techniques	4+2	100

SEMESTER-I

PAPER CODE: GEOG – HCC – 1016

(Geomorphology)

PAPER CREDIT: 06 (4T+2P)

Total No. of Lectures: 90

Total Marks=100 (T60 + IA20 + P20)

Course objectives

- To provide a general idea about the topographic and surficial characteristics of the earth's surface to the students.
- To make the students aware of the dynamic geomorphic processes responsible for the development of landforms of varied types and nature.
- To apply scientific knowledge on landform development based on geomorphic concepts, principles and theories.

Course outcomes

- The students will learn that the earth is unstable and it is undergoing constant changes due to dynamic earth's processes.
- The students will come to know about the meaning and scope of geomorphology as a major branch of Physical Geography.
- After gaining knowledge based on the contents embodied in this paper, the students will be able to realize the importance of geomorphological knowledge as applied in various developmental activities executed in different areas.

Geomorphology - Part A (Theory) Credit - 4

1. Geomorphology: Nature, Scope and Significance
2. Structure and characteristics of the earth's crust and interior; fundamentals of geomagnetism.
3. Forces of landform development: Endogenetic forces (folding, faulting earthquakes, volcanoes and tsunamis) and exogenetic forces (weathering, erosion and mass wasting)
4. Earth Movements: Continental drift theory, geosynclines, Isostasy, Mountain building: views of Holmes and Kober, Plate tectonics.
5. Concept of Cycle of Erosion: Davis and Penck, Landform development under Fluvial, Aeolian and Glacial conditions; Slope development: processes and factors

Geomorphology - Part B (Practical) Credit – 2

1. Study of Topographical Maps: Topographical map content and numbering system, the general interpretation of toposheets in respect of physical characteristics.
2. Profile Drawing (serial, superimposed, projected and composite).
3. Preparation of Slope Map / Relative Relief Map: Wentworth's method and Smith's method
4. Delineation of drainage basin and drainage network, construction of cross and long profiles, stream ordering by Horton and Strahler's method.
5. Interpretation of Geological map and Construction of cross –section (Two geological maps including one with interruptions) showing different sedimentary beds.
6. Practical Note book
7. Viva-voce

Reading List

1. Bloom A. L., 2003: Geomorphology: A Systematic Analysis of Late Cenozoic Landforms, Prentice-Hall of India, New Delhi.
2. Bridges E. M., 1990: World Geomorphology, Cambridge University Press, Cambridge.
3. Christopherson, Robert W., (2011), Geosystems: An Introduction to Physical Geography, 8 Ed., Macmillan Publishing Company
4. Kale V. S. and Gupta A., 2001: Introduction to Geomorphology, Orient Longman, Hyderabad.
5. Knighton A. D., 1984: Fluvial Forms and Processes, Edward Arnold Publishers, London.
6. Richards K. S., 1982: Rivers: Form and Processes in Alluvial Channels, Methuen, London.
7. Selby, M.J., (2005), Earth's Changing Surface, Indian Edition, OUP
8. Skinner, Brian J. and Stephen C. Porter (2000), The Dynamic Earth: An Introduction to Physical Geology, 4th Edition, John Wiley and Sons.
9. Strahler, A. N. and Strahler, A. H., 2008: Modern Physical Geography, John Wiley & Sons, New York.
10. Thornbury W. D., 1968: Principles of Geomorphology, Wiley.

11. Steers, J.A., 1988: The Unstable Earth, Kalyani Publishers, New Delhi.
12. Monkhouse, F.J. and Wilkinson, H.R., 1989: Maps and Diagrams, B.I. Publications Ltd., Mumbai.
13. Singh R. L. and Singh R. P. B., 1999: Elements of Practical Geography, Kalyani Publishers.
14. Singh, L.R., 2013: Fundamentals of Practical Geography, ShardaPustakBhawan, Allahabad.
15. Sarkar, A., 2015: Practical Geography: A Systematic Approach. Orient Black Swan Private Ltd., New Delhi
16. Misra, R. P. and Ramesh, A., 1989: Fundamentals of Cartography, Concept Publishing Company, New Delhi.

SEMESTER-I

PAPER CODE: GEOG – HCC – 1026

(Cartographic Techniques)

PAPER CREDIT: 06 (4T+2P)

Total No. of Lectures: 90

Total Marks=100 (T60 + IA20 + P20)

Course objectives

This course on Cartographic Techniques provides a general understanding of the field of cartography including its modern developments and importance in geographic study. It more particularly focuses on various types of map scale and their construction; principles of map projection and construction of selected few; and preparation of thematic maps through the representation of various geographical data using different cartographic techniques.

Course outcomes

- Understanding the importance of various cartographic techniques in geographical study
- General understanding of map type, map scale and map content.
- An acquaintance of different cartographic techniques for representation of various facets of physical and human geographic data of any area.

Cartographic Techniques – Part A (Theory) Credit – 4

1. Nature and scope of Cartography – Meaning, Development (Traditional and Modern Cartography) and Importance of Cartography in Geography. Digital cartography: geo-visualization technique; web cartography
2. Shape and size of the earth: concept of geoid, spheroid, ellipsoid for world and India; geodetic and projected coordinate system; UTM and Indian Grid system.
3. Maps: Types, scale and elements, representation of point, line and area in maps
4. Map Projections: Concept of Map Projection, Classification of Map Projections and choice of map projection.
5. Thematic mapping: Concept and types; thematic mapping from satellite imagery and aerial photograph; cartograms in digital platforms

Cartographic Techniques - Part B (Practical) Credit – 2

1. Construction of graphical scale (linear, diagonal and comparative); conversion of map scale
2. Construction of graticules of Zenithal Polar Gnomonic and Stereographic, Simple Conical with one standard parallel, Bonne's conical, Gall's Stereographic Cylindrical along with their properties, uses and limitations.
3. Preparation of thematic maps (choropleth, isopleth and pie diagram) for representing various physical geographic data.
5. Visual image interpretation and map preparation; general land use and urban land use from aerial photograph
6. Practical Note book
7. Viva-voce

Reading List

1. Anson R. and Ormelling F. J., 1994: International Cartographic Association: Basic Cartographic Vol., Pergaman Press.
2. Gupta K.K. and Tyagi, V. C., 1992: Working with Map, Survey of India, DST, New Delhi.
3. Misra R.P. and Ramesh, A., 1989: Fundamentals of Cartography, Concept, New Delhi.
4. Monkhouse F. J. and Wilkinson H. R., 1973: Maps and Diagrams, Methuen, London.
5. Rhind D. W. and Taylor D. R. F., (eds.), 1989: Cartography: Past, Present and Future, Elsevier, International Cartographic Association.
6. Robinson A. H., 2009: Elements of Cartography, John Wiley and Sons, New York.
7. Singh R. L. and Singh R. P. B., 1999: Elements of Practical Geography, Kalyani Publishers.
8. Sarkar, A. (2015) Practical Geography: A Systematic Approach. Orient Black Swan Private Ltd., New Delhi
9. Singh, L.R., 2013: Fundamentals of Practical Geography, ShardaPustakBhawan, Allahabad.
10. Talukder, S., 2008: Introduction to Map Projections, EBH Publishers (India), Guwahati.

UG Geography Course Structure Semester 2

Paper Type	Paper Code	Paper Name	Credit	Marks
Honours Core	GEOG-HCC-2016	Human Geography	4+2	100
	GEOG-HCC-2026	Climatology and Biogeography	4+2	100

SEMESTER-II

PAPER CODE: GEOG – HCC – 2016

(Human Geography)

PAPER CREDIT: 06 (4T+2P)

Total No. of Lectures: 90

Total Marks=100 (T60 + IA20 + P20)

Course objectives

- This paper is a core paper that intends to introduce students to human geography and how humankind transforms and gets transformed by geographic space.
- It seeks to develop new insights among students on the relevance of human environmental relationships and how a spatial perspective shapes these relationships.

Course outcomes

- The paper will be useful for students in developing ideas on human-environment issues that geographers usually address in the anthropocene
- The paper will be useful for students preparing for UGC NET/SLET exams and other competitive exams including the civil services.

Human Geography - Part A (Theory) Credit – 4

1. Defining the field of human geography: Meaning and Scope; Nature of human geography and its relation with other social sciences.
2. Schools of human geography: Human Ecology, Landscape and Locational. Radical, behavioural, human and welfare approach; Quantitative revolution
3. Paradigms of man-environment relationship study: Environmental Determinism, Possibilism, Neodeterminism, and Cultural Determinism.
4. Man and environment relationship: Impact of environment on man in different geographical conditions; Impact of man and its activities on environment in different parts of the world; Impact of Population growth on development and environmental degradations; House types in different environmental conditions.
5. Man and culture: Ethnicity and Race; Global patterns of racial composition of population and associated characteristics of major racial groups; Global patterns of religious and linguistic composition of population; Cultural regions of the world
6. Human Settlements: Rural and urban settlements - Origin, growth and morphological characteristics; Types/Patterns of rural settlements; Burgess and Hoyt theories of internal

structure of town; concept of primate city and rank size rule; patterns of urbanization: Global and Indian scenario.

Human Geography - Part B (Practical) Credit - 2

1. Traditional house types of selected ethnic groups of N.E. India and India.
2. Trend of population growth in the world in relation to five most populous countries of the world using line graph.
3. Religious and Linguistic composition of population in the world and five most populous countries of the world using pie-graph.
4. Spatial patterns of scheduled tribes population and urban population in India at state level through choropleth map (based on percentage and LQ).
5. Drawing of major rural settlement types/patterns; Morphological diagram of a village and a town (preferably based on student's own village and town); Drawing of internal model structure of towns according to Burgess and Hoyt.
6. Mapping of distribution of major racial and linguistic groups of population in the world.
7. Practical Note book
8. Viva-voce

Reading List

1. Chandna, R.C. (2010) Population Geography, Kalyani Publisher.
2. Hassan, M.I. (2005) Population Geography, Rawat Publications, Jaipur
3. Daniel, P.A. and Hopkinson, M.F. (1989) The Geography of Settlement, Oliver & Boyd, London.
4. Johnston R; Gregory D, Pratt G. et al. (2008) The Dictionary of Human Geography, Blackwell Publication.
5. Jordan-Bychkov et al. (2006) The Human Mosaic: A Thematic Introduction to Cultural Geography. W. H. Freeman and Company, New York.
6. Kaushik, S.D. (2010) ManavBhugol, Rastogi Publication, Meerut.
7. Maurya, S.D. (2012) ManavBhugol, ShardaPustakBhawan. Allahabad.
8. Hussain, Majid (2012) ManavBhugol. Rawat Publications, Jaipur

SEMESTER-II

PAPER CODE: GEOG – HCC – 2026

(Climatology and Biogeography)

PAPER CREDIT: 06 (4T+2P)

Total No. of Lectures: 90

Total Marks=100 (T60 + IA20 + P20)

Course objectives

- This paper is a core paper that intends to introduce students to the rationale underlying climatological studies in geography
- It seeks to develop new insights among students on the relevance of climatic variable stagnating on climate change.
- This paper intends to develop an understanding in the physical and human factors responsible for the distribution, conservation, and restriction of living organisms on the earth surface.

Course outcomes

- The paper will be useful for students in developing ideas on climate related aspects of geographical analyses.
- The paper will help provide theoretical insights and perspectives to students if they wish to pursue a research programme in future.
- Students will develop a basic understanding of the introductory concepts in biogeography.
- The paper be very useful for students preparing for UGC NET-JRF / SLET exam and other competitive exams including civil services.

Climatology and Biogeography: Part A (Theory) Credit – 4

Group A: Climatology (35 marks)

1. Atmospheric Composition and Structure; Variation with Altitude, Latitude and Season.
2. Insolation and Temperature; Factors and Distribution and Heat Budget.
3. Atmospheric Pressure and Wind system; Planetary and local Winds, air masses and fronts Forces affecting Winds, General Circulation, Jet Streams.
4. Atmospheric Moisture – Evaporation, Humidity, Condensation, Precipitation Types, Atmospheric Stability and Instability

5. Climatic classification of Koppen and Trewartha; global climate change and global warming
6. Cyclones and anti-cyclones; Tropical Cyclones, Extra Tropical Cyclone,
7. Monsoon - Origin and Mechanism.

Group B: Biogeography (25 marks)

1. Meaning, Scope and Significance of biogeography
2. Ecology and Ecosystem, Structure and functioning of ecosystem
3. Factors influencing global distribution of major plants and animals; Major gene pool centres
4. Biomes and Biodiversity hotspots of the world.
5. Soil as a component of environment, Soil types; soil formation process and factors , soil composition and horizon; degradation and conservation

Climatology and Biogeography: Part B (Practical) Credit – 2

Group –A: Climatology

1. Interpretation of Indian Weather map for Monsoon and non–monsoon seasons/months based on various weather symbols depicted on maps.
2. Preparation of weather reports of Indian subcontinent by analyzing the weather satellite images of at least three consecutive days (e.g. INSAT 3D, NOAA satellite). https://mausam.imd.gov.in/imd_latest/contents/satellite.php#.
3. Preparation of rainfall-temperature graphs; hythergraph, climograph and ergograph taking data from India/ N.E.India/Assam
4. Calculation of average annual rainfall and variability of annual rainfall and preparation of rainfall distribution and variability maps (using isopleths).

Group-B: Biogeography

5. Mapping of protected areas (National park, biosphere reserve and wildlife sanctuary) of Assam/ N.E. India/ India.
6. Mapping of phytogeographic and zoogeographic regions of the world.
7. Mapping of Biodiversity hotspots of the world.

8. Mapping of Soil types of Assam/N.E. India and Soil horizons.
9. Practical Note book (Climatology and Biogeography)
10. Viva-voce

Reading List

1. Barry R. G. and Carleton A. M., 2001: 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.
7. Gupta L S(2000): JalvayuVigyan, Hindi MadhyamKaryanvayNidishalya, Delhi VishwaVidhyalaya, Delhi
8. Lal, D S (2006): JalvayuVigyan, PrayagPustakBhavan, Allahabad
9. Vatal, M (1986): BhautikBhugol, Central Book Depot, Allahabad
10. Singh, S (2009): JalvayuVigyan, PrayagPustakBhawan, Allahabad
11. Soil and Biogeography, Kalyani Publishers., Manideep Raj
12. Cox, C.B., Moore, P.D. and Ladle, R., 2016. Biogeography: an ecological and evolutionary approach. John Wiley & Sons.

UG Geography Course Structure Semester 3

Paper Type	Paper Code	Paper Name	Credit	Marks
Honours Core	GEOG-HCC-3016	Economic Geography	4+2	100
	GEOG-HCC-3026	Geography of India with special reference to N.E. India	4+2	100
	GEOG-HCC-3036	Quantitative Methods in Geography	4+2	100

SEMESTER-III

PAPER CODE: GEOG – HCC – 3016

(Economic Geography)

PAPER CREDIT: 06 (4T+2P)

Total No. of Lectures: 90

Total Marks=100 (T60 + IA20 + P20)

Course Objectives:

- This is a core paper that intends to introduce students to the principles of economic geography and associated patterns and processes of major economic activities in the world.
- It seeks to develop new insights among students on the relevance of economy geography and associated problems in contemporary times.

Course Outcomes:

- The paper will be useful for students in developing ideas on how geographical aspects organise economic space and will offer perspectives to students if they wish to pursue a research programme.
- The paper will be useful for students preparing for UGC NET/SLET exams and other competitive exams including the civil services.

Economic Geography - Part A (Theory) Credit – 4

1. Meaning, scope and approaches of Economic Geography.
2. Economic activity: meaning and classification; Production system: Role of land, labour and capital.
3. Agriculture: Factors influencing agriculture; types of agriculture; Von Thunen's model of agricultural location; Factors influencing cultivation of wheat, rice, coffee and tea, and their distribution and production in different parts of the world. World agriculture: agricultural regions; inputs and productivity; food security and nutrition issues
4. Manufacturing: Factors influencing industrial location; Classification of industry; Weber's theory of industrial location; Factors, distribution and production of iron and steel, cotton textile and IT industries in the world; Special economic zones and technology parks. Patterns of world trade
5. Transport system: Modes of transport, factors influencing transport development and role of transport in resource mobilization and economic development. Importance of ports in notational and foreign trade

6. Trade: Factors influencing trade in different countries of the world; Trade relations of India with the countries like USA, Russia and Japan.

Economic Geography: Part B (Practical) Credit – 2

1. Trend of rice, wheat and iron & steel production in the world/USA/India since 1960 using moving average and least squares methods.
2. Trend of production of wheat, rice, maize and barley in the world/USA since 1960 using Band-graph.
3. Trend of balance of trade relations (export and import value) of India with USA, China and Japan in respect of major commodities since 1990 using Bar-graph.
4. Regional variation in fertilizer consumption and agricultural productivity in rice, wheat and barley in selected countries of the world using Bar-graph.
5. Inter-state/Inter-nation volume of movement of selected commodities and Inter-city movement of traffic/bus in N.E. India through flow cartogram.
6. Practical Note book
7. Viva-voce

Reading List

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. Clark, Gordon L.; Feldman, M.P. and Gertler, M.S., eds. 2000: The Oxford
10. Saxena, H.M., 2013: Economic Geography, Rawat Publications, Jaipur.

SEMESTER-III

PAPER CODE: GEOG – HCC – 3026

(Geography of India with special reference to N.E. India)

PAPER CREDIT: 06 (4T+2P)

Total No. of Lectures: 90

Total Marks=100 (T60 + IA20 + P20)

Course objectives

- This is a core paper which intends to introduce students to India as a geographical entity.
- It seeks to develop new insights among students on significant geographical dimensions of the country along with its north-eastern part.
- A field study is incorporated to make the students understand regional diversity of India with respect to its land, people and economy.

Course outcome

- The paper will be useful for students in developing understanding on Indian geography and its various dimensions.
- It will also be useful for students preparing for UGC NET/SLET examinations along with civil services and other competitive examinations.

Geography of India with special reference to N.E. India: Part A (Theory) Credit – 4

1. India's location and its significance; administrative divisions.
2. Physical setting: Physiographic divisions and their characteristics; Climate: mechanism of Indian monsoon; tropical cyclone and western disturbances; flood and droughts. Natural vegetation; soil types and its distribution
3. Population: Trend of growth, spatial variation in growth, distribution and density; Age and sex composition; literacy rate; linguistic and religious composition; Major tribes and their distribution
4. Agriculture: Regional distribution and production of rice, wheat and millet. Agro-climatic zones; Impact of Green revolution
5. Industry: Distribution and production patterns of iron and steel, cotton textile and fertilizers; Role of transport system in industrial development. Industrial regionalization; new industrial policy; Economic liberalization; importance of SEZ

6. North-East India: locational significance; physiographic framework; forest cover; agricultural practices including shifting cultivation; industrial development scenario; population growth, distribution and ethnic composition.

Geography of India with special reference to N.E. India: Part B (Practical) Credit – 2

Unit 1: 10 marks (2 Questions of 5 marks each)

1. Trend of population growth and growth rates in India and N.E. India since 1901 using Census data (Source: censusindia.gov.in)
2. Choropleth mapping to show spatial variation in decennial population growth rate in India.
3. Spatial variation in the patterns of religious composition of population in India and Social composition of population (SC, ST and General) in N.E. India using pie-graph.
4. Trend of foodgrains production (rice, wheat, maize, barley, jowar and bajra) in India since 1950-51 using band-graph.
5. Map showing distribution of major tribal groups in North-East India

Unit 2: (5 classes) 6 Marks (4+2)

6. Preparation of field report based on field study of observational knowledge about the geographical personality of any part of India/N.E. India under the guidance of teacher(s).
7. Practical Note book
8. Viva-voce

Reading List:

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 International 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. Tirtha, Ranjit 2002: Geography of India, RawatPubls., 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. PrayagPustakBhawan, Allahabad
12. Sharma, T.C. (2013) Economic Geography of India. Rawat Publication, Jaipur
13. Bhagabati, A.K., Bora, A. K. and Kar, B.K.: Geography of Assam, Rajesh Publications, New Delhi.
14. Taher, M and Ahmed, P.: Geography of North East India, Mani ManikPrakash, Guwahati.
15. Das, M.M.: Peasant Agriculture in Assam, Inter – India Publications, New Delhi.
16. Gopal Krishnan, R : Geography of North East India
17. Bhattacharya, P.2006 : Trend in Tourism Potentiality, BaniMandir, Guwahati
18. Bhagabati, A.K. (ed) : Biodiversity of Assam, Eastern Book House, Guwahati
19. Bhattacharyya, N.N. : North East India, Rajesh Publication, New Delhi
20. Srivastava, S.C., : Demographic Profile of N.E. India, Mittal Publications

SEMESTER-III

PAPER CODE: GEOG – HCC – 3036

(Quantitative Methods in Geography)

PAPER CREDIT: 06 (4T+2P)

Total No. of Lectures: 90

Total Marks=100 (T60 + IA20 + P20)

Course Objectives

The paper Quantitative Methods in Geography throws light on the importance of data in geography. It deals with the methods and techniques of data collection, data tabulation, data interpretation and analysis through the application of some basic statistical measures. This paper provides an understanding of the pure and applied nature of geography along with the key elements in the discipline.

Course Outcomes

- Thorough understanding of the statistical methods and techniques used in geographical studies;
- Understanding of tabulation, analysis and interpretation of geographical data.

Quantitative Methods in Geography: Part – A (Theory) Credit – 4

1. Quantification and its significance in geographical study; advantages and limitations of quantitative methods in geography.
2. Geographical Data: Nature, types and sources; scale of measurement (nominal, ordinal, interval and ratio).
3. Measures of central tendency (mean, median and mode) and dispersion (range, quartile deviation, mean deviation, standard deviation and coefficient of variation) and their applications in geographical data analysis.
4. Sampling techniques: meaning of sampling and its need; types of sampling (simple random and stratified random).
5. Time series analysis and its applications in geographical studies; Basic techniques of time series data analysis (semi-average, moving average and least squares).
6. Correlation and Regression Analysis: Meaning of correlation; Bi-variate coefficient of correlation (Spearman's rank correlation and Pearson's product-moment correlation); linear regression analysis; and their applications in geographical data analysis.

Quantitative Methods in Geography: Part – B (Practical) Credit - 2

1. Tabulation/Grouping of geographical data for making frequency distribution table; Preparation of Histogram, Frequency Polygon and Frequency Curve.
2. Computation of mean, median and mode for ungrouped and grouped geographical data; Determination of median and mode using graphical methods; Determination of the location of spatial mean centre of settlements (using centrophonic measure).
3. Computation of the values of standard deviation and coefficient of variation of ungrouped and grouped data relating to some geographical phenomena (rainfall, landholding, income, production, etc) for comparison of distribution patterns.
4. Analysis of time series data of some geographical phenomena (rainfall, production, export value, import value, etc) using moving average and least squares methods.
5. Computation of coefficient of correlation between two logically associated geographical phenomena using Spearman's rank correlation and Pearson's product-moment correlation formulae; Preparation of scatter diagram and fitting the line of linear regression of Y on X for any set of bi-variate data relating to meaningful geographical phenomena.
6. Practical Note book
7. Viva-voce

Reading List

1. Hammond P. and McCullagh P. S., 1978: Quantitative Techniques in Geography: An Introduction, Oxford University Press.
2. Sarkar, A. (2013) Quantitative Geography: techniques and presentations. Orient Black Swan Private Ltd., New Delhi.
3. Yeates M., 1974: An Introduction to Quantitative Analysis in Human Geography, McGraw Hill, New York.
4. Mathews, J.A., 1987: Quantitative and Statistical Approaches to Geography: A Practical Manual Pergamon, Oxford.
5. Mahmood, A., 1999: Statistical Methods in Geographical Studies, Rajesh Publications, New Delhi.
6. Elhance, D.N., 1972: Fundamentals of Statistics, KitabMahal, Allahabad
7. Monkhouse, F.J. & Wilkinson, H.R., 1989: Maps & Diagrams, B.I. Publications, New Delhi
8. Gregory, S., 1963: Statistical Methods and Geographers, Longman, London

UG Geography Course Structure Semester 4

Paper Type	Paper Code	Paper Name	Credit	Marks
Honours Core	GEOG-HCC-4016	Environmental Geography and Disaster Management	4+2	100
	GEOG-HCC-4026	Population and Settlement Geography	4+2	100
	GEOG-HCC-4036	Thematic Cartography	4+2	100
Skill Enhancement	GEOG-SEC-4014	Remote Sensing GIS and GPS	2+2	100

SEMESTER-IV

PAPER CODE: GEOG – HCC – 4016

(Environmental Geography and Disaster Management)

PAPER CREDIT: 06 (4T+2P)

Total No. of Lectures: 90

Total Marks=100 (T60 + IA20 + P20)

Course objectives:

This is a core paper which intends to introduce students to geography and environment interface.

It seeks to develop new insights among students on the relevance of environmental studies from a spatial perspective.

Course outcomes:

- This paper will be useful for students in developing ideas on environmental issues including disasters that geographers usually address.
- This paper will be useful for students preparing for different competitive exams including the civil services.

Environmental Geography and Disaster Management: Part - A: (Theory) Credit – 4

1. Environmental Geography: Nature, Scope and Significance
2. Human-Environment Relationships – Historical progression, Adaptation in different Biomes.
3. Major Global Environmental Problems: Pollution, Deforestation, Desertification, Global Warming, and Bio-Depletion.
4. Meaning of Hazard, Disaster, Risk and Vulnerability; Types of hazard/disaster (Natural and Manmade).
5. Disaster Management Cycle and Phases: Prevention, Preparedness, Response, Rehabilitation, Reconstruction and Mitigation,
6. Major Hazards and Disasters, and their Management: Flood, Earthquake, Wildfire, and Chemical and Nuclear explosions.
7. National Environmental Policy and National Disaster Management Plan: Environmental Protection Act 1986 and Disaster Management Act 2005.

Environmental Geography and Disaster Management: Part - B: (Practical) Credit – 2

1. Exploring satellite imageries and toposheets to observe bank line change of Brahmaputra river from any selected stretch in three different time periods and preparation of map therefrom.

Satellite images can be downloaded from <https://earthexplorer.usgs.gov/> Survey of India toposheets can be downloaded freely from <https://soinakshe.uk.gov.in/mtr/>

2. Mapping of major wetlands in a district and computation of shape and size (area) based distribution.
3. Preparation of a map of a nearby wetland and identify the changes in dimension, water level and encroachment it faced during the last one decade. Present your data in tabular form along with the map (field-based).
4. Preparation of a long-term precipitation time series curve for any selected station of N.E. India using moving average method by downloading the annual rainfall data for any district/station of Assam for at least 30 years from the portal https://www.indiawaterportal.org/met_data/. Students can also explore the web portal <https://mausam.imd.gov.in/> to get an idea of different types of weather data in India and their historical and present distribution.
5. Drawing of a diagram of disaster management cycle with reference to some disasters (flood and earthquake) in North-East India and to indicate the activities associated with each step.
6. Drawing of a map of Assam showing the major fault lines thereon. Also to plot at least 50 epicentres in last few years and to explain the areas of their concentration by taking the help of Bhookamp app.
7. Preparation of a disaster vulnerability map of Assam/ N.E. India based on data of natural disasters (Flood/earthquake/landslide/bank erosion) with respect to their occurrence and frequency in different areas.
(1exercise)
8. Evaluation of Practical Note-Book
9. Viva-voce

Reading List:

1. Chandna R. C., 2002: Environmental Geography, Kalyani, Ludhiana.
2. Cunningham W. P. and Cunningham M. A., 2004: Principals of Environmental

- Science: Inquiry and Applications, Tata Macgraw Hill, New Delhi.
3. Goudie A., 2001: The Nature of the Environment, Blackwell, Oxford.
 4. Singh, R.B. (Eds.) (2009) Biogeography and Biodiversity. Rawat Publication, Jaipur
 5. Miller G. T., 2004: Environmental Science: Working with the Earth, Thomson Brooks Cole, Singapore.
 6. MoEF, 2006: National Environmental Policy-2006, Ministry of Environment and Forests, Government of India.
 7. Singh, R.B. and Hietala, R. (Eds.) (2014) Livelihood security in Northwestern Himalaya: Case studies from changing socio-economic environments in Himachal Pradesh, India. Advances in Geographical and Environmental Studies, Springer
 8. Odum, E. P. et al, 2005: Fundamentals of Ecology, Cengage Learning India.
 9. Singh S., 1997: Environmental Geography, Prayag Pustak Bhawan. Allahabad.
 9. UNEP, 2007: Global Environment Outlook: GEO4: Environment For Development, United Nations Environment Programme.
 10. 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 & IBHPub..
 12. Alcántara-Ayala, I. (2002). Geomorphology, natural hazards, vulnerability and prevention of natural disasters in developing countries. *Geomorphology*, 47(2-4), 107-124.
 13. Goudie, A., & Ayala, I. A. (2010). *Geomorphological hazards and disaster prevention*. Cambridge University Press.
 14. <https://www.undrr.org/publications>
 15. <http://sdmassam.nic.in/dmp.html#ddmp17>. https://ndma.gov.in/sites/default/files/PDF/DM_act2005.pdf
 16. 18.
http://sdmassam.nic.in/pdf/publication/undp/disaster_management_in_india.pdf.

SEMESTER-IV

PAPER CODE: GEOG – HCC – 4026

(Population and Settlement Geography)

PAPER CREDIT: 06 (4T+2P)

Total No. of Lectures: 90

Total Marks=100 (T60 + IA20 + P20)

Course objectives

- This paper is a core paper that intends to introduce students to the basic concepts of population and settlement geography and how the differential characteristics of population and settlement influence the overall development process of an area.
- It seeks to develop understanding among students about the significance of population geography and settlement geography and their inter-relationship.

Course outcomes

- The paper will be useful for students in developing ideas about spatio-temporal changes in the characteristics of population and settlement and the factors associated with them.
- The paper will be useful for students preparing for various competitive exams including the civil services.

Population and Settlement Geography: Part - A: (Theory) Credit – 4

Group – I: Population Geography (40 Marks)

1. Defining the field of population geography: nature and scope; It's relation with demography.
2. Sources, characteristics and problems of population data; Perspectives on Census of India publications – Primary Census Abstract, District Census Hand-Book, Sample Registration System, etc.
3. Distribution and density of population: Factors influencing population distribution and density; global pattern of population distribution; population density regions in the world.
4. Population Growth: Trend of global population growth; components of population growth–fertility, mortality and migration; factors influencing fertility and mortality; push and pull factors of migration; spatial variations in population growth in the world.
5. Theories of population growth: Demographic Transition Theory.

6. Population composition and associated characteristic patterns in global contexts: Age-Sex Composition; Rural-Urban Composition; Contemporary population issues – population ageing, declining sex ratio, pandemics.

Group - II: Settlement Geography (20 Marks)

1. Defining the field of settlement of geography: Nature and scope.
2. Rural and urban settlements: Factors influencing distribution pattern of settlements; Types of rural settlements; Characteristics of rural and urban settlements.
3. Concept of settlement hierarchy, primate city and urban fringe; Christaller's Central Place Theory.
- 4.

Population and Settlement Geography: Part - B: (Practical) Credit – 2

1. Trend of population growth in Assam/N.E. India/India through line graph; Calculation and graphical representation of trend of decadal and annual growth rates of population in Assam/N.E. India/India.
2. Choropleth map to show spatial pattern of decadal variation in population growth in Assam/N.E. India/India.
3. Choropleth map showing spatial pattern of population density in Assam/India.
4. Calculation of distribution pattern of settlements in an area using Nearest Neighbor Analysis.
5. Choropleth map showing spatial pattern of level of urbanization in Assam/N.E. India.
6. Map showing distribution of towns and their varied population size with spheres in Assam/N.E. India.
7. Evaluation of Practical Note-Book
8. Viva-voce

Reading List:

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. Chandna R. C., 2014, *Geography of Population: Concepts, Determinants and Patterns*, Kalyani Publishers.
 5. Clarke J. I., 1965: *Population Geography*, Pergamon Press, Oxford.
 6. Jones, H. R., 2000: *Population Geography*, 3rd ed. Paul Chapman, London.
 7. Lutz W., Warren C. S. and Scherbov S., 2004: *The End of the World Population Growth in the 21st Century*, Earthscan.
 8. Singh, R.L. and Singh, K.N., (eds), 1975: *Readings in Rural Settlement Geography*, BHU, Varanasi.
 9. Singh, R.Y., 1994: *Geography of Settlements*, Rawat Publications, Jaipur and New Delhi.
 10. Maurya, S. D., 2014: *Settlement Geography*, Sharda Pustak Bhawan, Allahabad.
 - 11.
 12. Newbold, K. B., 2009: *Population Geography: Tools and Issues*, Rowman and Littlefield Publishers.
 13. Pacione, M., 1986: *Population Geography: Progress and Prospect*, Taylor and Francis.

SEMESTER-IV

PAPER CODE: GEOG – HCC – 4036

(Thematic Cartography)

PAPER CREDIT: 06 (4T+2P)

Total No. of Lectures: 90

Total Marks=100 (T60 + IA20 + P20)

Course objectives

This course on thematic cartography provides a general understanding of methods and techniques and importance in geographic study. It more particularly focuses on various themes of cartographic techniques; principles of different types of symbols, methods for preparation of maps or plan in different environment and representation of various features of the earth's surface using different cartographic techniques.

Course outcomes

- Understanding the importance of various techniques of preparation of maps in geographical study
- General understanding of preparation of different types of plan and maps.
- An acquaintance of different cartographic techniques for representation of various facets of earth's surface

Thematic Cartography - Part A (Theory) Credit – 2

1. Thematic cartography: meaning and importance
2. Thematic Mapping: Principles and techniques of representation of physical and human geographic data (point, line, polygon)
3. Concepts and principles of cartographic overlay and mapping; map generalization and visualization
4. Concept of base map; map types; map reading; map design, layout and typography
5. Techniques of interpretation of Topographical maps, satellite imageries and aerial photographs for thematic mapping.

Thematic Cartography - Part B (Practical) Credit – 2

1. Preparation of an administrative/physical map of India containing necessary map elements using appropriate typography.
2. Preparation of thematic maps for representing human geographic data using choropleth, isopleth, dot, sphere and proportionate circle techniques.
3. Interpretation of topographical maps for preparation of thematic maps through overlay method (taking point, line and area layers) to show relationship between relief and agriculture; and relief, drainage and settlements.
4. Locational accessibility mapping based on travel time through isochronic cartogram.
5. Preparation of landuse/landcover map through visual interpretation of satellite imagery using appropriate classification scheme.
6. Practical Note book
7. Viva-voce

Reading List

1. Anson R. and Ormelling F. J., 1994: International Cartographic Association: Basic Cartographic Vol., Pergaman Press.
2. Gupta K.K. and Tyagi, V. C., 1992: Working with Map, Survey of India, DST, New Delhi.
3. Misra R.P. and Ramesh, A., 1989: Fundamentals of Cartography, Concept, New Delhi.
4. Monkhouse F. J. and Wilkinson H. R., 1973: Maps and Diagrams, Methuen, London.
5. Rhind D. W. and Taylor D. R. F., (eds.), 1989: Cartography: Past, Present and Future, Elsevier, International Cartographic Association.
6. Robinson A. H., 2009: Elements of Cartography, John Wiley and Sons, New York.
7. Singh R. L. and Singh R. P. B., 1999: Elements of Practical Geography, Kalyani Publishers.
8. Sarkar, A. (2015) Practical Geography: A Systematic Approach. Orient Black Swan Private Ltd., New Delhi
9. Singh, L.R., 2013: Fundamentals of Practical Geography, ShardaPustakBhawan, Allahabad.
10. Talukder, S., 2008: Introduction to Map Projections, EBH Publishers (India), Guwahati.

SEMESTER-IV

PAPER CODE: GEOG – SEC – 4014

(Remote Sensing, GIS and GPS)

PAPER CREDIT: 04 (2T+2P)

Total No. of Lectures: 90

Total Marks=100 (T60 + IA20 + P20)

Course objectives

- This paper is a core paper that intends to introduce students to the interface of Remote Sensing and GIS
- It seeks to develop new insights among students on the relevance of geospatial studies within the field of geography.

Course outcomes

- The paper remains useful for students in developing skills in spatial data analysis if they wish to pursue a research programme.
- The paper will be useful for students preparing for different competitive exams including the civil services.

Remote Sensing, GIS and GPS: Part - A: (Theory) Credit – 2

(40 Classes of one hour duration each)

Group – I: Remote Sensing (30 Marks)

1. Remote Sensing: Definition and History of Development.
2. Principles of Remote Sensing System: Energy sources, EMR and its interaction with Atmosphere and Earth Features; Platform, Sensor and Resolutions; Aerial and Satellite Remote Sensing; Fundamentals of Photogrammetry.
3. Remote Sensing data products, sources and characteristics; Elements of Image Interpretation (Visual & Digital); Digital Image Processing: Image Enhancement and Classification (Supervised and Un-supervised).
4. Application of Remote Sensing: Land, Vegetation and Water

Group – II: GIS (20 Marks)

1. Geographical Information System (GIS): Definition, Development, Components, and Functions; Open-source GIS.
2. GIS Data Types & Structures: Spatial and Non-Spatial Data; Raster and Vector Data Structure, Database Management System (DBMS).
3. Data Layer Extraction and Spatial Analysis: Buffer, proximity and overlay analysis.
4. Application of GIS in geographical studies (Land Suitability analysis, Network analysis, Flood damage estimation).

Group – III: GPS (10 Marks)

1. Global Positioning System (GPS): Types, basic principles and functions; Different Navigational Systems.
2. Application of GPS in surveying and mapping.

Remote Sensing, GIS and GPS: Part - B: (Practical) Credit – 2

1. Visual Interpretation of Aerial photograph and Satellite Imagery and preparation of thematic maps based on appropriate classification scheme.
2. Analysis of aerial photographs and satellite image: Determination of photo scale and object height from aerial photo (Using Stereo-scope); Digital classification of satellite image: supervised and unsupervised.
3. Geo-referencing and Data layer creation: Map scanning, geometric correction, digitization of different layers using point, line and polygon, attribute data input and their thematic representation, Buffer creation, Overlay analysis.
4. GPS data collection, plotting and mapping of various features within college campus.

N.B.: Basic Remote Sensing and GIS Software are for practical works: Arc GIS/Erda Professional/Q-GIS/SAGA GIS.

5. Evaluation of Practical Note-Book
6. Viva-voce

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. Nag P. and Kudra, M., 1998: *Digital Remote Sensing*, Concept, New Delhi.
6. Rees W. G., 2001: *Physical Principles of Remote Sensing*, Cambridge University Press.
7. Singh R. B. and Murai S., 1998: *Space-informatics for Sustainable Development*, Oxford and IBH Pub.
8. Wolf P. R. and Dewitt B. A., 2000: *Elements of Photogrammetry: With Applications in GIS*, McGraw-Hill.
9. Sarkar, A. (2015): *Practical Geography: A Systematic Approach*. Orient Black Swan Private Ltd., New Delhi.
10. Chauniyal, D.D. (2010): *Sudur Samvedanevam Bhogolik Suchana Pranali*, Sharda Pustak Bhawan, Allahabad.
11. Burrough, P.A. and McDonnel, R.A., 1998: *Principles of Geographical Information Systems*, Oxford University Press.

UG Geography Course Structure Semester 5

Paper Type	Paper Code	Paper Name	Credit	Marks
Honours Core	GEOG-HCC-5016	Social and Political Geography	4+2	100
	GEOG-HCC-5026	Hydrology and Oceanography	4+2	100
Discipline Elective	GEOG-HDS-5016	Regional Development and Planning	4+2	100
	GEOG-HDS-5026	Surveying Techniques	4+2	100

SEMESTER-V

PAPER CODE: GEOG – HCC – 5016

(Social and Political Geography)

PAPER CREDIT: 06 (4T+2P)

Total No. of Lectures: 90

Total Marks=100 (T60 + IA20 + P20)

Course objectives:

- To appreciate the social and political dimensions of geographic phenomena.
- Understand how geography influences political issues and their spatial dimensions.

Course outcome:

- This course will help equip the students to comprehend various social and political aspects of phenomena and their interface within the realm of geography.
- The paper will be very useful for students preparing for various competitive examinations including civil services.

Social and Political Geography: Part - A: (Theory) Credit – 4

Unit 1: Social Geography (30 Marks)

1. Social Geography: Meaning and scope; its approaches of study; and contemporary trend of its development.
2. Concept and types of social space
3. Social Well-being: Concept and Component: Housing, Health and Education; Concept of Human development and its measurements.
4. Contribution of race, religion, language and ethnicity in promoting diversity in India.
5. Social Geographies of inclusion and exclusion: Caste system, slums, gated communities, communal conflicts and crime; Gender

Unit 2: Political Geography (30Marks)

1. Political Geography: Nature, scope and recent trends; Approaches to its study.
2. Concept of state, nation, and nation-state; Attributes of State.
3. Concept of frontiers and boundaries; boundary problems with reference to India and

- North- East India; Concept of buffer zones.
4. Concept of Geopolitics, Heartland and Rimland; Mackinder's Heartland Theory.
 5. Concept of colonialism, neo colonialism and lebensraum.

Social and Political Geography: Part - B: (Practical) Credit – 2

1. Mapping the spatial patterns of human development in India and Assam using HDI.
2. Construction of Ternary Diagram representing social composition of population in India/North East India.
3. Assessment of the pattern and level of Social well-being with the help of composite Z-score in India /North-East India.
4. Sex disparity in literacy in India/North-East India using Sopher's Disparity Index.
5. Computation of Shape Index for selected states of India and neighboring countries.
6. Showing the major inter-state boundary conflict zones and their interpretation.
7. Reorganization of the states of North-East India during Pre and Post-Independence periods (up to the present).
8. Evaluation of Practical Note-Book
9. Viva-voce

Reading List:

Social Geography

1. Ahmad, A., 1999: Social Geography, Rawat Publications, Jaipur and New Delhi.
2. Ahmad, A., (ed), 1993: Social Structure and Regional development: A Social Geography Perspective, Rawat Publications, Jaipur.
3. Carter, John and Trevor, Jones. 1989: Social Geography: An Introduction to Contemporary Issues, Edward Arnold, London.
4. Eyles, J.: 'Social Geography', in Johnston, R.J., et al, The Dictionary of Human Geography.
5. Jones, E. and Eyles, J., 1977: An Introduction to Social Geography, Oxford University Press, Oxford and New York.
6. Jones, E.(ed), 1975: Readings in Social Geography, Oxford University Press, Oxford.
7. Sharma, H.N., 2000: 'Social Geography' in Singh, J. (ed.) Progress in Indian Geography (1996- 2000), INSA, New Delhi.
8. Smith, D.M., 1977: Human Geography: A Welfare Approach, Edward Arnold, London.
9. Sopher, D.E. (ed), 1980: An Exploration of India: Geographical Perspectives on Society and Culture, Longman, London.

10. Srinivas, M.N., 1986: India: Social Structure, Hindustan Publishing Corporation, Delhi.
11. Taher, M., 1994: An Introduction to Social Geography: Concept and Theories, NEIGS, Guwahati. 37

Political Geography

1. Adhikari, S.,1996 : Political Geography, Rawat Publications, Jaipur and NewDelhi.
2. De Blij, H.J.,1972 : Systematic Political Geography, John Wiley , NewYork.
3. Dikshit, R.D.,1982 : Political Geography : A Contemporary Perspective, Tata McGraw Hill Publishing Co. Ltd., NewDelhi.
4. Muir, R.,1975 : Modern Political Geography , Macmillan Ltd.,London.
5. Pounds, N.J.G.,1972 : Political Geography, McGraw Hill , NewYork.
6. Prescott, J.R.V.,1972 : Political Geography, Methuen,London.
7. Sukhwal, B.L., 1979: Modern Political Geography of India, Sterling, New Delhi. Taylor, P.J., 1989: Political Geography, Longman,London.

SEMESTER-V

PAPER CODE: GEOG – HCC – 5026

(Hydrology and Oceanography)

PAPER CREDIT: 06 (4T+2P)

Total No. of Lectures: 90

Total Marks=100 (T60 + IA20 + P20)

Course objectives

- To provide knowledge on the principles, concepts and scope of hydrology and oceanography
- To make the students understand about the importance and relevance of the study of hydrology and oceanography as branch of physical geographic study

Course outcome

- The students will learn to analyse the hydrology of an area, even his/her local area and identify the components of hydrological cycle operating in the area
- The students will learn the dynamic processes associated with the oceans and also the importance and values of the ocean resources.

Hydrology and Oceanography: Part - A: (Theory) Credit – 4

Unit 1: Hydrology (30 Marks)

1. Hydrological cycle: systems approach in hydrology; human impact on the hydrological cycle; precipitation, interception, evaporation, evapo-transpiration, infiltration, runoff and overland flow; hydrological input and output.
2. Ground water: ground water and surface water relations; Aquifers; ground water flow; runoff generation and surface water flow
3. Water resources: watershed management; wetland hydrology

Unit 2: Oceanography (30 Marks)

1. Indian and Atlantic ocean topography and waves, currents and tides
2. Ocean salinity and temperature: distribution and determinants
3. Coral reefs: theories related to coral reef formation (Darwin and Daly); marine deposits: types and characteristics

Hydrology and Oceanography: Part - B: (Practical) Credit – 2

1. Estimation of annual rainfall variation (surplus or deficit) through line graph
2. Mapping Global distribution of average oceanic evaporation and continental evapo-transpiration
3. Wetland mapping and area measurement during Pre and Post monsoon for wetlands using satellite imagery
4. Preparation of ocean floor cross section for Indian and Atlantic ocean
5. Mapping of ocean currents for Indian and Pacific ocean
6. Salinity mapping of Indian Ocean
7. Bathymetric curve for Indian and Atlantic ocean

Suggested readings:

1. Timothy, Davie, 2003, Fundamentals of Hydrology. Rowledge, Taylor and Francis Group, U.K.
2. Rao, K.L., 1982, India's water wealth. Orient Longman, Delhi.
3. Todd, D.K., 2004, Groundwater Hydrology, John Wiley & Sons Inc
4. Mahajan, G., 1989, Evaluation and Development of Groundwater. Ashish Publishing House, New Delhi.
5. Karanth, K.R.C., 1988, Ground Water: Exploration, Assessment and Development. Tata-Mcgraw Hill, New Delhi.
6. Andrew D. Ward and Stanley Trimble, 2004, 2 nd Ed., Environmental Hydrology, Lewis Publishers.
7. Aggarwal, A., 1991, Floods, Floodplains and Environmental Myths. Centre for Science and Environment, New Delhi.
8. Wright.R.T and Nebel. B.J., 2002, Environmental Science: toward a sustainable future, Prentice Hall India Ltd, 8 th Edition.
9. Vijay P. Singh, 1995, Environmental Hydrology. Kluwer Academic Publications, The Netherlands.
10. Subramaniam V., 2002, Text Book of Environmental Science, Narosa Publishing House, Delhi.
11. Thurnman, H.V. 1978 Introduction to Oceanography, Charles E. Merrill Pub., London.
12. Singh, S. 2002 Physical Geography, Prayag Pub., Allahabad.
13. Siddhartha, K. 1999 Oceanography-A Brief Introduction, Kisalya Pub., New Delhi.
14. Kings, C.A.M., 1963 An introduction to oceanography, McGraw, New York.
15. Davis, R.J.A., 1986 Oceanography-An Introduction of the Marine Environment, Win C. Brown, Iowa.

SEMESTER-V

PAPER CODE: GEOG – HDS – 5016

(Regional Development and Planning)

PAPER CREDIT: 06 (4T+2P)

Total No. of Lectures: 90

Total Marks=100 (T60 + IA20 + P20)

Course objectives:

- This paper intends to introduce students to the rationale underlying the relevance of balanced regional development and spatial inequalities from geographical perspective.
- It seeks to develop new insights among students on the issue of development and associated regional disparities in development.

Course outcomes:

- The paper will be useful for students in developing ideas on disparities within and between countries and their fallout.
- The paper will help provide theoretical insights and perspectives to students, if they wish to pursue a higher studies or research in future.
- The paper will be very useful for students preparing for various competitive examinations including civil services.

Regional Development and Planning: Part - A: (Theory) Credit – 4

Unit 1: Regional Planning (30 Marks)

1. Region: Concept, types and delineation techniques of a region.
2. Objectives and principles of Regional Planning. Regional Planning in India: Macro, meso and micro level planning; Local level planning and Panchayati Raj (GPDP); Participatory approach in planning; NITI Aayog: objectives and functioning.
3. Planning regions of India with special reference to North-East India.

Unit 2: Regional Development (30 Marks)

1. Concept of Development: Growth versus development; Concept of sustainable

development and balanced development.

2. Regional Development theories and models: Concept and basic ideas of Growth Pole Model of Perroux; Stages of Economic Growth model of Rostow.
3. Human development: Meaning and concept of Human Development Index; Concept of Happiness Index.
4. Disparity of Regional Development in India: Development indicators; Pattern of regional development in India with special reference to North-East India; Role of NEC and DoNER Ministry towards development of the NE Region.

Regional Development and Planning: Part - B: (Practical) Credit – 2

1. Delineation of agricultural productivity regions in Assam/NE India by using weighted index number and Bhatia's method.
2. Delineation of influence zones of selected urban centres of Assam/ NE India by using Reilly's Breaking Point formula.
3. Preparation of land use maps of any suitable area for two different points of time for identifying the changes in settlement, agriculture land, forest cover, water bodies, etc. during the period; and representation of data generated from there in a graph.
4. Preparation of a choropleth map to show regional disparity in development in India and N. E. India based on selected indicators using Ranking Method and Composite Z-Score method.
5. Preparation of flow cartogram to show volume of inter-state movement of different commodities in India/NE India.
6. Evaluation of Practical Note-Book
7. Viva-voce

Reading List:

1. Bhargava, G. 2001. *Development of India's Urban, Rural, and Regional Planning in 21st Century: Policy Perspective*, GyanPublishingHouse.
2. Blij H. J. De, 1971: *Geography: Regions and Concepts*, John Wiley andSons.
3. Chand, M., Puri, V.K. 2000. *Regional Planning In India*, Allied PublishersLtd.
4. Chandana, R.C. 2016. *Regional Planning and Development*, 6th ed, Kalyani Publishers.
5. ClavalP.l, 1998: *An Introduction to Regional Geography*, Blackwell Publishers, Oxford andMassachusetts.
6. Friedmann J. and Alonso W. (1975): *Regional Policy - Readings in Theory and*

- Applications*, MIT Press, Massachusetts.
7. Glasson, J. 2017. *Contemporary Issues in Regional Planning*, Routledge.
 8. Gore C. G., 1984: *Regions in Question: Space, Development Theory and Regional Policy*, Methuen, London.
 9. 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.
 10. Haynes J., 2008: *Development Studies*, Polity Short Introduction Series.
 11. Johnson E. A. J., 1970: *The Organization of Space in Developing Countries*, MIT Press, Massachusetts.
 12. Misra, R.P. 1992. *Regional Planning: Concepts, Techniques, Policies and Case Studies*, Concept Publishing.
 13. Peet R., 1999: *Theories of Development*, The Guilford Press, New York.
 14. Ray, J. 2001. *Introduction to Development & Regional Planning*, Orient Blackswan.
 15. UNDP 2001-04: *Human Development Report*, Oxford University Press.
 16. World Bank 2001-05: *World Development Report*, Oxford University Press, New
 17. <https://sustainabledevelopment.un.org/partnership/?p=2212>.

SEMESTER-V

PAPER CODE: GEOG-HDS-5026

(Surveying Techniques)

PAPER CREDIT: 04 (2T+2P)

Total No. of Lectures: 90

Total Marks=100 (T60 + IA20 + P20)

Course Objectives:

This course on Surveying Techniques provides a general understanding of the field of survey including its modern tools and importance in geographic study. It more particularly focuses on various types of survey instruments; principles of different types of surveying, methods of carrying out survey for preparation of map/plan in different environment by presentation of various aspects of the area.

Course Outcomes:

- Understanding the importance of various surveying techniques in geographical study
- General understanding of preparation procedures of different types of plan and map
- An acquaintance of different surveying techniques for representation of various spatial objects/phenomena

Surveying Techniques: Part - A: (Theory) Credit – 2

1. Surveying: Its meaning, types and significance in geography.
2. Principles of surveying: plane and geodetic surveying; Principles of triangulation.
3. Techniques of surveying by Plane Table, Prismatic Compass, Theodolite and Dumpy Level.
4. Methods of radiation, intersection, traversing, contouring and leveling in surveying.
5. GPS: Basic concept, principles and utilities

Surveying Techniques Part - B: (Practical) Credit – 2

1. Preparation of a plan or a map of an area within the college campus or any suitable area using Plane Table (applying both radiation and intersection methods)
2. Open and Closed Traverse Surveying with Prismatic Compass: Preparation of plan along with adjustment of closing errors.

3. Closed Traverse Surveying with Theodolite: Plotting of data for preparation of a plan through computation of Reduced Bearing, Consecutive Co-ordinates and Independent Co-ordinates; Measurement of height of object/objects using Theodolite
4. Profile levelling and contouring in a selected area by Dumpy Level
5. Evaluation of Practical Note-Book
6. Viva-voce

Reading List:

1. Campbell, J., 1984: Introductory Cartography, Prentice Hall Inc., Englewood Cliff.
2. Misra, R.P. and Ramesh, A., 1995: Fundamentals of Cartography, Concept Publishing Company, NewDelhi.
3. Robinson, A.H., et al: Elements of Cartography, John Wiley & Sons, NewYork.
4. Raisz, E.: Principles of Cartography, McGraw Hills, London.
5. Kenetkar, T.P. and Kulkarni, S.U.: Surveying and Levelling, Vol. I &II, VidyarthiGrithaPrakashan, Pune.
6. Das, A.K.2021: Pocket Size Handbook on Handling of GPS for Field Studies, GTAD and Aranyak, Guwahati (In PDFformat).

UG Geography Course Structure Semester 6

Paper Type	Paper Code	Paper Name	Credit	Marks
Honours Core	GEOG-HCC-6016	Geographical Thought	4+2	100
	GEOG-HCC-6026	River Basin Studies	4+2	100
Discipline Elective	GEOG-HDS-6016	Geography of Health	4+2	100
	GEOG-HDS-6026	Project work/ Dissertation	4+2	100

SEMESTER-VI

PAPER CODE: GEOG – HCC – 6016

(Geographical Thought)

PAPER CREDIT: 06 (4T+2P)

Total No. of Lectures: 90

Total Marks=100 (T60 + IA20 + P20)

Course objectives:

- This course introduces the students to the theoretical development of geography overtime.
- This course presents contemporary and post-modern perspectives, along with the models that act as a guiding force of the discipline to understand various geographical phenomena in proper perspectives.

Course outcomes:

- This course develops a comprehensive understanding of the discipline;
- This course helps the students to apply the historic and contemporary perspective to explain and approach the real world geographic problems.

Geographical Thought: Part - A: (Theory) Credit – 4

1. Early development of Geography: Classical, dark age, medieval, and age of exploration and discoveries.
2. Foundation of modern geography: Contribution of the German, French, British and American geographers. Contribution of Indian Geographers
3. Evolution of geographical thought: Determinism, possibilism, neo-determinism, human ecology, cultural landscape and areal differentiation.
4. Recent trends in geography: Quantitative revolution and its impact, logical positivism, locational school of thought, behaviouralism, humanistic geography and post-modernism.
5. Geographical debates: Regional and systematic; ideographic and nomothetic.
6. Models in geography: Meaning, types and significance; basic concepts of Gravity Model, Spatial Diffusion Model

Geographical Thought: Part - B: (Practical) Credit – 2

1. Mapping of routes of exploration and discoveries (Marco Polo, Christopher Columbus, Vasco-da Gama, and A V Humboldt)
2. Mapping of population potential surfaces in Assam using the gravity model.
3. Demarcation of urban influence zone by using Reily's breaking point formula.
4. Trend of development of paradigms in geography (from Environmental Determinism to Post Modernism) through time-scale graph indicating advocates, tentative time of emergence and overriding theme.
5. Preparation of a world map highlighting the major developments of geography (Greek, Arab, France, Germany, Russia, UK and USA) indicating the contribution, name of the contributor and year of contribution.
6. Greek, Arabian and Indian contributions to the development of Geography in different ages (Name of contributor and name of contribution at different points of time) through time-scale graph.
7. Evaluation of Practical Note-Book
8. Viva-voce

Reading List:

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

SEMESTER-VI

PAPER CODE: GEOG – HCC – 6026

(River Basin Studies)

PAPER CREDIT: 06 (4T+2P)

Total No. of Lectures: 90

Total Marks=100 (T60 + IA20 + P20)

Course Objectives:

- The main objective of this course is to develop understanding among the honours students about the river basin and the functioning of its elements.
- To train the students for acquiring necessary skill for understanding geomorphology in the field.

Course Outcomes:

- At the end of the course, the students will be able to learn use of a few instruments like rotameter, planimeter, Dumpy Level, etc.
- To learn the basics of morphometric analysis techniques.
- To acquaint with the field methods of river studies in a cross-section.

River Basin Studies - Part A (Theory) Credit – 4

1. Concept of river basin, catchment area and watershed, delineation and codification of watershed
2. Concept of fluvial system operating in a river basin; Input-output components in relation to the hydrological cycle; River basin as a fundamental geomorphic unit.
3. Understanding the linear, areal and relief aspects of a river basin.
4. Concept of sediment production zone, sediment transfer zone and sediment deposition zone and associated processes.
5. Sources of water flow in a river basin; Concept of basin runoff and channel discharge; factors affecting basin runoff.
6. Integrated Watershed Management: Concepts and relevance, role of IWM in local and regional planning.

River Basin Studies - Part B (Practical) Credit 2

1. Delineation of a river basin along with drainage network from topographical sheet and preparation of a basin physiography map; conduct of morphometric analysis: Computation of bifurcation ratio, length ratio and basin circulatory ratio.
2. Relationship analysis using semi-log graph paper between stream order and stream number; stream order and average stream length; stream order and drainage area.
3. Cross-sectional survey of a river and construction of profiles at least at three points
4. Preparation of stream frequency and drainage density maps of a river basin.
5. Estimation of basin runoff for winter and summer months taking monthly water discharge data and preparation of a hydrograph.
6. Practical Note book
7. Viva-voce

Reading List

1. Bloom A. L., 2003: Geomorphology: A Systematic Analysis of Late Cenozoic Landforms, Prentice-Hall of India, New Delhi.
2. Bridges E. M., 1990: World Geomorphology, Cambridge University Press, Cambridge.
3. Christopherson, Robert W., (2011), Geosystems: An Introduction to Physical Geography, 8 Ed., Macmillan Publishing Company
4. 1. K. N. Brooks, P. F. Folliott & J. A. Magner: Hydrology and the Management of Watersheds, Fourth Edition. John Wiley & Sons, Inc., Publication.
5. 2. J. V. S. Murty: Watershed Management, Second Edition. New Age International (P) Limited.
6. 3. I.W. Heathcote: Integrated Watershed Management: Principles and Practices, Second Edition. John Wiley & Sons, Inc., Publication.
7. 4. T. O. Randhir: Watershed Management: Issues and Approaches, Latest Edition. IWA Publication
8. IWMP: Department of Land Resources, Ministry of Rural Development, Government of India, New Delhi. (http://dolr.nic.in/iwmp_main.htm)
9. Kale V. S. and Gupta A., 2001: Introduction to Geomorphology, Orient Longman, Hyderabad.
10. Knighton A. D., 1984: Fluvial Forms and Processes, Edward Arnold Publishers, London.
11. Richards K. S., 1982: Rivers: Form and Processes in Alluvial Channels, Methuen, London.
12. Selby, M.J., (2005), Earth's Changing Surface, Indian Edition, OUP

13. Skinner, Brian J. and Stephen C. Porter (2000), The Dynamic Earth: An Introduction to Physical Geology, 4th Edition, John Wiley and Sons.
14. Strahler, A. N. and Strahler, A. H., 2008: Modern Physical Geography, John Wiley & Sons, New York.
15. Thornbury W. D., 1968: Principles of Geomorphology, Wiley.
16. Steers, J.A., 1988: The Unstable Earth, Kalyani Publishers, New Delhi.
17. Monkhouse, F.J. and Wilkinson, H.R., 1989: Maps and Diagrams, B.I. Publications Ltd., Mumbai.
18. Singh R. L. and Singh R. P. B., 1999: Elements of Practical Geography, Kalyani Publishers.
19. Singh, L.R., 2013: Fundamentals of Practical Geography, ShardaPustakBhawan, Allahabad.
20. Sarkar, A., 2015: Practical Geography: A Systematic Approach. Orient Black Swan Private Ltd., New Delhi
21. Misra, R. P. and Ramesh, A., 1989: Fundamentals of Cartography, Concept Publishing Company, New Delhi.

SEMESTER-VI

PAPER CODE: GEOG – HDS – 6016

(Geography of Health)

PAPER CREDIT: 06 (4T+2P)

Total No. of Lectures: 90

Total Marks=100 (T60 + IA20 + P20)

Course objectives:

This course basically deals with understanding the concept of health and geography of health as a field of study. It throws light on the factors determining human health and occurrence of various types of diseases in relation to ecology. It also provides information about human health in relation to global climate change in general and disease pattern in relation to varying environmental contexts in India in particular.

Course outcomes:

- Understanding of the concept of human health and health care from the perspective of geography.
- Acquiring knowledge about factors influencing human health and occurrence of diseases in varying ecological settings.
- Providing useful information about the impact of global climate change on human health and occurrence of various diseases in different ecological settings in India.

Geography of Health: Part - A: (Theory) Credit – 4

1. Geography of Health: Definition and significance; approaches of study: ecological, social and spatial; dualism between medical geography and geography of health.
2. Disease ecology: ecology and human health; geographical factors affecting human health; factors influencing disease transmission (pathological, physical, environmental, social, cultural and economic); Diffusion of diseases and their causes in varied biotic, physical and cultural environments.
3. Classification of diseases: genetic, zoonotic, communicable, non-communicable, occupational, deficiency diseases and malnutrition.
4. Disease occurrence: emergence, re-emergence and persistence; modes of transmission of major diseases (Malaria, Japanese encephalitis, tuberculosis, hepatitis, AIDS and

COVID-19) and their broad global distribution.

5. Healthcare systems: Meaning and components; Universal government-funded health system; Role of WHO and UNICEF in global health care; SDG3 for good health and Well-being; Healthcare services in India: family welfare, immunization, National Health Mission and its programmes, health for all programmes, challenges to health care system during pandemic situation like COVID-19.
6. Environment, human habit and health: Basic concept and ideas relating to food habit and health, occupation and health, environmental degradation and health, lifestyle and human health.

Geography of Health: Part - B: (Practical) Credit – 2

1. Mapping of health status indicators (hospital beds, primary health centres, doctors, para-medics, etc.) in Assam/N.E. India using Z-score method.
2. Trend of infant mortality and maternal mortality rates in India in relation to selected developed and developing countries using line graph.
3. Choropleth mapping of infant mortality in India at state level.
4. Correlation analysis between any physical determinants (monthly rainfall/monthly average temperature) and epidemiological incidence of a disease (monthly malaria cases) in any district of Assam.
5. Map showing spatial variation of disease incidence rate in India/N.E. India at state level.
6. Mapping of seasonal variation in the occurrence of Covid-19 cases in Assam at any four district using pie graph.
7. Preparation of questionnaire for healthcare and health status survey.
8. Computation of distribution pattern of hospitals, health centres, etc. using nearest neighbor analysis.
9. Evaluation of Practical Note-Book
10. Viva-voce

Reading List:

1. AkhtarRais (Ed.), 1990 : Environment and Health Themes in Medical Geography, Ashish Publishing House, New Delhi.
2. Anthamatten P, (2011), Introduction to the Geography of Health, RawatPublications,Jaipur
3. Avon Joan L. and Jonathan A Patzed.2001 : Ecosystem Changes and Public Health,Baltimin, John HoplingUnitPress(ed).
4. Banerji, D. (1986) :Social Sciences and Health Services in India, LokPrakashan,NewDelhi.
5. Bradley,D.,1977: Water, Wastes and Health in Hot Climates, John WileyChichesten.
6. Brown, T., McLafferty, S., Moon, G. (2010): A Companion to Health and Medical Geography, Wiley Blackwell,UK
7. Christaler George and HristopolesDionissios, 1998: Spatio Temporal Environment Health Modelling , Boston Kluwer AcademicPress.
8. Cliff, A.D. and Peter,H., 1988 : Atlas of Disease Distributions, Blackwell Publishers, Oxford.
9. Curtis, S. (2004): Health and Inequality: Geographical Perspectives, Sage Publications, London
10. Gatrell, A.,andLoytonen, 1998 : GIS and Health, Taylor and Francis Ltd,London.
11. Hardham T. and Tannav M.,(eds): Urban Health in Developing Countries; Progress, Projects, Earthgoan,London.
12. Mishra, R.P.(1970): Medical Geography of India, National Book TrustofIndia.
13. Mishra, R.P.(2002)), Geography of health : a treatise on geography of life anddeath in India, Concept Publishing Co., NewDelhi
14. Murray C. and A. Lopez, 1996 : The Global Burden of Disease, Harvard UniversityPress.
15. Moeller Dade wed., 1993: Environmental Health, Cambridge, HarwardUniv.Press.
16. National HealthMission<https://nhm.gov.in/>
17. National Health Portal India <https://www.nhp.gov.in/healthprogramme/national-health-programmes>
18. Phillips, D.andVerhasselt, Y., 1994: Health and Development, Routledge,London.
19. Shaw, M., Dorling, D. and Mitchell, R, (2002) Health, Place and Society, Pearson,London

SEMESTER-VI

PAPER CODE: GEOG – HDS – 6026

(Dissertation/Project work)

PAPER CREDIT: 06

Total No. of Lectures: 90

Total Marks=100 (W80 + P20)

Dissertation/Project Work

Each candidate is required to complete any one project/dissertation work related to any area of the syllabus to be evaluated by internal examiners through viva voce test. The project work will have to be completed following steps given below (as applicable).

- Introduction
- Objectives of the study
- Review of related literature
- Significance of the study
- Methodology
- Results/Findings
- Discussion
- Conclusion
- References/Bibliography

**Regular Core Course/Generic Elective Course
(RCC/HGE)**

**Details of Courses in the Programme of Department of Geography, Nowgong College
(Autonomous)**

**Regular Core Course/Generic Elective Course
(RCC/HGE)**

Paper Type	Paper Code	Paper Name	Credit	Marks
Semester – I: Generic	GEOG-RCC/HGE-1016	Physical Geography	4+2	100
Semester – II: Generic	GEOG-RCC/HGE-2016	Human Geography	4+2	100
Semester – III: Generic	GEOG-RCC/HGE-3016	Economic Geography	4+2	100
Semester – IV: Generic	GEOG-RCC/HGE-4016	Geography of India with Reference N. E. India	4+2	100
Semester – V: Regular	GEOG-RGE-5016	Environmental Geography and Disaster Management	4+2	100
Semester – VI: Regular	GEOG-RGE-6016	Social and Political Geography	4+2	100

SEMESTER-I

PAPER CODE: GEOG – RCC/HGE – 1016

(Physical Geography)

PAPER CREDIT: 06 (4T+2P)

Total No. of Lectures: 90

Total Marks=100 (T60 + IA20 + P20)

Course objectives

- To provide a general idea about the topographic and surficial characteristics of the earth's surface to the students.
- To make the students aware of the dynamic geomorphic processes responsible for the development of landforms of varied types and nature.
- To impart applied scientific knowledge on landform development based on geomorphic concepts, principles and theories.

Course outcomes

- The students will learn that the earth is unstable and it is undergoing constant changes due to dynamic earth's processes.
- The students will come to know about the meaning and scope of geomorphology, which is a major branch of Physical Geography.
- After gaining knowledge based on the contents embodied in this paper, the students will be able to realize the importance of geomorphological knowledge as applied in various developmental activities executed on the land and over the earth's surface.

Physical Geography – Part A (Theory) Credit – 4

1. Physical Geography – Definition and Scope, Components of Earth System.
2. Atmosphere – Composition and the vertical structure, Heat Balance, temperature and pressure belts; Global air Circulation, Monsoon, Temperate and tropical cyclones
3. Lithosphere – Internal Structure of Earth based on Seismic Evidence; origin and evolution of the Earth's crust
4. Endogenetic and Exogenetic processes, earthquake, volcano, Works of River, Fluvial Cycle of Erosion – Davis
5. Hydrosphere: hydrological cycle, Types of ocean bottom relief features: Indian Ocean; oceanic deposits, variation in temperature and salinity of ocean, tides and currents.

Physical Geography - Part B (Practical) Credit – 2

1. Relief representation from the topographical sheet (v-shaped valley, u-shaped valley, conical hill, cliff, uniform slope)
2. Profile Drawing (Serial and superimposed)
3. Rainfall-Temperature Graph, Climograph and Hythergraph
4. Hypsometric and bathymetric curve
5. Practical Note book
6. Viva-voce

Reading List:

1. Conserva H. T., 2004: Illustrated Dictionary of Physical Geography, Author House, USA.
2. Gabler R. E., Petersen J. F. and Trapasso, L. M., 2007: Essentials of Physical Geography (8th Edition), Thompson, Brooks/Cole, USA.
3. Garrett N., 2000: Advanced Geography, Oxford University Press.
4. Goudie, A., 1984: The Nature of the Environment: An Advanced Physical Geography, Basil Blackwell Publishers, Oxford.
5. Hamblin, W. K., 1995: Earth's Dynamic System, Prentice-Hall, N.J.
6. Husain M., 2002: Fundamentals of Physical Geography, Rawat Publications, Jaipur.
7. Monkhouse, F. J. 2009: Principles of Physical Geography, Platinum Publishers, Kolkata.
8. Strahler A. N. and Strahler A. H., 2008: Modern Physical Geography, John Wiley & Sons, New York.

SEMESTER-II

PAPER CODE: GEOG – RCC/HGE – 2016

(Human Geography)

PAPER CREDIT: 06 (4T+2P)

Total No. of Lectures: 90

Total Marks=100 (T60 + IA20 + P20)

Course objectives

- This paper is a core paper that intends to introduce students to human geography and how humankind transforms and gets transformed by geographic space.
- It seeks to develop new insights among students on the relevance of human-environmental relationships and how a spatial perspective shapes these relationships.

Course outcomes

- The paper will be useful for students in developing ideas on human-environment issues that geographers usually address in the anthropocene
- The paper will be useful for students preparing for UGC NET/SLET exams and other competitive exams including the civil services.

Human Geography - Part A (Theory) Credit – 4

1. Field of human geography: meaning, scope and importance.
2. Concepts of man-environment relationship: Determinism and Possibilism.
3. Impact of environment on man; impact of man on environment; population growth and environmental changes; Modes of human adaptation to different environmental conditions.
4. Global patterns of racial, religious and linguistic composition of population. Cultural regions of the world
5. Origin, growth and characteristics of rural and urban settlements; Patterns of rural settlements; Patterns of urbanization in India and N.E. India.

Human Geography - Part B (Practical) Credit – 2

1. Traditional house types of selected ethnic groups of North-East India.
2. Trend of population growth in the world in relation to five most populous countries of the world using line graph. .

3. Religious composition of population in the world and three most populous countries of the world using pie-graph.
4. Spatial patterns of urban population in Assam and N.E. India at state level through choropleth map.
5. Drawing of major rural settlement types/patterns; Morphological diagram of a village and a town (preferably based on student's own village and town).
6. Practical Note book
7. Viva-voce

Reading List:

1. Chandna, R.C. (2010) Population Geography, Kalyani Publisher.
2. Hassan, M.I. (2005) Population Geography, Rawat Publications, Jaipur
3. Daniel, P.A. and Hopkinson, M.F. (1989) The Geography of Settlement, Oliver & Boyd, London.
4. Johnston R; Gregory D, Pratt G. et al. (2008) The Dictionary of Human Geography, Blackwell Publication.
5. Jordan-Bychkov et al. (2006) The Human Mosaic: A Thematic Introduction to Cultural Geography. W. H. Freeman and Company, New York.
6. Kaushik, S.D. (2010) ManavBhugol, Rastogi Publication, Meerut.
7. Maurya, S.D. (2012) ManavBhugol, ShardaPustakBhawan. Allahabad.
8. Hussain, Majid (2012) ManavBhugol. Rawat Publications, Jaipur

SEMESTER-III

PAPER CODE: GEOG – RCC/HGE – 3016

(Economic Geography)

PAPER CREDIT: 06 (4T+2P)

Total No. of Lectures: 90

Total Marks=100 (T60 + IA20 + P20)

Course Objectives:

- This is a generic elective paper with a view to make the students of other honours subjects understand the basic principles of economic geography and associated patterns and processes of major economic activities in the world.
- It seeks to develop insights among the students about the relevance of studying economic geography and understanding contemporary economic problems from geographical perspective.

Course Outcomes:

This paper will be useful for the students in developing understanding on how geographical factors organize economic space, and to acquire knowledge about spatial patterns of various economic activities on the earth.

Economic Geography: Part A (Theory) Credit – 4

1. Meaning and scope of Economic Geography.
2. Economic activity: meaning and classification; Production system: Role of land, labour and capital; Resource: Concept and classification.
3. Agriculture: Factors influencing agriculture; types of agriculture; Factors influencing cultivation of wheat, rice and tea, and their distribution and production in the world. World agriculture: agricultural regions; inputs and productivity
4. Manufacturing: Factors influencing industrial location; types of industry; Factors, distribution and production of iron and steel and cotton textile industry in the world. Patterns of world trade
5. Transport system: Modes of transport, factors influencing transport development and role of transport in resource mobilization and industrial development.
6. Trade: Factors influencing trade; Trade relations of India with the countries like Bhutan, Nepal and Bangladesh.

Economic Geography: Part B (Practical) Credit – 2

1. Trend of rice, wheat and iron & steel production in the world/India since 1960 using moving average method.
2. Trend of production of wheat, rice, maize and barley in the world/India since 1960 using Band-graph.
3. Trend of balance of trade relations (export and import value) of India with Bangladesh, Nepal and Bhutan in respect of major commodities since 1990 using Bar-graph.
4. Regional variation in fertilizer consumption and agricultural productivity in rice, wheat and barley in selected countries of the world using Bar-graph.
5. Inter-state and Inter-nation volume of movement of selected commodities through flow cartogram.
6. Practical Note book
7. Viva-voce

Reading List

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. Clark, Gordon L.; Feldman, M.P. and Gertler, M.S., eds. 2000: The Oxford.
10. Saxena, H.M., 2013: Economic Geography, Rawat Publications, Jaipur.

SEMESTER-IV

PAPER CODE: GEOG – RCC/HGE – 4016

(Geography of India with Reference N. E. India)

PAPER CREDIT: 06 (4T+2P)

Total No. of Lectures: 90

Total Marks=100 (T60 + IA20 + P20)

Course objectives

- This is an elective paper which intends to introduce students to India as a geographical entity.
- It seeks to develop new insights among students on significant geographical dimensions of the country along with its north-eastern part.
- A field study is incorporated to make the students understand regional diversity of India with respect to its land, people and economy.

Course outcome

- The paper will be useful for students in developing understanding on Indian geography and its various dimensions.
- It will also be useful for students preparing for various competitive examinations including civil services.

Geography of India with Reference N. E. India: Part - A: (Theory) Credit – 4

1. India's location and its significance; administrative divisions.
2. Physical setting: Major Physiographic Regions and their Characteristics; Drainage System (Himalayan and Peninsular).
3. Climate: Seasonal Weather Characteristics; Climatic Divisions; Indian Monsoon (mechanism and characteristics).
4. Population Growth and distribution; Characteristics and Composition of population (rural-urban, age, sex, occupational, literacy and religious), Population Policies of India.
5. Agriculture: Environmental, Technological and Institutional Factors affecting Indian Agriculture; Distribution and Production of Rice, Wheat and Tea; Agro Climatic Zones

6. Distribution and characteristics/potential of Natural Resources: Soil, Vegetation, Water, Mineral Resources (Coal, Petroleum and Iron ore).
7. Factors influencing Industrial development in the country; Industrial Regions and their characteristics; Industrial Policies in India; Distribution and production patterns of iron and steel and cotton textile.
8. North-East India: Land of seven sisters and its locational significance; physiographic framework; forest cover; agricultural practices including shifting cultivation; industrial development scenario; population growth pattern.

Geography of India with Reference N. E. India: Part - B (Practical) Credit – 2

1. Trend of population growth and growth rates in India and N.E. India/Assam since 1901 using Census of India data (Source: censusindia.gov.in)
2. Choropleth mapping to show spatial variation in decennial population growth rate in India /NE India/Assam.
3. Spatial variation in the patterns of religious composition of population in India and Social composition of population (SC, ST and General) in N.E. India using pie-graph.
4. Trend of food grains production (rice, wheat, maize, barley, jowar and bajra) in India since 1950-51 using band-graph.
5. Map showing distribution of major tribal groups in North-East India

Unit 2: Field Report

- Preparation of field report based on field study through observational knowledge about the geographical personality of any part of India/N.E. India/Assam under the guidance of teacher(s). (Evaluation of the Content of Field Report; 4 Marks; Viva-voce on Field Report: 2 Marks)
6. Evaluation of Practical Note-Book
 7. Viva-voce

Reading List:

1. Deshpande C. D., 1992: India: A Regional Interpretation, ICSSR, NewDelhi.
2. Johnson, B. L. C., ed. 2001. Geographical Dictionary of India. Vision Books,

NewDelhi.

3. Mandal R. B. (ed.), 1990: Patterns of Regional Geography – An International Perspective. Vol. 3 – Indian Perspective.
 4. Sdyasuk Galina and P Sengupta (1967): Economic Regionalisation of India, Census of India
 5. India
 6. Sharma, T. C. 2003: India - Economic and Commercial Geography. Vikas Publ., New Delhi.
 7. Singh R. L., 1971: India: A Regional Geography, National Geographical Society of India.
 8. Singh, Jagdish 2003: India - A Comprehensive & Systematic Geography, Gyanodaya Prakashan, Gorakhpur.
 9. Spate O. H. K. and Learmonth A. T. A., 1967: India and Pakistan: A General and Regional Geography, Methuen.
 10. Tirtha, Ranjit 2002: Geography of India, Rawat Publ., Jaipur & New Delhi.
 11. Pathak, C. R. 2003: Spatial Structure and Processes of Development in India. Regional Science Assoc., Kolkata.
 12. Tiwari, R.C. (2007) Geography of India. Prayag Pustak Bhawan, Allahabad
 13. Sharma, T.C. (2013) Economic Geography of India. Rawat Publication, Jaipur
 14. Bhagabati, A.K., Bora, A. K. and Kar, B.K.: Geography of Assam, Rajesh Publications, New Delhi.
 15. Taher, M and Ahmed, P.: Geography of North East India, Mani Manik Prakash, Guwahati.
 16. Das, M.M.: Peasant Agriculture in Assam, EBH India Publishers, Guwahati.
 17. Gopal Krishnan, R : Geography of North East India.
 18. Bhattacharya, P. 2006 : Trend in Tourism Potentiality, Bani Mandir, Guwahati.
 19. Bhagabati, A.K. (ed) : Biodiversity of Assam, Eastern Book House, Guwahati.
 20. Bhattacharyya, N.N. : North East India, Rajesh Publication, New Delhi.
- Srivastava, S.C. : Demographic Profile of N.E. India, Mittal Publications, New Delhi

SEMESTER-V

PAPER CODE: GEOG – RGE – 5016
(Environmental Geography and Disaster Management)

PAPER CREDIT: 06 (4T+2P)

Total No. of Lectures: 90

Total Marks=100 (T60 + IA20 + P20)

Course Objectives:

- This is a discipline specific elective paper which intends to introduce students to geography and environment interface.
- It seeks to develop new insights among students on the relevance of environmental studies from spatial perspective.

Course Outcomes:

- The paper will be useful for students in developing ideas on environmental issues including disasters that geographers usually address.
- The paper will also be useful for students preparing for different competitive exams including the civil services.

Environmental Geography and Disaster Management: Part - A: (Theory) Credit – 4

1. Environmental Geography: Nature, Scope and Significance.
2. Human-Environment Relationships – Historical progression; Adaptation in different Biomes.
3. Major Global Environmental Problems: Pollution, Deforestation, Desertification, Global Warming and Bio-Depletion.
4. Meaning of Hazard, Disaster, Risk and Vulnerability; Types of hazard/disaster (Natural and Manmade).
5. Disaster Management Cycle and Phases: Prevention, Preparedness, Response, Rehabilitation, Reconstruction and Mitigation,
6. Major Hazards and Disasters, and their Management: Flood, Earthquake, Wildfire, and Chemical and Nuclear explosions.
7. National Environmental Policy and National Disaster Management Plan: Environmental Protection Act 1986 and Disaster Management Act 2005.

Environmental Geography and Disaster Management: Part - B: (Practical) Credit – 2

1. Exploring satellite imageries and toposheets to observe bank line change of the Brahmaputra river from any selected stretch in three different time periods and preparation of map therefrom.
(Goalpara, Palasbari, Nimatighat, etc.) Satellite images can be downloaded from <https://earthexplorer.usgs.gov/> Survey of India toposheets can be downloaded freely from <https://soinakshe.uk.gov.in/mtr/>
2. Mapping of major wetlands in a district and computation of shape and size (area) for their classification.
3. Preparation of a map of a nearby wetland and to identify the changes in dimension, water level and encroachment it faced during the last one decade. Presentation of data in tabular form along with the map (field-based).
4. Preparation of a long-term precipitation time series curve for any selected station of N.E. India using moving average method by downloading the annual rainfall data for any district/station of Assam for at least 30 years from the portal. https://www.indiawaterportal.org/met_data/. Students can also explore the web portal <https://mausam.imd.gov.in/> to get an idea of different types of weather data in India and their historical and present distribution.
5. Drawing of a diagram of disaster management cycle with reference to some disasters (flood and earthquake) in North-East India and to indicate the activities associated with each step.
6. Drawing of a map of Assam showing the major fault lines thereon. Also to plot at least 50 epicentres in last few years and to explain the areas of their concentration with the help of Bhookamp app.
7. Preparation of a disaster vulnerability map of Assam/ N.E. India based on data of natural disasters (Flood/earthquake/landslide/bank erosion) with respect to their occurrence and frequency in different areas.
8. Evaluation of Practical Note-Book
9. 2. Viva-voce

Reading List:

1. Chandna R. C., 2002: Environmental Geography, Kalyani, Ludhiana.
2. Cunningham W. P. and Cunningham M. A., 2004: Principals of Environmental Science: Inquiry and Applications, Tata Macgraw Hill, New Delhi.

3. Goudie A., 2001: *The Nature of the Environment*, Blackwell, Oxford.
4. 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 North western 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.
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. Alcántara-Ayala, I. (2002). *Geomorphology, natural hazards, vulnerability and prevention o natural disasters in developing countries*. *Geomorphology*, 47(2-4), 107-124.
14. Goudie, A., & Ayala, I. A. (2010). *Geomorphological hazards and disaster prevention*. Cambridge University Press.
15. <https://www.undrr.org/publications>
16. <http://sdmassam.nic.in/dmp.html#ddmp>
17. https://ndma.gov.in/sites/default/files/PDF/DM_act2005.pdf
18. http://sdmassam.nic.in/pdf/publication/undp/disaster_management_in_india.pdf.

SEMESTER-VI

PAPER CODE: GEOG – RGE – 6016

(Social and Political Geography)

PAPER CREDIT: 06 (4T+2P)

Total No. of Lectures: 90

Total Marks=100 (T60 + IA20 + P20)

Course Objectives:

- To appreciate the social and political dimensions of geographic phenomena.
- Understand how geography influences political issues and their spatial dimensions.

Course Outcomes:

- This course will help equip the students to comprehend various social and political aspects of phenomena and their interface within the realm of geography.
- The paper will be very useful for students preparing for various competitive examinations including civil services.

Social and Political Geography: Part - A: (Theory) Credit – 4

Group A: Social Geography (30 marks)

1. Social Geography: Meaning, Scope and approaches of study.
2. Concept and types of social space and social groups.
3. Social Well-being: Concept and components: Housing, health and education; Concept of human development and its measurements
4. Contribution of race, religion, language and ethnicity in promoting diversity in India
5. Social geographies of inclusion and exclusion: Basic concept and characteristics of caste system, slums, social crime and gender identity.

Group B: Political Geography (30 marks)

1. Political Geography: Nature, scope and approaches to its study.
2. Concept of state, nation, and nation-state; Attributes of state.

3. Concept of frontiers and boundaries; boundary problems with reference to India and North- East India; Concept of buffer zones.
4. Concept of Geopolitics; Mackinder's Heartland Theory.

Social and Political Geography: Part - B: (Practical) Credit – 2

1. Mapping the patterns of human development in India and Assam using HDI
2. Construction of Ternary diagram representing social composition of population in India/ North- East India
3. Sex disparity in literacy in India /North-East India using a simple Index.
4. Computation of Shape Index for selected states and countries.
5. Construction of a map of India/North-East India highlighting the major inter-state boundary conflict zones.
6. Reorganization of states of North-East India during Pre and Post-Independence periods (up to the present).
7. Evaluation of Practical Note-Book
8. Viva-voce

Reading lists

Social Geography

1. Ahmad, A., 1999: Social Geography, Rawat Publications, Jaipur and New Delhi.
2. Ahmad, A., (ed), 1993: Social Structure and Regional development: A Social Geography Perspective, Rawat Publications, Jaipur.
3. Carter, John and Trevor, Jones. 1989: Social Geography: An Introduction to Contemporary Issues, Edward Arnold, London.
4. Eyles, J.: 'Social Geography', in Johnston, R.J., et al, The Dictionary of Human Geography.
5. Jones, E. and Eyles, J., 1977: An Introduction to Social Geography, Oxford University Press, Oxford and New York.

6. Jones, E.(ed), 1975: Readings in Social Geography, Oxford University Press, Oxford.
7. Sharma, H.N., 2000: 'Social Geography' in Singh, J. (ed.) Progress in Indian Geography (1996- 2000), INSA, New Delhi.
8. Smith, D.M., 1977: Human Geography: A Welfare Approach, Edward Arnold, London.
9. Sopher, D.E. (ed), 1980: An Exploration of India: Geographical Perspectives on Society and Culture, Longman, London.
10. Srinivas, M.N., 1986: India: Social Structure, Hindustan Publishing Corporation, Delhi.
11. Taher, M., 1994: An Introduction to Social Geography: Concept and Theories, NEIGS, Guwahati.

Political Geography

1. Adhikari , S.,1996 : Political Geography, Rawat Publications, Jaipur and New Delhi.
2. De Blij, H.J.,1972 : Systematic Political Geography, John Wiley , New York.
3. Dikshit, R.D.,1982 : Political Geography : A Contemporary Perspective, Tata McGraw Hill Publishing Co. Ltd., New Delhi.
4. Muir, R.,1975 : Modern Political Geography , Macmillan Ltd., London.
5. Pounds, N.J.G.,1972 : Political Geography, McGraw Hill , New York.
6. Prescott, J.R.V.,1972 : Political Geography, Methuen, London.
7. Sukhwal, B.L., 1979: Modern Political Geography of India, Sterling, New Delhi. Taylor, P.J., 1989: Political Geography, Longman, London.
