Preface

India faces a major challenge of population growth (A.S. Ganguly, 2015). It will soon have the distinction of being the most populated nation of the world. The challenge is accentuated further by climate change. This twin problem is further aggravated by hyper migration of rural people to urban areas. Though urbanization is considered to be a progressive process and one of the key indicators that is used to mark the development of a region; the trends and patterns of urbanization in India shows that it is lopsided and thus termed as pseudo-urbanization. In the process of urbanization the regional dimension at the national, state and district level needs to be considered for better understanding.

The Indian economy has a profound influence on the process of urban growth; more so during the last three decades. The colonial rule has had a great influence in the urbanization process; whether it was in the growth of metropolis, development of urban centres along railway lines or in opening of hill towns as tourist centres. Nevertheless there has been a deviation in the growth of urban centres since independence. The opening of the economy since 1990's (Sivaramakrishna, Kundu & Singh, 2005) has had a direct impact on the pattern and process of urban growth which has directly impacted how land is utilized.

With the growth of urban centers, forest cover, natural water bodies, natural estuaries are rapidly getting destroyed. Today urbanization is marked by concreting of roadways, multi-storey buildings, haphazard growth of commercial and residential centres and growth of slums. This trend is unavoidable and this dangerous trend is leading to occurrences of major disasters like flooding, landslides increasing rapidly in the urban areas further augmented by problems of unemployment, poverty, lack of civic amenities, deterioration in the living standards of urban dwellers; leading to further displacement of the people in search of livelihood. This process will have several and inevitable disastrous consequences in the future if the administrators and planners do not ensure that the land is being used in a sustainable manner. It is thus necessary to determine whether economic development impacts urbanization or vice versa. Economic development can be enhanced only if there is change in the land use. The land utilization if unplanned would lead to a large number of problems as can be seen in the growth of slums and environmental degradation. Thus, the major challenge is with ever growing urban population how the land can be utilized in a sustainable manner in order to ensure that the quality of life of people are enhanced.

Indira Lepcha nee Lama

CBCS SYLLABUS
FOR
UNDERGRADUATE HONOURS
COURSE IN GEOGRAPHY

UNIVERSITY OF NORTH BENGAL
RAJA RAMMOHUNPUR
DISTRICT: DARJEELING - 734013

B.A/B.Sc. (HONOURS COURSE)
GEOGRAPHY
DISCIPLINE CORE SPECIFIC – CC

FIRST SEMESTER

1. **Course Code: GEO-H-CC-1-01-TH - Geotectonic**
   Course Code: GEO-H-CC-1-01- PR - Practical

2. **Course Code: GEO-H-CC-1-02-TH - Geomorphology**
   Course Code: GEO-H-CC-1-02- PR - Practical

SECOND SEMESTER

1. **Course Code: GEO-H-CC-2-03- H - Human Geography**
   Course Code: GEO-H-CC-2-03-PR–Practical

2. **Course Code: GEO-H-CC-2-04-TH - Settlement Geography**
   Course Code: GEO-H-CC-2-04-PR - Practical

THIRD SEMESTER

1. **COURSE CODE: GEO-H-CC-3-05-TH - Climatology**
   COURSE CODE: GEO-H-CC-3-05-PR –Practical

2. **COURSE CODE: GEO-H-CC-3-06-TH - Statistical Methods in Geography**
   COURSE CODE: GEO-H-CC-3-06-PR –Practical

3. **COURSE CODE: GEO-H-CC-3-07-TH - Geography of India**
   COURSE CODE: GEO- H-CC-3-07-PR - Practical

FOURTH SEMESTER

1. **Course Code: GEO-H-CC-4-08-TH - Economic Geography**
   Course Code: GEO-H-CC4-08-PR –Practical

2. **Course Code: GEO-H-CC-4-09-TH - Regional Planning and Development**
   Course Code: GEO-H-CC4-09-PR - Practical

3. **Course Code: GEO-H-DSC-4-10-TH - Field Work and Research Methodology**
   Course Code: GEO-H-DSC-4-10-PR - Practical (Field Survey)

FIFTH SEMESTER

1. **Course Code: GEO-H-CC-5-11-TH - Environmental Geography**
   Course Code: GEO-H-CC-5-11-PR - Practical

2. **Course Code: GEO-H-CC-5-12-TH - Remote Sensing and GIS**
   Course Code: GEO-H-CC-5-12-PR -Practical

SIXTH SEMESTER

1. **Course Code: GEO-H-CC-6-13-TH - Evolution of Geographical Thoughts**
   Course Code: GEO-H-CC-6-13-PR –Practical

2. **Course Code: GEO-H-CC-6-14-TH - Disaster Management**
   Course Code: GEO-H-CC-6-14-PR -Practical

SKILL ENHANCEMENT COURSE – SEC (ANY ONE)

Students will have to choose <u>any one</u> from the given course

<u>THIRD SEMESTER</u>

1. **Course Code: GEO-SEC-A-3-01-TH: Remote Sensing**

2. **Course Code: GEO-SEC-A-3-01-TH: Rural Development**

<u>FOURTH SEMESTER</u>

Students will have to choose <u>any one</u> from the given course

1. **Course Code: GEO-SEC-A-4-02-TH: Geographical Information System**

2. **Course Code: GEO-SEC-A-4-02-TH: Tourism Management**

DISCIPLINE SPECIFIC CORE COURSE - DSC

FIFTH SEMESTER

(*Students will have to choose any two courses: Population Geography or Resource Geography and Urban Geography or Agricultural Geography*)

1. **Course Code: GEO-H-DSE-5-01-TH: Population Geography**
   Course Code:GEO-H-DSE-5-01-PR: Population Geography

   Course Code: GEO-H-DSE-5-01-TH: Resource Geography
   Course Code: GEO-H-DSE-5-01-PR: Resource Geography

2. **Course Code: GEO-H-DSE-5-02-TH: Urban Geography**
   Course Code: GEO-H-DSE-5-02-PR:Urban Geography

   Course Code: GEO-H-DSE-5-02-TH: Agricultural Geography
   Course Code: GEO-H-DSE-5-02-PR: Agricultural Geography

SIXTH SEMESTER

(*Students will have to choose any two courses: Advanced Cartography or Political Geography and Hydrology & Oceanography or Social Geography*)

3. **Course Code: GEO-H-DSE-6-03-TH:Advanced Cartography**
   Course Code: GEO-H-DSE-6-03-PR: Advanced Cartography

   Course Code: GEO-H-DSE-6-03-TH: Political Geography
   Course Code: GEO-H-DSE-6-03-PR: Political Geography

4. **Course Code: GEO-H-DSE-6-04-TH: Hydrology and Oceanography**
   Course Code: GEO-H-DSE-6-04-PR: Hydrology and Oceanography

   Course Code: GEO-H-DSE-6-04-TH: Social Geography
   Course Code: GEO-H-DSE-6-04-PR: Social Geography

FIRST SEMESTER

GEOGRAPHY

HONOURS COURSE

DISCIPLINE SPECIFIC CORE COURSE-CC

COURSE CODE: GEO-H-CC-1-01-TH **Credit: 04**

GEOTECTONIC

1. Earth's tectonic and structural evolution with reference to geological timescale;
2. Earth: Interior structure and theory of Isostasy (Airy, Pratt, Bowie, Hayford, Heiskanen);
3. Earth Movements: Types of folds and faults; Plate Tectonics: concept and theory;
4. Development of drainage on uniclinal and folded structure; Mountain Building theories (Kober and Holmes).

COURSE CODE: GEO-H-CC-1-01-PR **Credit: 02**

PRACTICAL

1. Scales: Concept and application; graphical construction of plain, comparative, diagonal and vernier scales;
2. Map Projections: Classification, properties and uses; Mathematical/graphical construction of Polar Zenithal Stereographic Projection, Bonne's Projection, Polyconic Projection, Sinusoidal Projection and Mercator's Projections.

Practical Record: A project file covering all practical topics must be prepared.

COURSECODE: GEO-H-CC-1-02-TH **Credit: 04**

GEOMORPHOLOGY

1. Geomorphology: Nature and scope; Fundamental concepts;
2. Geomorphic processes: weathering, mass wasting, cycle of erosion (Davis and Penck);
3. Evolution of erosional and depositional landforms: fluvial, aeolian, glacial, coastal and karst;
4. Slope: Forms and processes; Theories of slope development (Davis, Penck and King).

COURSE CODE: GEO-H-CC-1-02-PR **Credit: 02**

PRACTICAL

1. Topographical Map: Interpretation of plateau/mountain area with the help of cross and longitudinal profiles; interpretation of relief profile: superimposed, projected and composite; Slope Analysis (Wentworth's method); Relative relief (Smith's method); Drainage density and drainage frequency; Transect chart.
2. Megascopic identification of rocks and minerals: granite, basalt, limestone, shale, sandstone, phyllite, slate, marble, schist, quartzite, bauxite, calcite, chalcopyrite, feldspar, galena, haematite, magnetite, mica, quartz and talc.

Practical Record: A project file covering all practical topics must be prepared.

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. *Thornbury W. D., 1968: Principles of Geomorphology, Wiley.*
10. *Anson R. and Ormelling F. J., 1994: International Cartographic Association: Basic Cartographic Vol. Pregmen Press.*
11. *Gupta K.K. and Tyagi, V. C., 1992: Working with Map, Survey of India, DST, New Delhi.*
12. *Mishra R.P. and Ramesh, A., 1989: Fundamentals of Cartography, Concept, New Delhi.*
13. *Monkhouse F. J. and Wilkinson H. R., 1973: Maps and Diagrams, Methuen ,London.*
14. *Rhind D. W. and Taylor D. R. F., (eds.), 1989: Cartography: Past, Present and Future, Elsevier, International Cartographic Association.*
15. *Robinson A. H., 2009: Elements of Cartography, John Wiley and Sons, New York.*
16. *Singh R. L. and Singh R. P. B., 1999: Elements of Practical Geography, Kalyani Publishers.*
17. *Sarkar, A. (2015) Practical geography: A systematic approach. Orient Black Swan Private Ltd., New Delhi*

Important Note: Continuing evaluation will be as follows:

COURSE CODE: GEO-H-CC-1-01: Class Test

COURSE CODE: GEO-H-CC-1-02: Class Test

SECOND SEMESTER
GEOGRAPHY
HONOURS COURSE
DISCIPLINE SPECIFIC CORE COURSE-CC

COURSE CODE: GEO-H-CC-2-03-H **Credit: 04**
HUMAN GEOGRAPHY

1. Defining Human Geography; Scope and content of Human Geography; contemporary relevance;
2. Space and society: cultural regions; race; religion and language;
3. Population growth and distribution with special reference to India; population composition; Demographic Transition Theory; Population Policy of India;
4. Concept of population-resource relationship; Population resource regions of the world (Ackerman)

COURSECODE: GEO-H-CC-2-03-PR **Credit: 02**
PRACTICAL

1. Diagrammatic data presentation: isopleth (isotherm, isohyet and isobar); bar (simple, compound and composite); circles (proportional concentric circle and proportional divided circle);
2. Thematic Mapping Techniques: properties, uses and limitations; Areal Data: Choropleth, Chorochromatic, Dot and Sphere, Proportional Cubes.

Practical Record: A project file covering all practical topics must be prepared.

COURSECODE: GEO-H-CC-2-04-TH **Credit: 04**
SETTLEMENT GEOGRAPHY

1. Settlements: Origin and growth of rural and urban settlements;
2. Types, patterns and morphology of rural settlements;
3. Trends and patterns of world urbanization (ancient, medieval and modern);
4. Theories of urban land use: Concentric Zone Theory; Sector Theory; Multiple Nuclei Theory

COURSECODE: GEO-H-CC-2-04-PR **Credit: 02**
PRACTICAL

1. Concept of levelling and surveying; Surveying by Prismatic Compass (closed traverse); Levelling by Dumpy Level along a given line by rise and fall and collimation method; determination of height of an object with accessible and inaccessible base in the same vertical plane by Theodolite (transit);
2. Geological Map; Drawing of sections on uniclinal and folded structures depicting unconformity.

Practical Record: A project file covering all practical topics must be prepared.)

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. *Cuff J. D. and Mattson M. T., 1982: Thematic Maps: Their Design and Production, Methuen Young Books*
7. *Dent B. D., Torguson J. S., and Holder T. W., 2008: Cartography: Thematic Map Design (6th Edition), Mcgraw-Hill Higher Education*
8. *Gupta K. K. and Tyagi V. C., 1992: Working with Maps, Survey of India, DST, New Delhi.*
9. *Kraak M.-J. and Ormeling F., 2003: Cartography: Visualization of Geo-Spatial Data, Prentice-Hall.*
10. *Mishra R. P. and Ramesh A., 1989: Fundamentals of Cartography, Concept, New Delhi.*
11. *Singh R. L. and Singh R. P. B., 1999: Elements of Practical Geography, Kalyani Publishers.*
12. *Slocum T. A., Mcmaster R. B. and Kessler F. C., 2008: Thematic Cartography and Geovisualization (3rd Edition), Prentice Hall.*
13. *Tyner J. A., 2010: Principles of Map Design, The Guilford Press.*
14. *Sarkar, A. (2015) Practical geography: A systematic approach. Orient Black Swan Private Ltd., New Delhi*

***Important Note: Continuing evaluation will be as follows*:**

COURSE CODE: GEO-H-CC-2-03: Term Paper

COURSE CODE: GEO-H-CC-2-04: Seminar

THIRD SEMESTER
GEOGRAPHY
HONOURS COURSE
DISCIPLINE SPECIFIC CORE COURSE -CC

COURSECODE: GEO-H-CC-3-05-TH **Credit: 04**
CLIMATOLOGY

1. Atmospheric composition and structure; insolation and temperature: factors and distribution, heat budget, temperature inversion;
2. Atmospheric pressure and winds: planetary winds, forces affecting winds, general circulation, jet streams; Monsoon: origin and mechanism (thermal and jet stream theory);
3. Atmospheric moisture: evaporation, humidity, condensation, precipitation types; climatic regions (Koppen and Thornthwaite)
4. Cyclones: Tropical cyclones, extra tropical cyclones.

COURSECODE: GEO-H-CC-3-05-PR **Credit: 02**
PRACTICAL

1. Meteorological instruments: Recording of Maximum and Minimum thermometer, Hygrometer, Fortin's barometer;
2. Interpretation of Indian daily weather report; Representation of climatic data by climographs and hythergraphs.

Practical Record: A project file covering all practical topics must be prepared.

COURSECODE: GEO-H-CC-3-06-TH **Credit: 04**
STATISTICAL METHODS INGEOGRAPHY

1. Significance of statistics in Geography;
2. Use of data in Geography: sources of data, scales of measurement (nominal, ordinal, interval, ratio);
3. Sampling: purposive, random, systematic and stratified;
4. Theoretical concept: probability and normal distribution.

COURSECODE: GEO-H-CC-3-06-PR **Credit: 02**
PRACTICAL

1. Tabulation of data; frequency distribution table, class group and class interval; Descriptive statistics: Deciles, Quartiles, Percentiles; Measures of Central Tendency: Mean, Median and Mode; Measures of Dispersion: Quartile Deviation, Mean Deviation, Standard Deviation, Variance and Coefficient of Variation;
2. Association and Correlation: Rank Correlation, Product Moment Correlation, and Simple Linear Regression.

Practical Record: A project file covering all practical topics must be prepared.

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

COURSE CODE: GEO-H-CC-3-07-TH Credit: 04 GEOGRAPHY OF INDIA

1. Physical: Physiographic divisions, soil, vegetation, climate (characteristics and classification);
2. Economic: Mineral and power resources distribution and utilization of iron ore, coal, petroleum, gas; agricultural production and distribution of rice and wheat; industrial development: Automobile and Information Technology;
3. Social: Spatial distribution of population by race, caste, religion, language and tribes;
4. Regionalization of India: Physiographic (R.L.Singh), Economic (P. Sengupta).

COURSE CODE: GEO-H-CC-3-07-PR Credit: 02
PRACTICAL

1. Monthly temperature and rainfall graphs of five selected stations from different climatic regions of India;
2. Decadal growth rate of population; Measures of Inequality: Lorenz Curve and Gini's Coefficient.

Practical Record: A project file covering all practical topics must be prepared.

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 Regionalization of India, Census of India*
5. *Sharma, T. C. 2003: India - Economic and Commercial Geography. Vikas Publ., New Delhi.*
6. *Singh R. L., 1971: India: A Regional Geography, National Geographical Society of India.*
7. *Singh, Jagdish 2003: India; A Comprehensive & Systematic Geography, Gyanodaya Prakashan, Gorakhpur.*
8. *Spate O. H. K. and Learmonth A. T. A., 1967: India and Pakistan: A General and Regional Geography, Methuen.*
9. *Tirtha, Ranjit 2002: Geography of India, Rawat Publishers, Jaipur & New Delhi.*
10. *Pathak, C. R. 2003: Spatial Structure and Processes of Development in India. Regional Science Assoc., Kolkata.*
11. *Tiwari, R.C. (2007) Geography of India. Prayag Pustak Bhawan, Allahabad*
12. *Sharma, T.C. (2013) Economic Geography of India. Rawat Publication, Jaipur*

***Important Note: Continuing evaluation will be as follows*:**

COURSE CODE: GEO-H-CC-3-05: Report writing

COURSE CODE: GEO-H-CC-3-06: Report writing

COURSE CODE: GEO-H-CC-3-07: Report writing

(Report will be an overview of syllabus topic given by the guide teacher. Word limit will be 1000 words. It must be hand-written)

SKILL ENHANCEMENT COURSE - SEC (ANY ONE)

Students will have to choose any one from the given course

COURSE CODE: GEO-SEC-A-3-01-TH **Credit: 02**

REMOTE SENSING

1. Remote Sensing: Definition and development; platforms and types; photogrammetry;
2. Satellite Remote Sensing: Principles, EMR Interaction with atmosphere and earth surface; satellites (Landsat and IRS);sensors;
3. Visual Satellite Image Interpretation;
4. Application of Remote Sensing in Land use/Land cover mapping.

Reading List

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

COURSECODE: GEO-SEC-A-3-01-TH **Credit: 02**

RURAL DEVELOPMENT

1. Rural Development: Concept, basic elements, measures of level of rural development;
2. Paradigms of rural development: Gandhian approach to rural development; Lewis model of economic development;
3. Major Rural Development Programmes in India: PMGSY, SJSY, MNREGA, Jan Dhan Yojana and NABARD;
4. Rural Governance: Panchayati Raj System and rural development policies.

Reading list:

1. *Gilg, A.W. 1985. An Introduction to Rural Geography, Edwin Arnold.*
2. *Krishnamurthy, J. 2000. Rural Development: Problems and Prospects, Rawat Publications.*
3. *Lee, D.A., Chaudhuri, D.P. (Eds) 1983. Rural Development and State, Methuen Publishing.*
4. *Misra, R.P., Sundaram, K.V. (Eds) 1979. Rural Area Development: Perspectives and Approaches, Sterling Publishers.*
5. *Misra, R.P. (Ed.) 1985. Rural Development: Capitalist and Socialist Paths, Vol-1, Concept Publishing.*
6. *Ramachandran, H., Guimaraes, J.P.C. 1991. Integrated Rural Development in Asia: Leaning from Recent Experience, Concept Publishing.*
7. *Robb, P. (Ed.) 1983. Rural South Asia: Linkages, Change and Development, Curzon Press.*
8. *Singh, K., Shishodia, A. 2016. Rural Development: Principles, Policies, and Management, 4th edition, Sage.*
9. *Wanmali, S. 1992. Rural Infrastructure, the Settlement System and Development of the Regional Economy in Southern India, International Food Policy Research Institute.*
10. *Yugandhar, B.N., Mukherjee, N.(Eds) 1991. Studies in Village India: Issues in Rural Development, Concept Publishing.*

FOURTH SEMESTER
GEOGRAPHY
HONOURS COURSE
DISCIPLINE SPECIFIC CORE COURSE -CC

COURSE CODE: GEO-H-CC-4-08-TH **Credit: 04**
ECONOMIC GEOGRAPHY

1. Introduction: Concept of economic activity; factors affecting location of economic activity with special reference to agriculture (Von Thunen theory), Industry (Weber's theory);
2. Primary activities: subsistence and commercial agriculture, forestry, fishing and mining;
3. Secondary activities: Manufacturing (Cotton Textile, Iron and Steel), Special Economic Zones and Technology Parks;
4. Tertiary activities: transport, trade and services.

COURSECODE: GEO-H-CC4-08-PR **Credit: 02**
PRACTICAL

1. Transport network analysis: connectivity (alpha, beta, gamma, theta and eta indices) and accessibility (Accessibility zoning using Detour Index);
2. Representation of state wise variation in occupational structure and work participation rate using proportional circles and proportional divided circles; Kendall's Ranking Co-efficient method (comparison of developed and developing countries).

Practical Record: A project file covering all practical topics must be prepared.

Reading List

1. *Alexander J. W., 1963: Economic Geography, Prentice-Hall Inc., Englewood Cliffs, New Jersey*
2. *Coe N. M., Kelly P. F. and Young 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*

COURSE CODE: GEO-H-CC-4-09-TH **Credit: 04**

REGIONAL PLANNING AND DEVELOPMENT

1. Definition of region, evolution and types of regional planning: formal, functional, and planning regions and regional planning; need for regional planning; types of regional planning;
2. Choice of a region for planning: Characteristics of an ideal planning region; delineation of planning region; Regionalization of India for planning (Agro Ecological Zones);
3. Theories and Models for regional planning: Growth Pole Model of Perroux; Growth Centre Model in Indian Context; Myrdal and Rostow;
4. Measuring development: Indicators (economic, social and environmental); Human development.

COURSE CODE:GEO-H-CC4-09-PR **Credit: 02**

PRACTICAL

1. Delineation of formal regions by weighted index method; Delineation of functional regions by breaking point analysis;
2. Measuring inequality by Location Quotient; Nearest Neighbour Test for clustering and regularity.

Practical Record: A project file covering all practical topics must be prepared.

Reading List

1. *Blij H. J. De, 1971: Geography: Regions and Concepts, John Wiley and Sons.*
2. *Claval P.L, 1998: An Introduction to Regional Geography, Blackwell Publishers, Oxford and Massachusetts.*
3. *Friedmann J. and Alonso W. (1975): Regional Policy - Readings in Theory and Applications, MIT Press, Massachusetts.*
4. *Gore C. G., 1984: Regions in Question: Space, Development Theory and Regional Policy, Methuen, London.*
5. *Gore C. G., Köhler G., Reich U.P. and Ziesemer T., 1996: Questioning Development; Essays on the Theory, Policies and Practice of Development Intervention, Metropolis- Verlag, Marburg.*
6. *Haynes J., 2008: Development Studies, Polity Short Introduction Series.*
7. *Johnson E. A. J., 1970: The Organization of Space in Developing Countries, MIT Press, Massachusetts.*
8. *Peet R., 1999: Theories of Development, The Guilford Press, New York.*
9. *UNDP 2001-04: Human Development Report, Oxford University Press.*
10. *World Bank 2001-05: World Development Report, Oxford University Press*

COURSECODE: GEO-H-CC-4-10-TH **Credit: 04**

FIELD WORK AND RESEARCH METHODOLOGY

1. Field work in geographical studies: Role, value, data and ethics of field-work;

2. Defining the field and identifying the case study: Rural; urban; physical; human and environmental;
3. Field techniques: Merits, demerits and selection of the appropriate technique; observation (participant and non-participant), questionnaires (open, closed, structured and non-structured); interview with special focus on focused group discussions;
4. Defining research problems; objectives and hypothesis.

COURSE CODE: GEO-H-CC-4-10-PR **Credit: 02**

PRACTICAL (FIELD SURVEY)

1. Use of field tools: Collection of material for physical and socio-economic surveys;
2. Designing the field report: Aims and objectives, methodology, analysis, interpretation and writing the report.

Project Report

1. Each student will prepare an individual report based on primary and secondary data collected during field work within India
2. The duration of the field work should not exceed 10 days.
3. The word count of the report should be 10,000 to 12,000 excluding figures, tables, photographs, maps, references and appendices.
4. One typed copy of the report on A 4 size paper should be submitted in soft binding.

Reading List

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

Important Note: Continuing evaluation will be as follows:

COURSE CODE: GEO-H-CC-4-08: Class Test
COURSE CODE: GEO-H-CC-4-09: Class Test
COURSE CODE: GEO-H-CC-4-10: Class Test

SKILL ENHANCEMENT COURSE – SEC (ANY ONE)

Students will have to choose <u>any one</u> from the given course

COURSECODE: GEO-SEC-A-4-02-TH **Credit: 02**

GEOGRAPHICAL INFORMATION SYSTEM

1. Geographical Information System (GIS): Definition and Components;
2. Global Positioning System (GPS): Principles and uses;
3. GIS Data Structures: Types (spatial and non-spatial), raster and vector data structure; GIS Data Analysis: Input; geo-referencing; editing and output;
4. Application of GIS: Land use mapping; urban sprawl analysis; forests monitoring.

Reading List

1. *Bhatta, B. (2010) Analysis of Urban Growth and Sprawl from Remote Sensing, Springer, BerlinHeidelberg.41*
2. *Burrough, P.A., and McDonnell, R.A.(2000) Principles of Geographical Information System-Spatial Information System and Geo-statistics. Oxford University Press*
3. *Heywoods, I., Cornelius, S and Carver, S. (2006) An Introduction to Geographical Information system. Prentice Hall.*
4. *Jha, M.M. and Singh, R.B. (2008) Land Use: Reflection on Spatial Informatics Agriculture and Development, New Delhi: Concept.*
5. *Nag, P. (2008) Introduction to GIS, Concept India, New Delhi.*
6. *Sarkar, A. (2015) Practical geography: A systematic approach. Orient Black Swan Private Ltd., New Delhi*
7. *Singh, R.B. and Murai, S. (1998) Space Informatics for Sustainable Development, Oxford and IBH, New Delhi.*

COURSECODE: GEO-SEC-A-4-02-TH **Credit: 02**

TOURISM MANAGEMENT

1. Tourism: Concepts, nature and scope, inter-relationships of tourism, recreation and leisure; geographical parameters of tourism by Robinson;
2. Type of tourism: Nature tourism, Cultural tourism, Medical tourism, Pilgrimage tourism and Ecotourism;
3. Recent Trends of Tourism: International and regional; domestic (India); Meetings, Incentives, Conventions and Exhibitions (MICE); Case studies of Himalaya, desert, coastal areas and heritage tourism in India;
4. National Tourism Policy of India.

Reading List:

1. *Boniface, B., Cooper, R., Cooper, C. 2016. Worldwide Destinations: The Geography of Travel and Tourism, vol. 1, 7th ed, Routledge.*
2. *Edgell, D.L., Swanson, J. 2013. Tourism Policy and Planning: Yesterday, Today, and Tomorrow, Routledge.*

3. *Fennell, D.A.2014. Ecotourism, 4th ed, Routledge.*
4. *Hall, C.M., Lew, A.A. 2009. Understanding and Managing Tourism Impacts: An Integrated Approach, Routledge.*
5. *Hall, C.M., Page, S.J. 2014.The Geography of Tourism and Recreation: Environment, Place and Space 4th ed, Routledge.*
6. *Honey, M. 2008. Ecotourism and Sustainable Development, Second Edition: Who Owns Paradise? 2nd ed, Island Press.*
7. *Kale, V.S. (Ed) 2017. Geomorphology of India, Indian Institute of Geomorphologists.*
8. *Lew, A., Hall, C.M., Timothy, D.J. 2008. World Geography of Travel and Tourism: A Regional Approach, Butterworth-Heinemann.*
9. *Mason, P. 2017. Geography of Tourism: Image, Impacts and Issues, Good fellow Publishers.*
10. *Mowforth, M., Munt, I. 2015. Tourism and Sustainability: Development, globalisation and new tourism in the Third World, 4th ed, Routledge.*
11. *Var, T., Gunn, C. Tourism Planning: Basics, Concepts, Cases, 4th ed, Routledge.*
12. *Velvet, N. 2017. An Introduction to the Geography of Tourism, 2nd ed, Rowman & Littlefield Publishers.*
13. *Williams, S., Lew, A.A. 2014. Tourism Geography: Critical Understandings of Place, Space and Experience, 3rd ed, Routledge.*
14. *Wilson, J. 2017. The Routledge Handbook of Tourism Geographies, Routledge.*

FIFTH SEMESTER

GEOGRAPHY

HONOURS COURSE

DISCIPLINE SPECIFIC CORE COURSE -CC

COURSE CODE: GEO-H-CC-5-11-TH Credit: 04

ENVIRONMENTAL GEOGRAPHY

1. Environmental Geography: Concept and scope; components of environment (physical and socio-cultural);
2. Human-environment relationships: Historical progression, adaptation in different biomes (tundra, savanna and equatorial);
3. Ecosystem: Concept, structure and functions and problems in tropical and temperate ecosystems;
4. Environmental programmes and policies: global, national and regional.

COURSE CODE: GEO-H-CC-5-11-PR Credit: 02 PRACTICALS

1. Preparation of questionnaire for perception survey on environmental problems;
2. Project on environmental problems of North Bengal relating to solid waste/water pollution/air pollution.

Project Report:

1. Each student will prepare an individual report based on primary and secondary data on any one topic mentioned above;
2. The word count of the report should be about 3000 to 4000 excluding figures, tables, photographs, maps, references and appendices;
3. One typed copy of the report on A4 size paper should be submitted in soft binding.

Reading List

1. *Chandna R. C., 2002: Environmental Geography, Kalyani, Ludhiana.*
2. *Cunninghum W. P. and Cunninghum 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 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. *Singh S., 1997: Environmental Geography, Prayag Pustak Bhawan, 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..*

COURSE CODE: GEO-H-CC-5-12-TH **Credit: 04**

REMOTE SENSING AND GIS

1. Remote Sensing and GIS: Definition and components, development, platforms and types;
2. Aerial Photography and Satellite Remote Sensing: principles, types and geometry of aerial photograph; principles of remote sensing, EMR interaction with atmosphere and earth surface; satellites (Landsat and IRS) and sensors;
3. GIS Data Structures: Types (spatial and Non-spatial), raster and vector data structure;
4. Interpretation and application of Remote Sensing and GIS: Land use/Land Cover; urban sprawl analysis; forests monitoring.

COURSE CODE: GEO-H-CC-5-12-PR **Credit: 02**

PRACTICAL

1. Air photo interpretation (using pocket stereoscope); and satellite imagery interpretation(manual);
2. Image Processing, Classification (supervised & unsupervised); Geo-referencing, Editing and Output, Overlays.

Practical Record

A project file consisting of two exercises will be done from aerial photos and satellite images (scale, orientation and interpretation) and three exercises using any of the following software: Map Info/Global Mapper/QGIS/ERDAS

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, McGrawHill.*
9. *Sarkar, A. (2015) Practical geography: A systematic approach. Orient Black Swan Private Ltd., New Delhi*

***Important Note: Continuing evaluation will be as follows*:**

COURSE CODE: GEO-H-CC-5-11: Seminar

COURSE CODE: GEO-H-CC-5-12: Class Test

ELECTIVE DISCIPLINE SPECIFIC-DSE (ANY TWO)

(*Students will have to choose any two courses: Population Geography or Resource Geography and Urban Geography or Agricultural Geography*)

COURSE CODE: GEO-H-DSE-5-01-TH **Credit: 04**

POPULATION GEOGRAPHY (THEORY)

1. Defining the field: Nature and scope; sources of data with special reference to India (Census, Vital Statistics and NSSO);
2. Population size, distribution and growth: Determinants and patterns; Theories of population; (Malthusian Theory and Optimum Population Theory);
3. Population dynamics: Fertility, mortality and migration; measures, determinants and implications;
4. Population composition and characteristics: age-sex composition; rural and urban composition; literacy; contemporary issues: ageing of population; declining sex ratio, HIV/AIDS

COURSE CODE: GEO-H-DSE-5-01-PR **Credit: 02**

POPULATION GEOGRAPHY (PRACTICAL)

1. Population projection by arithmetic method; Population density mapping for India;
2. Analysis of work participation rate: Total and gender-wise for India; Analysis of occupation structure by dominant and distinctive functions for West Bengal.

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. *Clarke J. I., 1965: Population Geography, Pergamon Press, Oxford.*
5. *Jones, H. R., 2000: Population Geography, 3rd ed. Paul Chapman, London.*
6. *Lutz W., Warren C. S. and Scherbov S., 2004: The End of the World Population Growth in the 21st Century, Earthscan*
7. *Newbold K. B., 2009: Population Geography: Tools and Issues, Rowman and Littlefield Publishers.*
8. *Pacione M., 1986: Population Geography: Progress and Prospect, Taylor and Francis.*
9. *Wilson M. G. A., 1968: Population Geography, Nelson.*

COURSE CODE: GEO-H-DSE-5-01-TH **Credit: 04**

RESOURCE GEOGRAPHY (THEORY)

1. Natural Resource: Concept, classification and techniques;
2. Distribution, utilization, problems and management of land resources and water resources;
3. Distribution, utilization, problems and management of forests and energy resources;
4. Appraisal and conservation of natural resources, sustainable resource development.

COURSECODE: GEO-H-DSE-5-01-PR **Credit: 02**

RESOURCE GEOGRAPHY (PRACTICAL)

1. Preparation of landuse/landcover map;
2. Computing Human Development Index: comparative decadal change of top five Indian states.

Reading List

1. *Cutter S. N., Renwich H. L. and Renwick W., 1991: Exploitation, Conservation, Preservation: A Geographical Perspective on Natural Resources Use, John Wiley and Sons Gadgil M. and Guha R., 2005: The Use and Abuse of Nature: Incorporating This Fissured Land: An Ecological History of India and Ecology and Equity, Oxford University Press. USA.*
2. *Holechek J. L. C., Richard A., Fisher J. T. and Valdez R., 2003: Natural Resources: Ecology, Economics and Policy, Prentice Hall, New Jersey.*
3. *Jones G. and Hollier G., 1997: Resources, Society and Environmental Management, Paul Chapman, London.*
4. *Klee G., 1991: Conservation of Natural Resources, Prentice Hall, Englewood.*
5. *Mather A. S. and Chapman K., 1995: Environmental Resources, John Wiley and Sons, New York.*
6. *Mitchell B., 1997: Resource and Environmental Management, Longman Harlow, England.*
7. *Owen S. and Owen P. L., 1991: Environment, Resources and Conservation, Cambridge University Press, New York.*
8. *Rees J., 1990: Natural Resources: Allocation, Economics and Policy, Routledge, London.*

COURSECODE: GEO-H-DSE-5-02-TH **Credit: 04**

URBAN GEOGRAPHY(THEORY)

1. Urban geography: Introduction, nature and scope;
2. Patterns of urbanisation in developed and developing countries;
3. Functional classification of cities: quantitative and qualitative methods (F.S, Hudson, C.D. Harris and R. Ramachandran);
4. Urban Issues: problems of housing, slums, civic amenities (water and transport), Case studies of urban centres in North Bengal *(Siliguri Municipal Corporation and Headquarters of North Bengal districts:*

COURSECODE: GEO-H-DSE-5-02-PR **Credit: 02**

URBAN GEOGRAPHY (PRACTICAL)

1. Hierarchy of urban settlements: Rank-size rule;
2. State-wise variation and trends of urbanization; Temporal analysis of urban growth using Census data of India.

Reading List

1. *Fyfe N. R. and Kenny J. T., 2005: The Urban Geography Reader, Routledge.*
2. *Graham S. and Marvin S., 2001: Splintering Urbanism: Networked Infrastructures, Technological Mobilities and the Urban Condition, Routledge.*
3. *Hall T., 2006: Urban Geography, Taylor and Francis.*
4. *Kaplan D. H., Wheeler J. O. and Holloway S. R., 2008: Urban Geography, John Wiley.*

5. *Knox P. L. and McCarthy L., 2005: Urbanization: An Introduction to Urban Geography, Pearson Prentice Hall New York.*
6. *Knox P. L. and Pinch S., 2006: Urban Social Geography: An Introduction, Prentice-Hall.*
7. *Pacione M., 2009: Urban Geography: A Global Perspective, Taylor and Francis.*
8. *Ramachandran R (1989): Urbanisation and Urban Systems of India, Oxford University Press, New Delhi*
9. *Ramachandran, R., 1992: The Study of Urbanisation, Oxford University Press, Delhi*
10. *Singh, R.B. (Eds.) (2001) Urban Sustainability in the Context of Global Change, Science Pub., Inc., Enfield (NH), USA and Oxford & IBH Pub., New Delhi.*
11. *Singh, R.B. (Ed.) (2015) Urban development, challenges, risks and resilience in Asian megacities. Advances in Geographical and Environmental Studies, Springer*

COURSE CODE: GEO-H-DSE-5-02-TH **Credit: 04**

AGRICULTURAL GEOGRAPHY (THEORY)

1. Agricultural Geography: Defining the field; Introduction, nature and scope; Land use/ land cover definition and classification;
2. Determinants of Agriculture: Physical, technological and institutional;
3. Agricultural Regions of India: Agro-climatic, Agro-ecological & Crop Combination Regions;
4. Agricultural Systems of the world (Whittlesey's classification) and Agricultural land use model (Von Thunen's modification and relevance), Agricultural revolutions in India: Green, White and Blue.

COURSECODE: GEO-H-DSE-5-02-PR **Credit: 02**

AGRICULTURAL GEOGRAPHY (PRACTICAL)

1. Measurement of agricultural efficiency (Bhatia, Martin-Gibbs methods);
2. Measurement of crop concentration index by Jasbir Singh; measurement of crop diversification by ICAR.

Reading List

1. *Basu, D.N., and Guha, G.S., 1996: Agro-Climatic Regional Planning in India, Vol. I & II, Concept Publication, New Delhi.*
2. *Bryant, C.R., Johnston, T.R, 1992: Agriculture in the City Countryside, Belhaven Press, London.*
3. *Burger, A., 1994: Agriculture of the World, Aldershot, Avebury.*
4. *Grigg, D.B., 1984: Introduction to Agricultural Geography, Hutchinson, London.*
5. *Ilbery B. W., 1985: Agricultural Geography: A Social and Economic Analysis, Oxford University Press.*
6. *Mohammad, N., 1992: New Dimension in Agriculture Geography, Vol. I to VIII, Concept Pub., New Delhi.*
7. *Roling, N.G., and Wageruters, M.A.E.,(ed.) 1998: Facilitating Sustainable Agriculture, Cambridge University Press, Cambridge.*
8. *Shafi, M., 2006: Agricultural Geography, Doring Kindersley India Pvt. Ltd., New Delhi*
9. *Singh, J., and Dhillon, S.S., 1984: Agricultural Geography, Tata McGraw Hill, New Delhi.*
10. *Tarrant J. R., 1973: Agricultural Geography, David and Charles, Devon.*

Important Note: Continuing evaluation for all Discipline Specific Elective will be Seminar

SIXTH SEMESTER
GEOGRAPHY
HONOURS COURSE
DISCIPLINE SPECIFIC CORE COURSE -CC

COURSE CODE: GEO-H-CC-6-13-TH **Credit: 04**
EVOLUTION OF GEOGRAPHICAL THOUGHTS

1. Evolution of geographical ideas during the ancient period in Western world and India;
2. Evolution of geographical ideas during the medieval period in Western world and India;
3. Modern evolution of geographical thinking in Germany, France, Britain, United States of America;
4. Debates: Environmental Determinism and Possibilism, Systematic and Regional.

COURSE CODE: GEO-H-CC-6-13-PR **Credit: 02**
PRACTICAL

1. Quantitative techniques in geography: Chi square, standard score;
2. Crop combination by Weaver, Rafiulla and Doi.

Practical Record: A project file covering all practical topics must be prepared.

Reading List

1. *Arentsen M., Stam R. and Thuijis 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. *Hartshone R., 1959: Perspectives of Nature of Geography, Rand MacNally andCo.*
6. *Holt-Jensen A., 2011: Geography: History and Its Concepts: A Students Guide, SAGE.*
7. *Johnston R. J., (Ed.): Dictionary of Human Geography, Routledge.*
8. *Johnston R. J., 1997: Geography and Geographers, Anglo-American Human Geography since 1945, Arnold, London.*
9. *Kapur A., 2001: Indian Geography Voice of Concern, Concept Publications.*
10. *Martin Geoffrey J., 2005: All Possible Worlds: A History of Geographical Ideas, Oxford.*
11. *Soja, Edward 1989. Post-modern Geographies, Verso, London. Reprinted 1997: Rawat Publ., Jaipur and New Delhi.*

COURSECODE: GEO-H-CC-6-14-TH **Credit: 04**

DISASTERMANAGEMENT

1. Definition, classification of hazards and disasters;
2. Approaches to hazard study: Risk perception and vulnerability assessment;
3. Factors, consequences and management of earthquake, flood, riverbank erosion, landslide;
4. Human induced disaster: Fire hazard, industrial accidents.

COURSECODE:GEO-H-CC-6-14-PR **Credit: 02**

PRACTICAL

Project report based on any one field based case study from the following disaster will be prepared:

a) Flood
b) Landslide
c) Earthquake

Project Report

1. Each student will prepare an individual project report based on primary and secondary data collected from local area.
2. The word count of the report should be about 4000 to 6000 excluding figures, tables, photographs, maps, references and appendices.
3. One typed copy of the report on A4 size paper should be submitted in soft binding.

Reading List

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

***Important Note: Continuing evaluation will be as follows*:**

COURSE CODE: GEO-H-CC-6-13: Seminar

COURSE CODE: GEO-H-CC-6-14: Class Test

DISCIPLINE SPECIFIC ELECTIVE - DSE

(*Students will have to choose two courses: Advanced Cartography or Political Geography and Hydrology & Oceanography or Social Geography*)

COURSECODE: GEO-H-DSE-6-03-TH **Credit: 04**

ADVANCED CARTOGRAPHY

1. Fundamentals of cartography: Nature, scope and history;
2. Levelling: Solution of computational problems in Dumpy Level and drawing of profiles, methods of contouring; Determination of height and distance by transit Theodolite (accessible and inaccessible base);
3. Map Projection: Properties, advantages, limitations and derivation of Polar Zenithal Equal Area, Polar Zenithal Equidistant, Cubic Development of Gnomonic Projection; Simple Conical Projection with two standard parallels; International Projection, Universal Transverse Mercator's Projection;
4. Remote Sensing and GIS: Concept, principles and components of Remote sensing, Techniques of digital image processing, Application of GIS.

COURSE CODE: GEO-H-DSE-6-03-PR **Credit: 02**

ADVANCED CARTOGRAPHY (PRACTICAL)

1. Drawing of profiles and contouring by Dumpy Level; determination of height and distance by transit Theodolite (accessible and inaccessible base);
2. Construction of Polar Zenithal Equal Area, Polar Zenithal Equidistant, Simple Conical Projection with two standard parallels; International Projection

Reading List

1. *Hinks, A. R.: Map Projections, Cambridge University Press, Cambridge, UK, 1st Edition,1921.*
2. *Kellaway, George P.: Map Projections, Methuen & Co. Ltd., London, 2nd Edition,1949.*
3. *Krakk Menno-Jan and Brown Allan: Web Cartography: developments and prospects, Taylor & Francis, London, 1st Edition,2001.*
4. *Mailing, D.H.: The Terminology of Map Projections, International year Book of Cartography VIII, George Philip & Sons Ltd., London, 1st Edition,1968.*
5. *Mainwaring, James: An Introduction to the study of Map Projection, McMillan & Co., NY1960*
6. *Rabinson, Arthur H., Morison, Joel L., Muehrcke, Philip C., Kimerling, A. Jon and Guptill, Stephen C.: Elements of Cartography, John Wiley & Sons, Inc., N.Y., 6th Edition,1995.*
7. *Raisz Erwin,: Principles of Cartography, International Student Edition, McGraw-Hill Book Co. Inc., Tokyo, Japan, 1st Edition,1962.*
8. *Raisz, Erwin,: General Cartography, McGraw Hill Book Co., New York,1938.*
9. *Richardus, Peter and Adler, Ron K.: Map Projections, North-Holland Publishing Company, Amstardam, 1st Edition,1972.*
10. *Roy, P.: An Analytical Study of Map Projections, Applied and Mathematical Geographic Studies, Calcutta, 1st Edition,1988.*
11. *Sarkar, Ashis: Practical Geography – A Systematic Approach, Orient Longman, Calcutta, 1stEdition, 1991.*
12. *Sarkar, Ashis and Roy, P., 1983: Some selected Map Projection for India – their relative efficiencies, Geographical Review of India, Kolkata, Vol. 43, No.2.*
13. *Singh, R. L.: Elements of Practical Geography, Kalyani Publishers, New Delhi, 1st Edition,1979.*

14. *Snyder, John P.: Flattening the Earth-Two thousand years of Map Projections, The University of Chicago Press, Chicago, 1st Edition, 1997.*
15. *Steers, J.A.: An introduction to the Study of Map Projections, University of London Press Ltd., London, Thirteenth Edi.,1962.*

COURSECODE: GEO-H-DSE-6-03-TH **Credit: 04**

POLITICAL GEOGRAPHY (THEORY)

1. Introduction: Concepts, nature and scope of Political Geography;
2. Concept of nation, state and nation state, Attributes of states: frontiers and boundaries; geopolitics; theories (Heartland and Rimland);
3. Political Geography of resource conflicts: water sharing disputes, conflicts related to forest rights in India;
4. Politics of displacement: Issues of relief, compensation and rehabilitation: with reference to dams in India.

COURSECODE: GEO-H-DSE-6-03-PR **Credit: 02**

POLITICAL GEOGRAPHY (PRACTICAL)

1. Preparation of spatial distribution maps of India: gender, caste, religion;
2. Preparation of questionnaire on socio-economic status of rural and urban centres of India

Reading List

1. *Agnew J., 2002: Making Political Geography, Arnold.*
2. *Agnew J., Mitchell K. and Toal G., 2003: A Companion to Political Geography, Blackwell.*
3. *Cox K. R., Low M. and Robinson J., 2008: The Sage Handbook of Political Geography, Sage Publications.*
4. *Cox K., 2002: Political Geography: Territory, State and Society, Wiley-Blackwell*
5. *Gallaher C., et al, 2009: Key Concepts in Political Geography, Sage Publications.*
6. *Glassner M., 1993: Political Geography, Wiley.*
7. *Jones M., 2004: An Introduction to Political Geography: Space, Place and Politics, RoutledgeMathur H.M. and M. M. Cernea (eds.) Development, Displacement and Resettlement – Focus on Asian Experience, Vikas, Delhi*
8. *Painter J. and Jeffrey A., 2009: Political Geography, Sage Publications.*
9. *Taylor P. and Flint C., 2000: Political Geography, Pearson Education.*
10. *Verma M K (2004): Development, Displacement and Resettlement, Rawat Publications, Delhi*
11. *Hodder Dick, Sarah J Llyod and Keith S McLachlan (1998), Land Locked States of Africa and Asia (vo.2), Frank Cass*

COURSE CODE: GEO-H-DSE-6-04-TH **Credit: 04**

HYDROLOGY AND OCEANOGRAPHY (THEORY)

1. Hydrological Cycle: Systems approach in hydrology, human impact on the hydrological cycle; precipitation, interception, evaporation, evapo-transpiration, infiltration, ground-water, run off and over land flow; hydrological input and output;
2. Characteristics of river basins, basin surface run-off, measurement of river discharge; floods and droughts;

3. Bottom floor topography; ocean salinity and temperature; distribution and determinants;
4. Coral Reefs: types and theories of origin; marine deposits and ocean resources

COURSECODE: GEO-H-DSE-6-04-PR **Credit: 02**
HYDROLOGY AND OCEANOGRAPHY (PRACTICAL)

1. Morphometric analysis of any river basin from topographical map (stream frequency, drainage texture, circulatory ratio, elongation ratio);
2. Calculation of discharge by area velocity methods.

Reading List

1. *Andrew. D. ward and Stanley, Trimble (2004): Environmental Hydrology, 2nd edition, Lewis Publishers, CRC Press.*
2. *Karanth, K.R., 1988 : Ground Water: Exploration, Assessment and Development, Tata-McGraw Hill, New Delhi.*
3. *Ramaswamy, C. (1985): Review of floods in India during the past 75 years: A Perspective. Indian National Science Academy, New Delhi.*
4. *Rao, K.L., 1982 : India's Water Wealth 2nd edition, Orient Longman, Delhi,.*
5. *Singh, Vijay P. (1995): Environmental Hydrology. Kluwar Academic Publications, The Netherlands.*
6. *Garrison T., 1998: Oceanography, Wordsworth Company, Belmont.*
7. *Kershaw S., 2000: Oceanography: An Earth Science Perspective, Stanley Thornes, UK.*
8. *Pinet P. R., 2008: Invitation to Oceanography (Fifth Edition), Jones and Barlett Publishers, USA, UK and Canada.*
9. *Sharma R. C. and Vatal M., 1980: Oceanography for Geographers, Chaitanya Publishing House,Allahabad.*
10. *Sverdrup K. A. and Armbrust, E. V., 2008: An Introduction to the World Ocean, McGraw Hill,Boston.*
11. *Singh, M., Singh, R.B. and Hassan, M.I. (Eds.) (2014) Landscape ecology and water management. Proceedings of IGU Rohtak Conference, Volume 2. Advances in Geographical and Environmental Studies, Springer*

COURSE CODE: GEO-H-DSE-6-04-TH **Credit: 04**
SOCIAL GEOGRAPHY (THEORY)

1. Social Geography: concept, origin, nature and scope;
2. People as a workforce: Technological and occupational change of the people of India; migration; types, causes and consequences;
3. Social categories: caste, class, religion, race and gender and their spatial distribution;
4. Geographies of welfare and wellbeing: concept and components: healthcare, housing and education; slums.

COURSE CODE: GEO-H-DSE-6-04-PR **Credit: 02**
SOCIAL GEOGRAPHY (PRACTICAL)

1. Flow chart to show migration trends;
2. Spatial distribution of caste, religion and gender in India using suitable cartographic techniques.

Reading List

1. *Ahmed A., 1999: Social Geography, Rawat Publications.*
2. *Casino V. J. D., Jr., 2009) Social Geography: A Critical Introduction, Wiley Blackwell.*
3. *Cater J. and Jones T., 2000: Social Geography: An Introduction to Contemporary Issues, Hodder Arnold.*
4. *Holt L., 2011: Geographies of Children, Youth and Families: An International Perspective, Taylor &Francis.*
5. *Panelli R., 2004: Social Geographies: From Difference to Action, Sage.*
6. *Rachel P., Burke M., Fuller D., Gough J., Macfarlane R. and Mowl G., 2001: Introducing Social Geographies, Oxford University Press.*
7. *Smith D. M., 1977: Human geography: A Welfare Approach, Edward Arnold, London.*
8. *Smith D. M., 1994: Geography and Social Justice, Blackwell, Oxford.*
9. *Smith S. J., Pain R., Marston S. A., Jones J. P., 2009: The SAGE Handbook of Social Geographies, Sage Publications.*
10. *Sopher, David (1980): An Exploration of India, Cornell University Press, Ithasa*
11. *Valentine G., 2001: Social Geographies: Space and Society, Prentice Hall.*

Important Note: Continuing evaluation for all Discipline Specific Elective will be Seminar

CBCS SYLLABUS FOR UNDERGRADUATE PROGRAMME COURSE IN GEOGRAPHY

UNIVERSITY OF NORTH BENGAL
RAJA RAMMOHUNPUR
DISTRICT: DARJILING - 734013

GEOGRAPHY
PROGRAMME COURSE
CORE COURSE – CC

FIRST SEMESTER

1. **Course Code: GEO-P-CC-1-01-TH: Physical Geography**
   Course Code: GEO-P-CC-1-01-PR: Practical

SECOND SEMESTER

1. **Course Code: GEO-P-CC-2-02-TH: Human Geography**
   Course Code: GEO-P-CC-2-02-PR: Practical

THIRD SEMESTER

1. **Course Code: GEO-P-CC-3-03-TH: Regional Development**
   Course Code: GEO-P-CC-3-03-PR: Practical

FOURTH SEMESTER

1. **Course Code: GEO-P-CC-4-04-TH: Spatial Information Technology**
   Course Code: GEO-P-CC-4-04-PR: Practical

SKILL ENHANCEMENT COURSE - SEC (ANY ONE)
Students will have to choose any one from the given course

THIRD SEMESTER

1. **Course Code: GEO-SEC-A-3-01-TH: Remote Sensing**

   or

   Course Code: GEO-SEC-A-3-01-TH: Rural Development

FOURTH SEMESTER

2. **Course Code: GEO-SEC-A-4-02-TH: Geographical Information System**

   or

   Course Code: GEO-SEC-A-4-02-TH: Tourism Management

DISCIPLINE SPECIFIC ELECTIVE - DSE
(Students will choose either Disaster Management or Sustainable Management)

FIFTH SEMESTER

1. **Course Code: GEO-P-DSE-5-01-TH: Disaster Management**
   Course Code: GEO-P-DSE-5-01-PR: Practical

   or

2. **Course Code: GEO-P-DSE-5-01-TH: Sustainable Development**
   Course Code: GEO-P-DSE-5-01-PR: Practical

SIXTH SEMESTER

(Students will choose either Climate Change: Vulnerability and Adaptation or Rural Development)

1. **Course Code: GEO-P-DSE-6-02-TH: Climate Change: Vulnerability and Adaptation**
   Course Code: GEO-P-DSE-6-02-PR: Practical

or

2. **Course Code: GEO-P-DSE-6-02-TH: Rural Development**
   Course Code: GEO-P-DSE-6-02-PR: Practical

<u>FIRST SEMESTER</u>
GEOGRAPHY
PROGRAMME COURSE
CORE COURSE – CC

COURSE CODE: GEO-P-CC-1-01-TH **Credits: 04**
PHYSICAL GEOGRAPHY

1. Earth's interior with special reference to seismology;
2. Plate Tectonics as a unified theory of global tectonics; Formation of major relief features of the ocean floor and continents according to Plate Tectonics;
3. Folds and faults: Classification and surface expression;
4. Principal geomorphic agents. Classification and evolution of fluvial, coastal, aeolian and glacial landforms.

Reading list

1. *Billings, M.P. 1971. Structural Geology, Pearson.*
2. *Goudie, A.S. (Ed) 2004. Encyclopedia of Geomorphology, vol. 1 & 2,Routledge.*
3. *Gregory, K.J., Lewin, J. 2014. The Basics of Geomorphology: Key Concepts, Sage.*
4. *Harvey, A. 2012. Introducing Geomorphology: A Guide to Landforms and Processes, Dunedin Academic Press.*
5. *Kale, V.S., Gupta, A. 2001. Introduction to Geomorphology, Orient Longman.*
6. *Kearey, P., Klepeis, K.A., Vine, F.J. 2011. Global Tectonics, 3rd ed, Wiley-India.*
7. *Monkhouse, F.J. 1974. Principles of Physical Geography (2009-reprint), Platinum Publishers.*
8. *Selby, M.J. 1986. Earth's Changing Surface, Oxford University Press.*
9. *Strahler, A. 2016. Introducing Physical Geography, 6th ed, Wiley.*
10. *Summerfield, M.J. 2003. Global Geomorphology: An Introduction to the Study of landforms, Longman.*

COURSE CODE: GEO-P-CC-1-01-PR **Credits: 02**
PRACTICAL

1. Construction of scale; plain (linear and comparative), diagonal and vernier scale;
2. Map Projection: Zenithal Gnomonic Projection (Polar Case), Cylindrical Equal Area Projection (Equatorial Case), Simple Conical Projection with one standard parallel, Sinusoidal Projection.

<u>Practical Record: A project file covering all practical topics must be prepared</u>.

Reading List

1. *Farndon, J. 2012. The Illustrated Guide to Rocks & Minerals, Southwater.*
2. *Pillent, C. 2002. Smithsonian Handbooks: Rocks & Minerals, Dorling Kindersley.*
3. *Sarkar, A. 2015. Practical Geography: A Systematic Approach, 3rd ed, Orient Blackswan Private Ltd.*
4. *Sen, P.K. 1989. Geomorphological Analysis of Drainage Basin: An Introduction to Morphometric and Hydrological Parameters, University of Burdwan.*

5. *Sorrell, C.A. Rocks and Minerals: A Guide to Field Identification, St. Martin's Press.*

Important Note: Continuing evaluation will be as follows:
COURSE CODE: GEO-P-CC-1-01-CE: Class test

SECOND SEMESTER
GEOGRAPHY
PROGRAMME COURSE
CORE COURSE – CC

COURSE CODE: GEO-P-CC-2-02-TH **Credits: 04**
HUMAN GEOGRAPHY

1. Introduction: Definition, scope and content of Human Geography;
2. Cultural Regions; Race; religion and language with reference to India;
3. Population growth and distribution with special reference to India;
4. Population-Resource Relationship.

COURSE CODE: GEO-P-CC-2-02-PR **Credits: 02**
PRACTICAL

1. Diagrammatic Data Presentation: Line, Bar and Circle;
2. Thematic Mapping Techniques: Choropleth, Proportional Circles and Proportional Divided Circles

Practical Record: A project file covering all practical topics must be prepared.

References:

1. *Aoyama, Y., Murphy, J.T., Hanson, S. 2010. Key Concepts in Economic Geography, Sage.*
2. *Chandna, R.C. 2016. Geography of Population: Concepts, Determinants and Patterns, Kalyani Publishers.*
3. *Coe N. M., Kelly P. F. and Young H. W., 2007: Economic Geography: A Contemporary Introduction, Wiley-Blackwell. Fouberg, E.H., Murphy, A.B., de Blij H.J. 2015. Human Geography: People, Place, and Culture, 11th ed, Wiley.*
4. *Ghosh, S. 1998. Introduction to Settlement Geography, Sangam Books Ltd.*
5. *Gregory, D., Johnston, R., Pratt, G., Watts., Whatmore, S. (Eds) 2009. The Dictionary of Human Geography, 5th ed, Wiley.*
6. *Knox, P.L., Marston, S.A. 2014. Human Geography: Places and Regions in Global Context, 6th ed, Pearson Education Limited.*
7. *Knox, P.L., McCarthy, L.M. 2011. Urbanization: An Introduction to Urban Geography, 3rd ed, Pearson Education Ltd.*
8. *Moseley, W.G., Perramond, E., Hapke, H.M., Laris, P. 2013. An Introduction to Human-Environment Geography: Local Dynamics and Global Processes, Wiley-Blackwell.*
9. *Norton, W. 2014. Human Geography, 8th ed, Oxford University Press.*

Important Note: Continuing evaluation will be as follows:
COURSE CODE: GEO-P-CC-2-02-CE: Class test

THIRD SEMESTER
GEOGRAPHY
PROGRAMME COURSE
CORE COURSE – CC

COURSECODE: GEO-P-CC-3-03-TH **Credits: 04**
REGIONAL DEVELOPMENT (THEORY)

1. Definition, types of Regional planning: Formal, Functional, and Planning regions;
2. Regional Imbalances and problems of functional regions;
3. Strategies; Models for Regional Planning: Growth Pole Model of Perroux;
4. Problem Regions and Regional Planning: Backward Regions and Regional Plans: Special Area Development Plans in India.

COURSECODE: GEO-P-CC-3-03-PR **Credits: 02**
PRACTICAL

1. Interpretation of Indian Topographical maps: plains/plateaus; scale 1:50000 (Broad physiographic divisions, drainage, natural vegetation, settlement, transport and communication, simple profiles and transect chart);
2. Geological maps: Uniclinal and folded structures with given dips.

Practical Record: A project file covering all practical topics must be prepared.

Reading List

1. *Adell, Germán (1999) Literature Review: Theories and Models Of The Peri-Urban Interface: A Changing Conceptual Landscape, Peri-urban Research Project Team, Development Planning Unit, University College London*
2. *Bhatt, L.S. (1976) Micro Level Planning in India. KB Publication, Delhi*
3. *Deshpande C. D., 1992: India: A Regional Interpretation, ICSSR, New Delhi.*
4. *Dreze J. and A. Sen, Indian Development: Select Regional Perspectives (Oxford: Oxford University Press,1996).*
5. *Sen, Amratya (2000) Development as Freedom. Random House, Toronto*
6. *Raza, M., Ed. (1988). Regional Development. Contributions to Indian Geography. New Delhi, Heritage Publishers.*
7. *Rapley, John (2007) Understanding Development: Theory and Practice in the 3rd World. Lynne Rienner,London.*
8. *Schmidt-Kallert, Einhard (2005) A Short Introduction to Micro-Regional Planning, Food and Agriculture Organization of the United Nations(FAO)*
9. *Sdyasuk Galina and P Sengupta (1967): Economic Regionalization of India, Census of India*

Important Note: Continuing evaluation will be as follows:

COURSE CODE: GEO-P-CC-3-03-CE: Project report on any rural issue

Project Report:

1. Each student will prepare an individual report based on primary and secondary data.

2. The word count of the report should be about 4000 to 6000 excluding figures, tables, photographs, maps, references and appendices.
3. One typed copy of the report on A4 size paper should be submitted in soft binding.

SKILL ENHANCEMENT COURSE - SEC (ANY ONE)

Students will have to choose <u>any one</u> from the given course

COURSE CODE: GEO-SEC-A-3-01-TH **Credit: 02**

REMOTE SENSING

1. Remote Sensing: Definition and development; platforms and types; photogrammetry;
2. Satellite Remote Sensing: Principles, EMR Interaction with atmosphere and earth surface; satellites (Landsat and IRS); sensors;
3. Visual Satellite Image Interpretation;
4. Application of Remote Sensing in Land use/Land cover mapping.

Reading List

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

COURSE CODE: GEO-SEC-A-3-01-TH **Credit: 02**

RURAL DEVELOPMENT

1. Rural Development: Concept, basic elements, measures of level of rural development;
2. Paradigms of rural development: Gandhian approach to rural development; Lewis model of economic development;
3. Major Rural Development Programmes in India: PMGSY, SJSY, MNREGA, Jan Dhan Yojana and NABARD;
4. Rural Governance: Panchayati Raj System and rural development policies.

Reading list:

1. *Gilg, A.W. 1985. An Introduction to Rural Geography, Edwin Arnold.*
2. *Krishnamurthy, J. 2000. Rural Development: Problems and Prospects, Rawat Publications.*
3. *Lee, D.A., Chaudhuri, D.P. (Eds) 1983. Rural Development and State, Methuen Publishing.*
4. *Misra, R.P., Sundaram, K.V. (Eds) 1979. Rural Area Development: Perspectives and Approaches, Sterling Publishers.*

5. *Misra, R.P. (Ed.) 1985. Rural Development: Capitalist and Socialist Paths, Vol-1, Concept Publishing.*
6. *Ramachandran, H., Guimaraes, J.P.C. 1991. Integrated Rural Development in Asia: Leaning from Recent Experience, Concept Publishing.*
7. *Robb, P. (Ed.) 1983. Rural South Asia: Linkages, Change and Development, Curzon Press.*
8. *Singh, K., Shishodia, A. 2016. Rural Development: Principles, Policies, and Management, 4th ed, Sage.*
9. *Wanmali, S. 1992. Rural Infrastructure, the Settlement System and Development of the Regional Economy in Southern India, International Food Policy Research Institute.*
10. *Yugandhar, B.N., Mukherjee, N.(Eds) 1991. Studies in Village India: Issues in Rural Development, Concept Publishing.*

FOURTH SEMESTER
GEOGRAPHY
PROGRAMME COURSE
CORE COURSE – CC

COURSE CODE: GEO-P-CC-4-04-TH **Credits: 04**
SPATIAL INFORMATIONTECHNOLOGY

1. Introduction: definitions, concept and historical development;
2. Spatial Information/Data: Web data sources; registration and projection; data structures; data interpolation and modelling.
3. Functions of Spatial information system: Information retrieval; Topological modelling; networks; overlay; data output.
4. Application of Spatial Information Technology

COURSECODE: GEO-P-CC-4-04-PR **Credits: 02**
PRACTICAL

1. Identification of broad physical and cultural features from aerial photographs using pocket stereoscope;
2. Statistical techniques: Measures of central tendency and measures of dispersion.

Practical Record: A project file covering all practical topics must be prepared.

Reading List

1. *C. Esperança and H. Samet, An overview of the SAND spatial database system, to appear in Communications of the ACM,1997. http://www.cs.umd.edu/~hjs/pubs/sandprog.ps.gz*
2. *G.HjaltasonandH.Samet,RankinginSpatialDatabasesinAdvancesinSpatialDatabases —4th Symposium, SSD'95, M. J. Egenhofer and J. R. Herring, Eds., Lecture Notes in Computer Science 951, Springer-Verlag, Berlin, 1995, 83-95. http://www.cs.umd.edu/~hjs/pubs/incnear.ps*
3. *H. Samet, Spatial Data Structures in Modern Database Systems: The Object Model, Interoperability, and Beyond, W. Kim, Ed., Addison-Wesley/ACM Press, 1995, 361-385. http://www.cs.umd.edu/~hjs/pubs/kim.ps*
4. *H. Samet, Applications of Spatial Data Structures: Computer Graphics, Image Processing, and GIS, Addison-Wesley, Reading, MA, 1990. ISBN 0-201-50300-0.*
5. *H. Samet, The Design and Analysis of Spatial Data Structures, Addison-Wesley, Reading, MA, 1990. ISBN0-201-50255-0.*
6. *H. Samet and W. G. Aref, Spatial Data Models and Query Processing in Modern Database Systems: The Object Model, Interoperability, and Beyond, W. Kim, Ed., Addison-Wesley/ACM Press, 1995, 338-360.http://www.cs.umd.edu/~hjs/pubs/kim2.ps*
7. *C. D. Tomlin, Geographic Information Systems and Cartographic Modeling, Prentice-Hall, Englewood Cliffs, NJ, 1990. ISBN0-13-350927-3.*

COURSE CODE: GEO-P-CC-4-04-CE: Seminar

SKILL ENHANCEMENT COURSE – SEC (ANY ONE)

Students will have to choose <u>any one</u> from the given courses

COURSE CODE: GEO-SEC-A-4-02-TH **Credit: 02**

GEOGRAPHICAL INFORMATION SYSTEM

1. Geographical Information System (GIS): Definition and Components;
2. Global Positioning System (GPS): Principles and uses;
3. GIS Data Structures: Types (spatial and Non-spatial), raster and vector data structure; GIS Data Analysis: Input; geo-referencing; editing and output;
4. Application of GIS: Land use mapping; urban sprawl analysis; forests monitoring.

Reading List

1. *Bhatta, B. (2010) Analysis of Urban Growth and Sprawl from Remote Sensing, Springer, BerlinHeidelberg.41*
2. *Burrough, P.A., and McDonnell, R.A.(2000) Principles of Geographical Information System-Spatial Information System and Geo-statistics. Oxford University Press*
3. *Heywoods, I., Cornelius, S and Carver, S. (2006) An Introduction to Geographical Infromation system. Prentice Hall.*
4. *Jha, M.M. and Singh, R.B. (2008) Land Use: Reflection on Spatial Informatics Agriculture and Development, New Delhi: Concept.*
5. *Nag, P. (2008) Introduction to GIS, Concept India, New Delhi.*
6. *Sarkar, A. (2015) Practical geography: A systematic approach. Orient Black Swan Private Ltd., New Delhi*
7. *Singh, R.B. and Murai, S. (1998) Space Informatics for Sustainable Development, Oxford and IBH, New Delhi.*

COURSE CODE: GEO-SEC-A-4-02-TH **Credit: 02**

TOURISM MANAGEMENT

1. Tourism: Concepts, nature and scope, inter-relationships of tourism, recreation and leisure; geographical parameters of tourism by Robinson;
2. Type of tourism: Nature tourism, Cultural tourism, Medical tourism, Pilgrimage tourism and Ecotourism;
3. Recent Trends of Tourism: International and regional; domestic (India); Meetings, Incentives, Conventions and Exhibitions (MICE); Case studies of Himalaya, desert, coastal areas and heritage tourism in India;
4. National Tourism Policy of India.

Reading List:

1. *Boniface, B., Cooper, R., Cooper, C. 2016. Worldwide Destinations: The Geography of Travel and Tourism, vol. 1, 7th ed, Routledge.*
2. *Edgell, D.L., Swanson, J. 2013. Tourism Policy and Planning: Yesterday, Today, and Tomorrow, Routledge.*

3. *Fennell, D.A.2014. Ecotourism, 4th ed, Routledge.*
4. *Hall, C.M., Lew, A.A. 2009. Understanding and Managing Tourism Impacts: An Integrated Approach, Routledge.*
5. *Hall, C.M., Page, S.J. 2014.The Geography of Tourism and Recreation: Environment, Place and Space 4th ed, Routledge.*
6. *Honey, M. 2008. Ecotourism and Sustainable Development, Second Edition: Who Owns Paradise? 2nd ed, Island Press.*
7. *Kale, V.S. (Ed) 2017. Geomorphology of India, Indian Institute of Geomorphologists.*
8. *Lew, A., Hall, C.M., Timothy, D.J. 2008. World Geography of Travel and Tourism: A Regional Approach, Butterworth-Heinemann.*
9. *Mason, P. 2017. Geography of Tourism: Image, Impacts and Issues, Good fellow Publishers.*
10. *Mowforth, M., Munt, I. 2015. Tourism and Sustainability: Development, globalisation and new tourism in the Third World, 4th ed, Routledge.*
11. *Var, T., Gunn, C. Tourism Planning: Basics, Concepts, Cases, 4th ed, Routledge.*
12. *Velvet, N. 2017. An Introduction to the Geography of Tourism, 2nd ed, Rowman& Littlefield Publishers.*
13. *Williams, S., Lew, A.A. 2014. Tourism Geography: Critical Understandings of Place, Space and Experience, 3rd ed, Routledge.*
14. *Wilson, J. 2017. The Routledge Handbook of Tourism Geographies, Routledge.*

FIFTH SEMESTER
GEOGRAPHY
DISCIPLINE SPECIFIC ELECTIVE - DSE

(Students will choose either Disaster Management or Sustainable Management)

COURSECODE: GEO-P-DSE-5-01-TH **Credits: 04**

DISASTER MANAGEMENT

1. Disasters: definition and concepts: hazards, disasters; risk and vulnerability; classification;
2. Disasters in India: (a) flood: causes, impact, distribution and mapping; landslide: causes, impact, distribution and mapping; drought: causes, impact, distribution and mapping;
3. Disasters in India: (b) earthquake and tsunami: causes, impact, distribution and mapping; cyclone: causes, impact, distribution and mapping;
4. Response and mitigation to disasters: mitigation and preparedness, NDMA and NIDM; Indigenous Knowledge and Community-Based Disaster Management.

COURSECODE: GEO-P-DSE-5-01-PR **Credits: 02**

PRACTICAL

1. Project report based on any one field based case study among the following disasters:
   a) Flood
   b) Landslide
   c) Human induced disaster: fire, chemical and industrial accidents

Practical Record

1. Each student will prepare an individual report based on primary and secondary data collected during fieldwork.
2. The word count of the report should be about 4000 to 5000 excluding figures, tables, photographs, maps, references and appendices.
3. One typed copy of the report on A4 size paper should be submitted in soft binding.

Reading List

1. *Government of India. (1997) Vulnerability Atlas of India. New Delhi, Building Materials & Technology Promotion Council, Ministry of Urban Development, Government of India.*
2. *Kapur, A. (2010) Vulnerable India: A Geographical Study of Disasters, Sage Publication, New Delhi.*
3. *Modh, S. (2010) Managing Natural Disaster: Hydrological, Marine and Geological Disasters, Macmillan, Delhi.*
4. *Singh, R.B. (2005) Risk Assessment and Vulnerability Analysis, IGNOU, New Delhi. Chapter 1, 2 and 3*
5. *Singh, R. B. (ed.), (2006) Natural Hazards and Disaster Management: Vulnerability and Mitigation, Rawat Publications, New Delhi.*
6. *Sinha, A. (2001). Disaster Management: Lessons Drawn and Strategies for Future, New United Press, New Delhi.*

7. *Stoltman, J.P. et al. (2004) International Perspectives on Natural Disasters, Kluwer Academic Publications.*
8. *Singh Jagbir (2007) ―Disaster Management Future Challenges and Opportunities‖, 2007. Publisher- I.K. International Pvt. Ltd. S-25, Green Park Extension, Uphaar Cinema Market, New Delhi, India (www.ikbooks.com).*

COURSE CODE: GEO-P-DSE-5-01-TH **Credits: 04**
SUSTAINABLE DEVELOPMENT

1. Sustainable Development: definition, components, limitations and historical background;
2. The Millennium Development Goals: national strategies and international experiences;
3. Inclusive Development: education, health; climate change: the role of higher education in sustainable development; the human right to health; poverty and disease; the challenges of universal health coverage; policies and global cooperation for climate change;
4. Sustainable Development policies and programmes: The proposal for SDGs at Rio^{+}20; Illustrative SDGs; goal-based development; financing for sustainable development; principles of good governance; National Environmental Policy, CDM.

COURSECODE: GEO-P-DSE-5-01-PR **Credits: 02**
PRACTICAL

1. Project report based on any one field based case study among the following:
    a) Health issues in any local village
    b) Education status in any local village

Practical Record

1. Each student will prepare an individual report based on primary and secondary data collected during fieldwork.
2. The word count of the report should be about 4000 to 5000 excluding figures, tables, photographs, maps, references and appendices.
3. One typed copy of the report on A 4 size paper should be submitted in soft binding

Reading List

1. *Agyeman, Julian, Robert D. Bullard and Bob Evans (Eds.) (2003) Just Sustainability: Development in an Unequal World. London: Earth scan. (Introduction and conclusion.).*
2. *Ayers, Jessica and David Dodman (2010) ―Climate change adaptation and development I: the state of the debate‖. Progress in Development Studies 10 (2):161-168.*
3. *Baker, Susan (2006) Sustainable Development. Milton Park, Abingdon, Oxon; New York, N.Y.: Routledge. (Chapter 2, ―The concept of sustainable development‖).*
4. *Brosius, Peter (1997) ―Endangered forest, endangered people: Environmentalist representations of indigenous knowledge‖, Human Ecology 25:47-69.*
5. *Lohman, Larry (2003) ―Re-imagining the population debate‖. Corner House Briefing28.*

6. *Martínez-Alier, Joan et al (2010) ―Sustainable de-growth: Mapping the context, criticisms and future prospects of an emergent paradigm‖ Ecological Economics 69:1741-1747.*
7. *Merchant, Carolyn (Ed.) (1994) Ecology. Atlantic Highlands, N.J: Humanities Press. (Introduction, pp125.)*
8. *Osorio, Leonardo et al (2005) ―Debates on sustainable development: towards a holistic view of reality‖. Environment, Development and Sustainability 7:501-518.*
9. *Robbins, Paul (2004) Political Ecology: A Critical Introduction. Blackwell Publishing.*
10. *Singh, R.B. (Eds.) (2001) Urban Sustainability in the Context of Global Change, Science Pub., Inc., Enfield (NH), USA and Oxford & IBH Pub., New Delhi.*

COURSE CODE: GEO-P-GE-5-01-CE: Class test

SIXTH SEMESTER
GEOGRAPHY
DISCIPLINE SPECIFIC ELECTIVE - DSE

(Students will choose either Climate Change: Vulnerability and Adaptation or Rural Development)

COURSE CODE: GEO-P-DSE-6-02-TH **Credits: 04**
CLIMATE CHANGE: VULNERABILITY AND ADAPTATION

1. Science of climate change: understanding climate change; green house gases and global warming; global climatic assessment, IPCC;
2. Climate change and vulnerability: physical vulnerability; economic vulnerability; social vulnerability;
3. Impact of Climate Change: Agriculture and water; flora and fauna; human health;
4. Adaptation and mitigation: global initiatives with particular reference to South Asia.

COURSECODE: GEO-P-DSE-6-02-PR **Credits: 02**
PRACTICAL

1. Project report based on climate change field based case study among any one of the following:
    a) Local level
    b) National level

Practical Record

1. Each student will prepare an individual report based on primary and secondary data collected during fieldwork.
2. The word count of the report should be about 4000 to 5000 excluding figures, tables, photographs, maps, references and appendices.
3. One typed copy of the report on A4 size paper should be submitted in soft binding.

Further Readings

1. *IPCC. (2007) Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change.*
2. *IPCC (2014) Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change Cambridge University Press, Cambridge, United Kingdom and New York, NY,USA.*
3. *IPCC (2014) Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change Cambridge University Press, Cambridge, United Kingdom and New York, NY,USA.*
4. *Palutikof, J. P., van der Linden, P. J. and Hanson, C. E. (eds.), Cambridge University Press, Cambridge, UK.*

5. *OECD. (2008) Climate Change Mitigation: What Do We Do? Organization and Economic Cooperation and Development.*
6. *UNEP. (2007) Global Environment Outlook: GEO4: Environment for Development, United Nations Environment Programme.*
7. *Singh, M., Singh, R.B. and Hassan, M.I. (Eds.) (2014) Climate change and biodiversity: Proceedings of IGU Rohtak Conference, Volume 1. Advances in Geographical and Environmental Studies, Springer*
8. *Sen Roy, S. and Singh, R.B. (2002) Climate Variability, Extreme Events and Agricultural Productivity in Mountain Regions, Oxford& IBH Pub., New Delhi.*

COURSE CODE: GEO-P-DSE-6-02-TH **Credits: 04**

RURAL DEVELOPMENT

1. Defining Development: Inter-Dependence of Urban and Rural Sectors of the Economy; Need for Rural Development, Gandhian Approach of Rural Development;
2. Rural Economic Base: Panchayat Raj System, Agriculture and Allied Sectors, Seasonality and Need for Expanding Non-Farm Activities, Co-operatives, PURA;
3. Area Based Approach to Rural Development: Drought Prone Area Programmes, PMGSY;
4. Target Group Approach to Rural Development: SJSY, MNREGA, Jan Dhan Yojana and Rural Connectivity.

COURSE CODE: GEO-P-DSE-6-02-PR **Credits: 02**

PRACTICAL

1. A case study on socio economic status of the people at any one of the following level:
   a) Mouza level
   b) Village level

Practical Record

1. Each student will prepare an individual report based on primary and secondary data collected during fieldwork.
2. The word count of the report should be about 4000 to 5000 excluding figures, tables, photographs, maps, references and appendices.
3. One typed copy of the report on A 4 size paper should be submitted in soft binding

Reading List

1. *Gilg A. W., 1985: An Introduction to Rural Geography, Edwin Arnold, London.*
2. *Krishnamurthy, J. 2000: Rural Development - Problems and Prospects, RawatPubls., Jaipur*
3. *Lee D. A. and Chaudhri D. P. (eds.), 1983: Rural Development and State, Methuen, London.*
4. *Misra R. P. and Sundaram, K. V. (eds.), 1979: Rural Area Development: Perspectives and Approaches, Sterling, New Delhi.*
5. *Misra, R. P. (ed.), 1985: Rural Development: Capitalist and Socialist Paths, Vol. 1, Concept, New Delhi.*
6. *Palione M., 1984: Rural Geography, Harper and Row, London.*

7. *Ramachandran H. and Guimaraes J.P.C., 1991: Integrated Rural Development in Asia – Leaning from Recent Experience, Concept Publishing, New Delhi. 8. Robb P. (ed.), 1983: Rural South Asia: Linkages, Change and Development, Curzon Press.*
8. *UNAPDI 1986:Local Level Planning and Rural Development: Alternative Strategies. (United Nations Asian & Pacific Development Institute, Bangkok), Concept Publs. Co., New Delhi.*
9. *Wanmali S., 1992: Rural Infrastructure Settlement Systems and Development of the Regional Economy in South India, International Food Policy Research Institute, Washington, D.C.*
10. *Yugandhar, B. N. and Mukherjee, Neela (eds.) 1991: Studies in Village India: Issues in Rural Development, Concept Publs. Co., New Delhi.*

COURSE CODE: GEO-P-GE-6-01-CE: Seminar

CBCS SYLLABUS FOR UNDERGRADUATE GENERIC ELECTIVE COURSE IN GEOGRAPHY

UNIVERSITY OF NORTH BENGAL
RAJA RAMMOHUNPUR
DISTRICT: DARJILING – 734013

GEOGRAPHY
GENERIC ELECTIVE
(FIRST/THIRD SEMESTER)

COURSE CODE: GEO-GE-01-TH
PHYSICAL GEOGRAPHY

1. Geography as a discipline: Meaning, scope and content, branches of geography
2. Geotectonics: Origin and evolution of the earth,Interior structure of the earth; Wegener's Continental Drift theory and Plate Tectonic theory
3. Rocks: Major types of rocks and their characteristics,
4. Geomorphic processes: Weathering and mass wasting,
5. Geomorphology: Erosional and depositional features of river, glacier and wind.

COURSE CODE: GEO-GE-01-PR
PRACTICAL

1. Scale: Definition, classification, construction of simple linear scale
2. Map Projection: Definition, classification and graphical construction of Zenithal Gnomonic Projection (Polar Case); Cylindrical Equal Area Projection; Simple Conical Projection with one Standard Parallel

Reading List

1. *Kale V. S. and Gupta A., 2001: Introduction to Geomorphology, Orient Longman, Hyderabad.*
2. *Thornbury W. D., 1968: Principles of Geomorphology, Wiley.*
3. *Gupta K.K. and Tyagi, V. C., 1992: Working with Map, Survey of India, DST, New Delhi.*
4. *Mishra R.P. and Ramesh, A., 1989: Fundamentals of Cartography, Concept, New Delhi.*
5. *Monkhouse F. J. and Wilkinson H. R., 1973: Maps and Diagrams, Methuen, London.*
6. *Singh R. L. and Singh R. P. B., 1999: Elements of Practical Geography, Kalyani Publishers.*
7. *Sarkar, A. (2015) Practical geography: A systematic approach. Orient Black Swan Private Ltd., New Delhi*

Important Note: Continuing evaluation will be as follows:
COURSE CODE: GEO-GE-01-TH: Class Test

GEOGRAPHY
GENERIC ELECTIVE
(SECOND/FOURTH SEMESTER)

COURSE CODE: GEO-GE-02-TH
GEOGRAPHY OF INDIA

1. Physiography, climate, natural vegetation and soil
2. Types of settlements, morphology of rural and urban settlements
3. Intensive farming (rice), plantation farming (tea and rubber), horticulture
4. Factors of industrial location, classification of industries, distribution of Iron and Steel industry, Cotton Textile industry
5. Growth and distribution of population; demographic characteristics of population.

COURSE CODE: GEO-GE-02-PR
PRACTICAL

1. Geological map: Uniclinal and folded structure with given dips
2. Topographical maps: Interpretation of topographical map of India; relief, drainage, natural vegetation, settlement and transport & communication (plateau region)

Reading List

1. *Mandal R. B. (ed.), 1990: Patterns of Regional Geography – An International Perspective. Vol. 3 – Indian Perspective.*
2. *Sharma, T. C. 2003: India - Economic and Commercial Geography. Vikas Publ., New Delhi.*
3. *Singh R. L., 1971: India: A Regional Geography, National Geographical Society of India.*
4. *Singh, Jagdish 2003: India; A Comprehensive & Systematic Geography, GyanodayaPrakashan, Gorakhpur.*
5. *Spate O. H. K. and Learmonth A. T. A., 1967: India and Pakistan: A General and Regional Geography, Methuen.*
6. *Tirtha, Ranjit 2002: Geography of India, Rawat Publishers, Jaipur & New Delhi.*
7. *Tiwari, R.C. (2007) Geography of India. Prayag Pustak Bhawan, Allahabad*
8. *Sharma, T.C. (2013) Economic Geography of India. Rawat Publication, Jaipur*

Important Note: Continuing evaluation will be as follows:
COURSE CODE: GEO-GE-02-TH: Class Test

IDENTIFICATION OF POPULATION DYNAMICS: A CASE STUDY OF MALDA DISTRICT, WEST BENGAL

Snehasish Saha

Abstract

Population studies always deserve importance towards the necessity of coining the dynamics either in pace or any culminating change is taking place. This in turn supplements the cognitive background and information pool of the planners and decision makers to put forward new thrusts for development-point of view. Malda district is the populous and dynamic one in this respect with a rate of 15,000-20,000 increment of population every year as computed in respect to 1951 to 2001 i.e. a period of about 50 years span. The present study is with a simple approach to view and document the change with some detection of demographic patterns. Secondary sources from off and on-line data has been the base of the study and so far methodology is concerned statistical and cartographic techniques have used to build up the necessary analysis and discussions. Results were interpreted to explain the demographic pattern and temporal changes supported by possible review of literatures.

Keywords: *Demography, population dynamics, population growth, decadal variation, co-efficient of determination, Human Resource Development Index (HDI)*

Introduction

Demographic upliftment is related to the work culture of any area. Less the number of working people shows a declining rate of economic attainment of the local people which ultimately alters the Human Resource Development Index (HDI) or at best no such remarkable positive change in HRD. The case of Malda District as a whole is not an exception from this fact. The Human Development Index of Malda District is only 0.44, education index 0.48 and health index 0.49, income index 0.36 (Basu Roy et al, 2009). The HDI of India is 0.64 in 2017. Precisely level of occupation, educational attainment, means of transport and communication, services, health facilities, banking facilities, civic amenities, water supply system etc. are dependent on active participation of working people. All such parameters happen to be highly variable with population growth and on temporal basis. The importance of population growth rate is in its central role like forecasting future population trends (Sibly, 2002). The district is mainly belonging to majority of rural population with low literacy and depends upon agronomy.

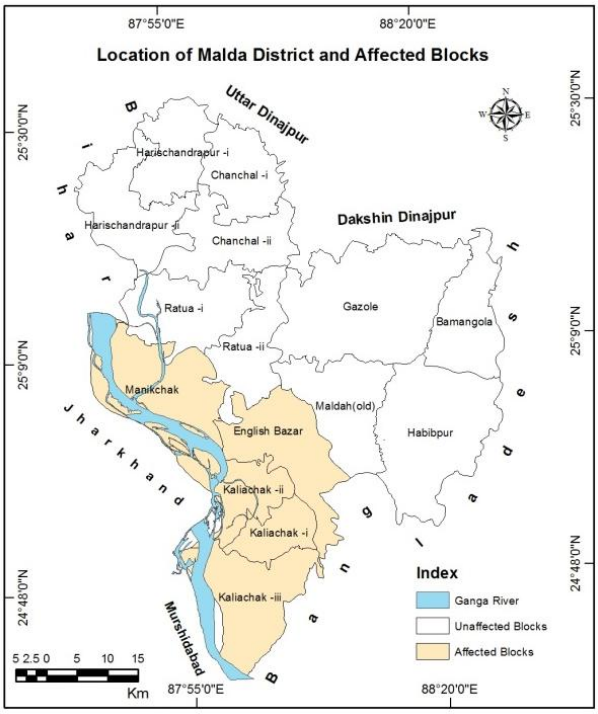
Assistant Professor*, Department of Geography and Applied Geography,*
University of North Bengal

The riverine tracts alongside the Ganga River are frequently affected by floods and erosions (Iqbal, 2010) which have been the prime impetus for rural-urban out pool migration. Five blocks have been seriously affected by river bank erosion and all Tal and Diara blocks are flood prone and are associated with population pressure due to migration..

Health constraints and poor to pauper dwelling standards have been the indicators of backwardness of the district As per District Level Educational Development Index Malda district is ranking 19 and 520 as per all India rank (Mukherjee & Basak, 2012) and most backward among the West Bengal districts. Poor literacy rate has been an indicator of unknowing family planning issues like birth control and vasectomy.

Study Area

The district comprises of about 3,566.17 sq km area and it is located between 24°40′20″N to 25°32′08″ N and from 87°45′50″E to 88°30′00″E respectively. The District Malda is situated keeping Jharkhand in the west, Bangladesh in the east, and Murshidabad distinct in the south whereas, western boundary is demarcated by the River Ganga in a curvilinear fashion and the northern part of the district is bounded by the North Dinajpur District. The district is receiving 2 sub-divisions, 2 municipalities, 15 CD Blocks, 1814 mouzas and 3701 villages.



Source: *Prepared by author, 2012-13*.

Fig. 1: Locational Personality of Malda District

From the physiographic perspectives the District is faceted into three identifiable geographical units, namely TAL (in North and North-West), DIARA (in the south west) and BARIND (in the East). Barind is characterized by rugged and old alluvium with successive mounds and depressions. Diaras are the alluvial lands

evolved mainly because of the joint actions of erosion and deposition by the rivers Mahananda and Ganga finally shaped up in the Pleistocene- Holocene (recent) age. Barind tract is undulating in character (Saha, 2013).

The Tal tract is full of small depressions or ponds of natural evolution and is featured as a low lying area. The general slope of the district is not more than 3 degrees; whereas Diara is characterized by lower the slope of 1:21,000 (Mazumder, 1998). The river Ganga enters to the district near Gaduri of Bhutnichar (Manikchak Block) and flow for a length of 172 km including its tributaries. The physical set-up is thus favourable for habitation and climate is promising for population growth i.e. good birth rates which is 98.8% in case of live birth rate (NHSRC, 2013). But disturbances in healthy flow of life in Malda are due to bank erosion of Ganga River and occasional floods especially land loss and property damage resulting into population displacements. The most affected blocks are Manikchak, Kaliachak II and parts of Kaliachak III and Englishbazar.

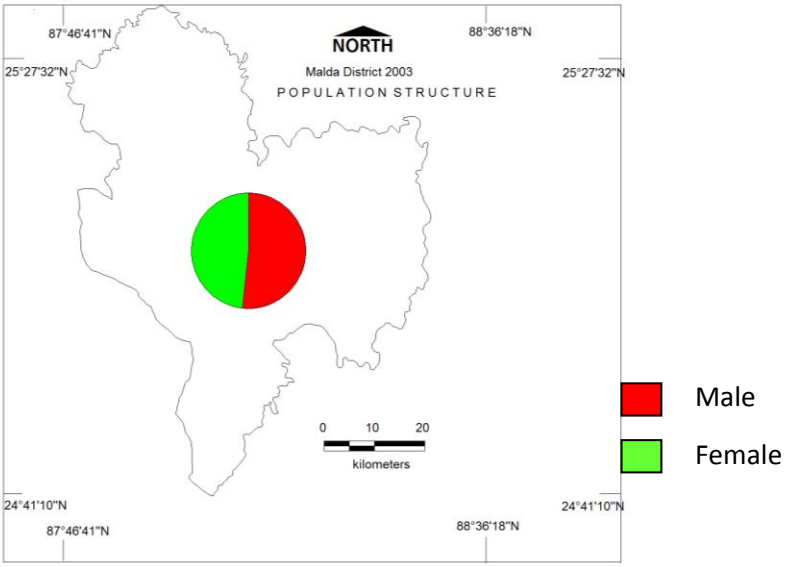


Fig.2 Population Structure of Malda District
Source: *District Census Abstract, 2003*

Aims and Objectives

1. Trend study of Population growth over the decades since 1901 to 2011 in Malda district
2. Finding out the possible causes of population dynamics

Table 1a: Police Station-wise Population Growth of Malda District from 1901-1951

Col.1*	Col.2	Col.3	Col.4	Col.5	Col.6	Col.7
Census Years	**1901**	**1911**	**1921**	**1931**	**1941**	**1951**
Police Station						
Harishchandrapur	47592	57072	71845	82596	99974	101156
Kharba	70810	82399	80516	83594	103062	100498
Ratua	69304	84662	81073	85793	102985	115834
Gazole	52966	64052	65773	67023	73387	73171
Bamongola	24861	30065	30872	31174	35973	39665
Habibpur	42814	49841	47414	48969	52307	72193
Old Malda	29534	34381	32707	30584	33978	37420
Englishbazar	70349	73591	62909	69651	53539	93872
Manikchak	47218	57683	55237	56482	64786	77587
Kaliachak	148201	164801	157828	164574	194324	226184
Malda District	**603649**	**698547**	**686174**	**720440**	**814315**	**937580**

Source: *District Census Hand books and literature review, 2011-'18*.

*col. stands for column

Table 1b: Population Growth of Malda District from 1961-2011

Col.1*	Col.2	Col.3	Col.4	Col.5	Col.6	Col.7
Census Years	**1961**	**1971**	**1981**	**1991**	**2001**	**2011**
Police Station						
Harishchandrapur	136682	177333	221890	286906	360445	450838
Kharba	137444	177905	217746	275985	339396	410073
Ratua	151899	195161	241198	299417	378260	477468
Gazole	94505	143426	180315	233139	294715	343830
Bamongola	47805	66773	85362	107579	127252	143936
Habibpur	87494	113170	141070	168397	187650	210699
Old Malda	52475	71077	98767	146020	194214	156365
Englishbazar	131377	182996	239457	319638	387692	274627
Manikchak	98610	126715	149981	177572	214127	269813
Kaliachak	283635	358101	359603	478841	806717	961693
Malda District	1221926	1612657	1935389	2493494	3290468	3699342

Source: *District Census Hand books and literature review, 2011-'18.*

*col. stands for column

The Issue

The district economy is mostly dependant on agricultural activities with slower avenues of income generating opportunities. This may be one of the causes that out migrations are high in Malda and is creating regional disparity in rural-urban population distribution. The two down town areas in the district viz.

Englishbazar and Chanchal are experiencing huge population pressure with urban congestion and over residential agglomeration especially in Englishbazar only due to rural influx of migrated people. On the other hand in the rural areas limited engagement sectors are found; either engagement as tenant cultivators or agricultural labourers. This indicates poorer strength of human resource development. Negligible participation of industrial workers indicates that the district lacks industry and factorial productions.

Discussion

The total population of Malda district is 39, 97,970 (2011 census) (Hoque, et al., 2017) with 15 C.D. Blocks in the District. But the most important irony is that about 3/4th of the total populations of Malda are belonging to backward and socially underprivileged communities (Hussain & Kirmani, 2010). Urban population has been grown from a minimum of 7.35% in 2001 to about 14% in 2011 being almost double. The decadal population growth is second highest in the state (20-22%) and even crossing the state's average. The density of Population is very high (800-1010) with the average literacy rate of just 61.7% compared to state's percentage of 76.3%. Total number of main workers is declining temporally from 2001 to 2011.

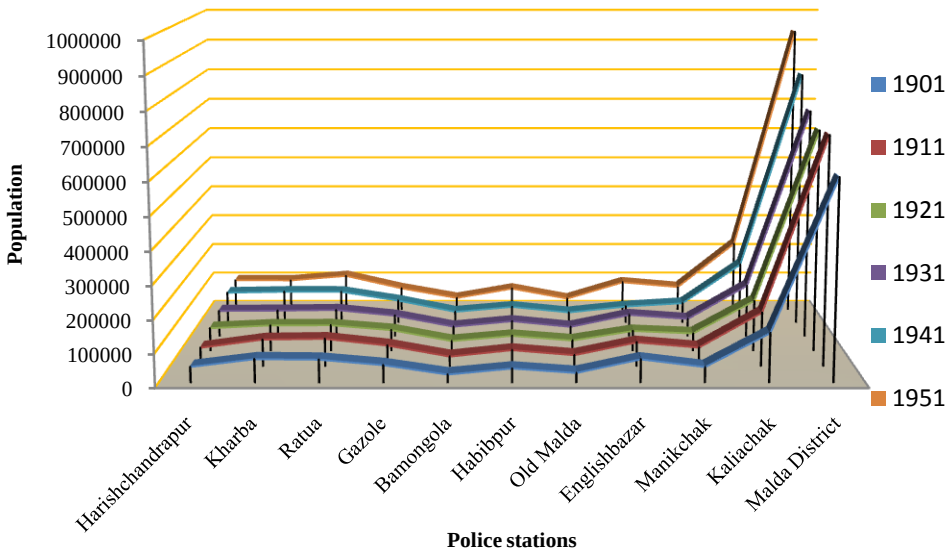


Fig. 3 Trend of Population growth rate in Malda District till independence; since 1901 to 1951

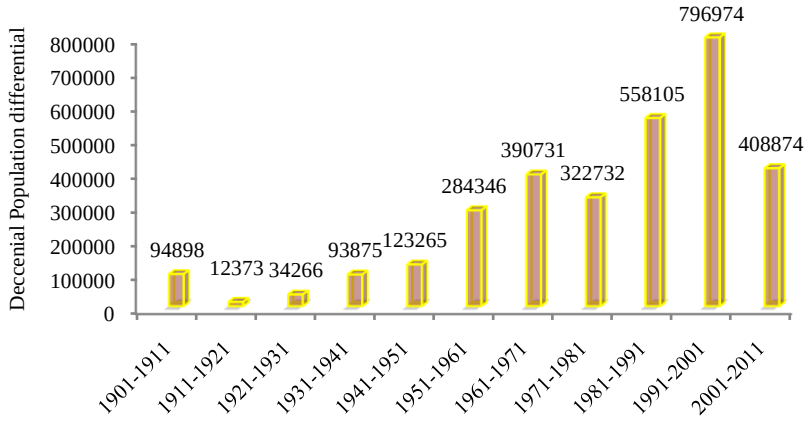
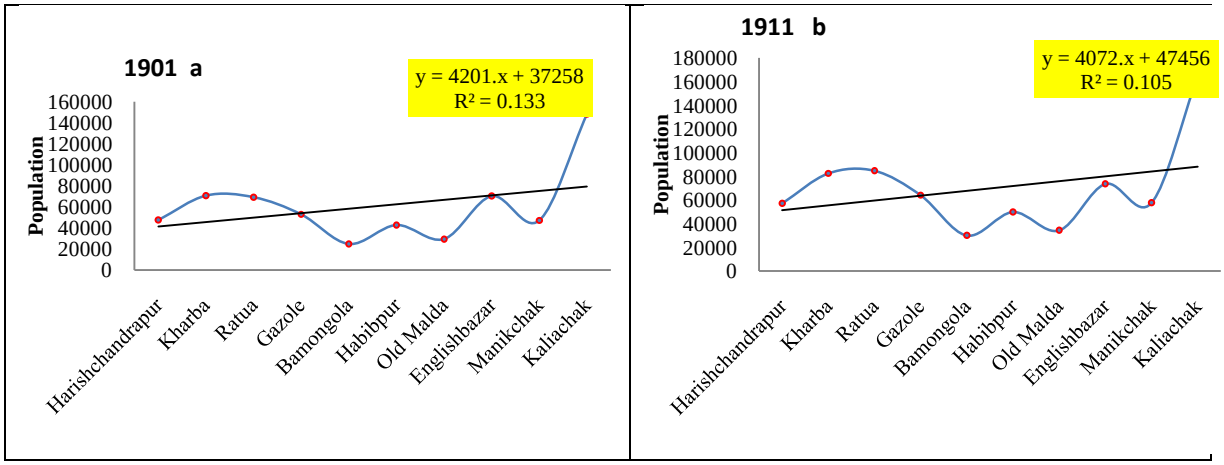
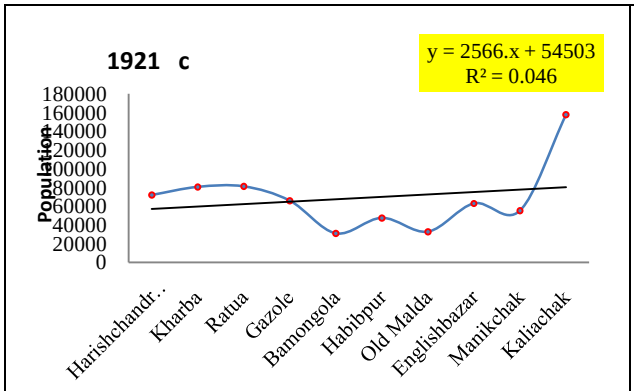
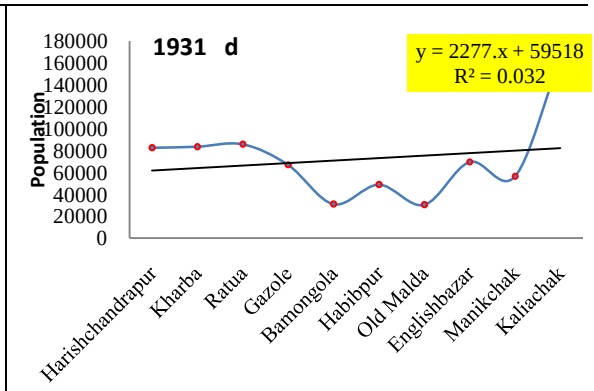
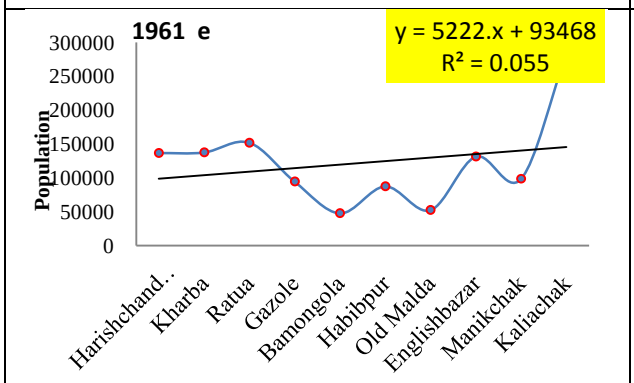


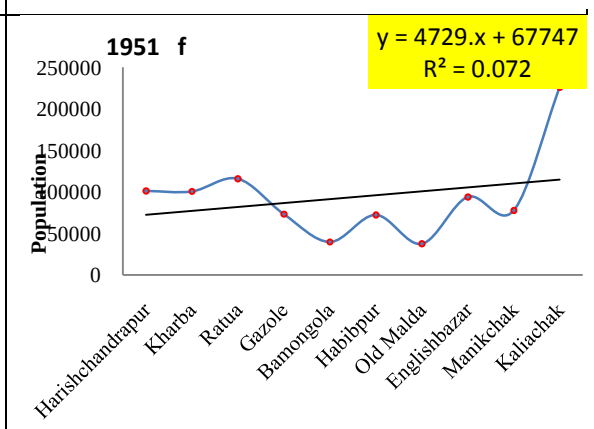
Fig.4 General Trend of Population Growth in Malda District since1901 to 2011

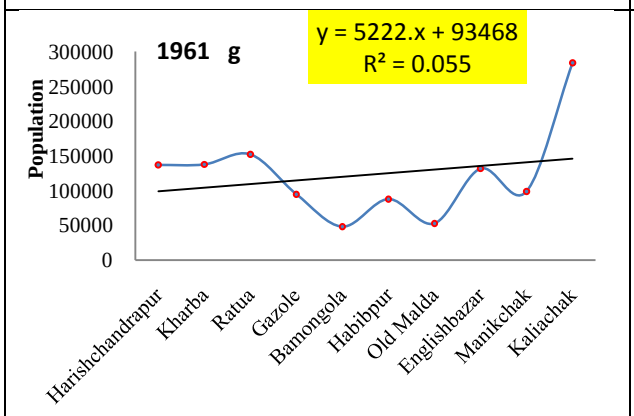


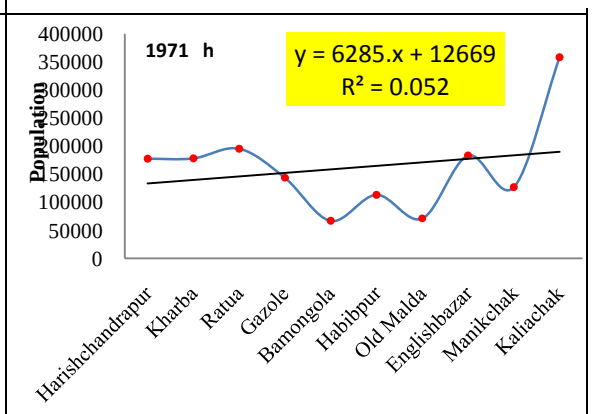

1921 c
y = 2566.x + 54503
R² = 0.046
Population
180000
160000
140000
120000
100000
80000
60000
40000
20000
0
Harishchandr..
Kharba
Ratua
Gazole
Bamongola
Habibpur
Old Malda
Englishbazar
Manikchak
Kaliachak


1931 d
y = 2277.x + 59518
R² = 0.032
Population
180000
160000
140000
120000
100000
80000
60000
40000
20000
0
Harishchandrapur
Kharba
Ratua
Gazole
Bamongola
Habibpur
Old Malda
Englishbazar
Manikchak
Kaliachak


1961 e
y = 5222.x + 93468
R² = 0.055
Population
300000
250000
200000
150000
100000
50000
0
Harishchand..
Kharba
Ratua
Gazole
Bamongola
Habibpur
Old Malda
Englishbazar
Manikchak
Kaliachak


1951 f
y = 4729.x + 67747
R² = 0.072
Population
250000
200000
150000
100000
50000
0
Harishchandrapur
Kharba
Ratua
Gazole
Bamongola
Habibpur
Old Malda
Englishbazar
Manikchak
Kaliachak


1961 g
y = 5222.x + 93468
R² = 0.055
Population
300000
250000
200000
150000
100000
50000
0
Harishchandrapur
Kharba
Ratua
Gazole
Bamongola
Habibpur
Old Malda
Englishbazar
Manikchak
Kaliachak


1971 h
y = 6285.x + 12669
R² = 0.052
Population
400000
350000
300000
250000
200000
150000
100000
50000
0
Harishchandrapur
Kharba
Ratua
Gazole
Bamongola
Habibpur
Old Malda
Englishbazar
Manikchak
Kaliachak

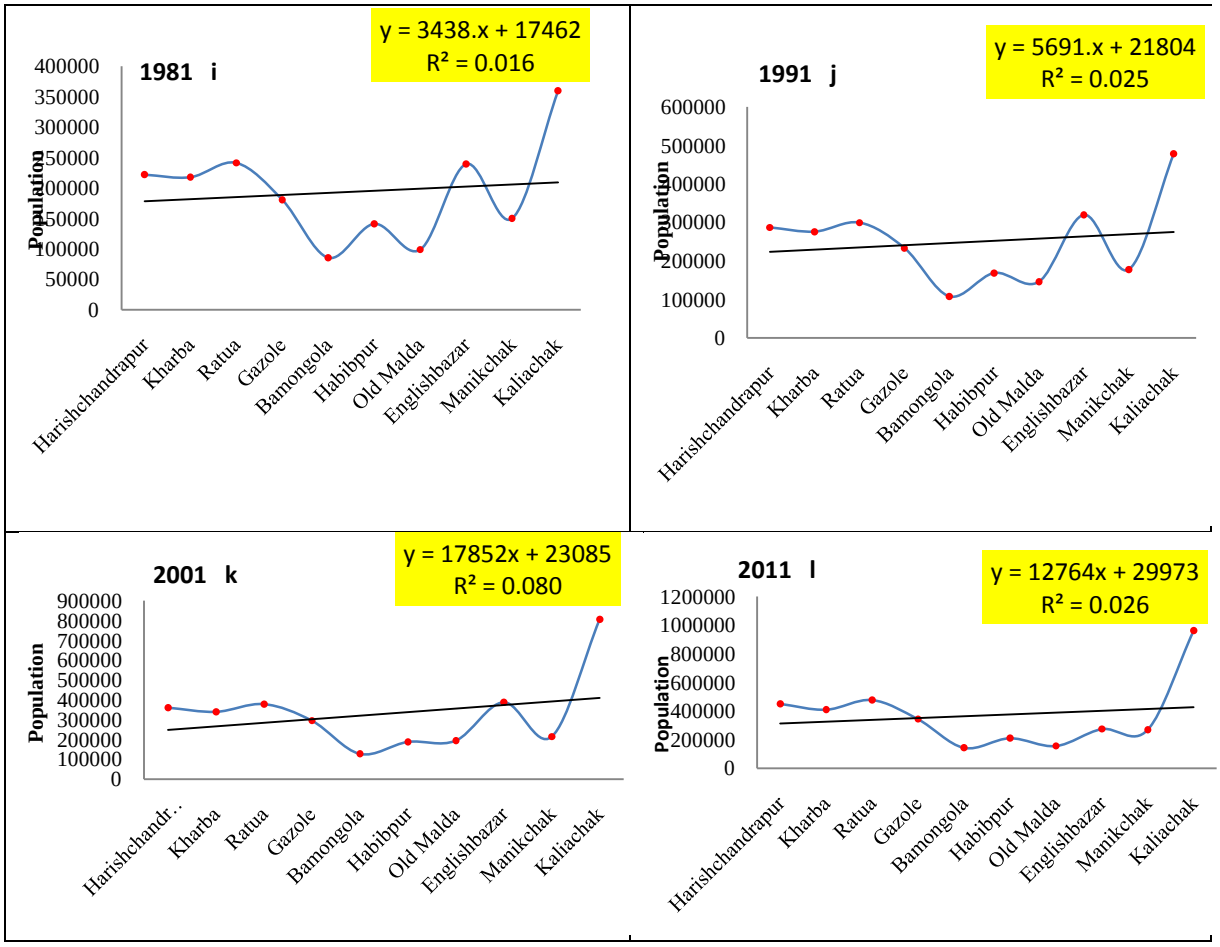


Fig. 5 a-l Decadal trend Analysis of Police Station–wise Population dynamics in Malda District

Tal receives a population density of 1,157 person $km^{2\ -1}$ compared to Barind with population density of 656 person $km^{2\ -1}$ and maximum in case of Diara blocks (DHDR, 2007).

Maximum growth of population has been assessed in 2001(as current year) of 7, 96,974 (DSH, 2013) persons and (1991 to 2001) minimum of 12373 (1911-1921). For all census years Positive growth rates has been found from 1901 to 2011 except one shortfall in 1921, and another in 1981 with a sharp fall in 2011(table 1) due to severe threats of bank erosion and disaster refugees creating out migration in search of livelihood. Maximum population has been found in

Kaliachak I followed by Kaliachak III, Gazole, Ratua I, Harishchandrapur II and Harishchandrapur I i.e. six hierarchically populous blocks in Malda district. In all blocks female population is less than male with high sex-ratio, which is indicative of high probability of fertility.

Gazole receives highest growth rates of SC population in 2011. Kaliachak III and Habibpur are receiving second and third positions. All *Tal* blocks like Harishchandrapur I, II, Ratua I, II, Chanchal I, II; SC population is comparatively low. More or less similar pattern has been found in case of ST population. In view of ST population size, Gazole, Habibpur, Manikchak, Kaliachak I, III and Old Malda are ranking as leading blocks. Lowest population has been witnessed in case of Chanchal I, Ratua II and Kaliachak I.

Maximum density is found in Kaliachak blocks (I, II &III) and minimum in Habibpur. Nearly 78 percent households are *Kutcha* in the district (Ismail & Mustaquim, 2013). Bamongola, Gazole and Habibpur are the low density police stations mostly due to lower agricultural growths than Diara blocks of newer alluvium.

In all cases the value of R^2 is less than 0.1 i.e. 10% and the computed values are even less than 0.08 which is determining non-conformal relation of the expected straight line called as trend line vs. the distribution of population. So far range is concerned it happens to be 0 to 1, with 1 explaining a perfectly fit relation and 0 representing no statistical correlation. Analysis builds the fact that there is no or little symmetry in the police station-wise population increment pattern of the district which is showing a haphazard growth rate. This also confirms the reality that within the district, population migration in search of livelihood is high and it is the chief impetus behind population concentration in Englishbazar. Harishchandrapur, Kharba, Ratua, Englishbazar and Kaliachak are the police stations which show high positive growth rate as per locations of the scatters (Fig.5 a-l) above the trend line. But Bamongola, Habibpur and Old Malda belonged to the scatter values lower than the trend line. Though inter-police station-wise variations are there but the overall pattern of growth of the district population irrespective of census years is same except variations in magnitude since 1901 to 2011.

The general formula for the trend line $y = mx + b$, depicts regularity of growth pattern over the census years as the m is the slope (β) and in all cases not at all steep receiving population size of 1,200-5,500 . 'b' is the y-intercept, x is any value and y is any value falling on trend line explained by $mx + b$. x being the important determining factor is impacting upon the trend line equation. Except difference in magnitude of population growth all blocks over the decades show

similar trend of growth meaning thereby monothetic demographic structure almost irrespective to the time lines.

Conclusion

In respect to its areal coverage Malda is highly populated as the man-land ratio is temporally decreasing and spatially very negligible in Englishbazar and Chanchal urbanities especially. Revealing the reality evident that districts away from Kolkata metropolitan like, Malda, Murshidabad, Birbhum, Jalpaiguri, Purulia and Nadia have evolved with relatively higher growth rate of urban population (Chakraborty et al, 2015) causational to the facts of illiteracy, level of education, family values and climatic congeniality as most fitful to the case of Malda district. Englishbazar is excessively overcrowded for its locational facility and good connectivity with all the blocks and having urban facilities. Medical migration to Englishbazar is high, for example 6 % adult residents are infected by only diabetes in Malda (Kanungo et al, 2016) and mostly cluster to Englishbazar. Efficacy of inter and intra-regional migrations to Englishbazar for educational, occupational and other service facilities is very often attributed to congestion problems. Cases of early marriage with age group of 18-21 has been attributed to the increasing population growth accounting to about 57.85 % (Julfikar, 2016) as enunciation to long reproductive lifetime is supportive to population growth. On the other hand differences in standard of life and socio-economic differences results into the diffusion of intra and inter regional disparities (Roy, D. & Mondal, A., 2015). Wide gap in respect to the educational services between the rural and urban areas in the district (Hoque, Anwaruzzaman et al, 2018) has resulted out migration from villages mostly towards Englishbazar accounting to about 16% people. Differential growth was high during 1991-2001 assessment period over the 1981-1991 (Fig. 4) which indicates major dynamics in pattern and high probability of intake-migrants.

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