CHOICE BASED CREDIT SYSTEM
B.A/B.SC GEOGRAPHY (Regular Course) Syllabus

SEM-I						
Paper Code	**Course**	**Credit**	**Credit Distribution (L+T+P)**	**End Semester Marks**	**Internal Marks**	**Total Marks**
GGY-101R	DSC-1A: Physical Geography	6	4+0+2	60(Th)+20(P)	20	100
Paper-102R	DSC-2A	6	4+0+2	80	20	100
Paper-103R	DSC-3A	6	4+0+2	80	20	100
COMM-104HR	AECC-1: English/Hindi/MIL (Communication)	2	2+0+0	40	10	50
Total		**20**	**20**	**280**	**70**	**350**

SEM-II						
Paper Code	**Course**	**Credit**	**Credit Distribution (L+T+P)**	**End Semester Marks**	**Internal Marks**	**Total Marks**
GGY-201R	DSC-1B: General Cartography	6	4+0+2	60(Th)+20(P)	20	100
Paper-202R	DSC-2B	6	4+0+2	80	20	100
Paper-203R	DSC-3B	6	4+0+2	80	20	100
COMM-204HR	AECC-2: Environmental Studies	2	2+0+0	40	10	50
Total		**20**	**20**	**280**	**70**	**350**

SEM-III						
Paper Code	**Course**	**Credit**	**Credit Distribution (L+T+P)**	**End Semester Marks**	**Internal Marks**	**Total Marks**
GGY-301R	DSC-1C: Human Geography	6	4+0+2	60(Th)+20(P)	20	100
Paper-302R	DSC-2C	6	4+0+2	80	20	100
Paper-303R	DSC-3C	6	4+0+2	80	20	100
GGY-304HR	SEC-1: Statistical Methods in Geography	2	2+0+0	40	10	50
Total		**20**	**20**	**280**	**70**	**350**

SEM-IV						
Paper Code	**Course**	**Credit**	**Credit Distribution (L+T+P)**	**End Semester Marks**	**Internal Marks**	**Total Marks**
GGY-401R	DSC-1D: Geography of India	6	4+0+2	60(Th)+20(P)	20	100
Paper-402R	DSC-2D	6	4+0+2	80	20	100
Paper-403R	DSC-3D	6	4+0+2	80	20	100
GGY-404HR	SEC-2: Research Methodology	2	2+0+0	40	10	50
Total		**20**	**20**	**280**	**70**	**350**

SEM-V						
Paper Code	**Course**	**Credit**	**Credit Distribution (L+T+P)**	**End Semester Marks**	**Internal Marks**	**Total Marks**
GGY-501R	DSE-1A: Soil and Bio-Geography	6	4+0+2	60(Th)+20(P)	20	100
GGY-502R	DSE-2A:	6	4+0+2	80	20	100
GGY-503R	GE-1:Disaster Management	6	4+0+2	60(Th)+ 20 (R)	20	100
GGY-504R	SEC-3: Basics of Remote Sensing and GIS (Practical Base)	2	2+0+0	30(Th) + 10(P)	10	50
Total		**20**	**20**	**280**	**70**	**350**

SEM-VI						
Paper Code	**Course**	**Credit**	**Credit Distribution (L+T+P)**	**End Semester Marks**	**Internal Marks**	**Total Marks**
GGY-601R	DSE-1B: Social and Political Geography	6	4+0+2	60(Th)+20(P)	20	100
GGY-602R	DSE-2B:	6	4+0+2	80	20	100
GGY-603R	GE-2: Sustainable Development	6	4+0+2	60 (Th)+20(R)	20	100
GGY-604R	SEC-4: Field Techniques and Surveying (Practical Base)	2	0+0+2	20(P) + 20 (R)	10	50
Total		**20**	**20**	**280**	**70**	**350**

CHOICE BASED CREDIT SYSTEM
B.A/B.SC GEOGRAPHY (Regular Course) Syllabus
BODOLAND UNIVERSITY, KOKRAJHAR-783370

Semester	**Core Course (12)**	**Ability Enhancement Compulsory Course (AECC) (2)**	**Skill Enhancement Course (SEC)(2)**	**Discipline Specific Elective (DSE)(4)**	**Generic Elective (GE)(4)**
I	DSC-1A: Physical Geography DSC-2A DSC-3A	AECC-1: English/Hindi/MIL (Communication)			
II	DSC-1B: General Cartography DSC- 2B DSC-3B	AECC-2: Environmental Studies			
III	DSC -1C: Human Geography DSC-2C: DSC-3C:		SEC-1: Statistical Methods in Geography		
IV	DSC-1D: Geography of India DSC-2D: DSC-3D:		SEC-2: Research Methodology		
V			SEC-3: Basics of Remote Sensing and GIS (Practical Base)	DSE-1A :Soil and Bio-Geography DSE-2A:	GE-1: Physical Geography
VI			SEC-4: Field Techniques and Surveying (Practical Base)	DSE-1B: Social and Political Geography DSE-2B:	GE-2: General Cartography

FIRST SEMESTER

Core Course: DSC-1A: Physical Geography
Total Marks: 100
60(Th) + 20(P) + 20(IA)
Total Credit: 6 (Total Number of Classes: 60)

Unit 1: **Field of Geography (10 class)**

- Nature and scope of Geography, Physical Geography and Human Geography: Nature, Contents and Interrelationship.
- Earth: Chemical Composition and Interior Structure of the Earth, Geological Time scale; Era, period and epoch.

Unit 2: **Basics of Geomorphology (20 class)**

- Types of landform – First order, second order and third order, Forces for landform development - endogenetic and exogenetic, Landform development processes- weathering, erosion, transportation and deposition
- Landform development under different conditions – fluvial, arid and glacial
- Cycle concepts in geomorphology Weathering, Mass Wasting, Cycle of Erosion (Davis and Penck).
- Evolution of Landforms (Erosional and Depositional): Fluvial, Aeolian, Glacial, Karst and Coastal.

Unit 3: **Climatology and Oceanography (15class)**

- Atmosphere: Composition, Structure and Functions
- Elements of Weather: Temperature, Pressure, Wind and Humidity
- Heat Zones, Atmospheric Pressure Belt and Atmospheric Circulation; Mechanism of Monsoon, Jet-stream, El-Nino; Cyclones: Tropical and subtropical
- Koppen's Climatic Classification
- Ocean Basin: Major features of the ocean floor; Coral reefs and atolls: types and factors, coral and volcanic islands;
- Ocean Current and Tides; Ocean currents and their influence.

Unit 4: Practical (15 class)

- Drawing of a representative part from topographical map, such as - Mountain, Plateau, Hills and Ridges, Piedmont, Floodplain, Valley (U-shaped and V-shaped), spurs and their characteristics.
- Relief representation through serial profiles, superimposed profiles, composite profiles and Projected profiles.
- Demarcation of basin and representation of basin relief through profiles, interpretation.
- Drawing and analysis of Average Slope Map by Wentworth's Method
- Drawing and interpretation of rainfall-temperature-humidity graph of tropical, sub-tropical and temperate regions/stations.
- Study of weather condition depicted by Indian Weather maps and prediction of weather conditions for next 48 hours.
- Calculation of average annual rainfall and variability of annual rainfall, and mapping and interpretation thereof.

Books Suggested:

1. Hussain, M., 1989: *Evolution of Geographic Thought*, Rawat Publications, Jaipur
2. Dikshit, R.D., 1997: *Geographical Thoughts: A Contextual History of Ideas*, Printice Hall of India, New Delhi
3. Adhikari, S., 1992: Geographical Thought, Chaitanya Pustak Allahabad
4. Abler, R., Adams, J. and Gould, P.P., 1971: *Spatial Organization: the Geographers' View of the World*, Prentice Hall, Englewood Cliff
5. Hussain, M.: *Human Geography*, Rawat Publications, Jaipur 3
6. Brunhes, J., 1920: *Human Geography*, edited by Isaisah Bowman
7. Hartshorne, R., 1939: *The Nature of Geography*, Rand Mckully, Chicago
8. Knox, P.L., 1975: *Social Well-being: A Spatial Perspective*, Oxford University
9. Smith, David M., 1977: *Human Geography*: A Welfare Approach, Edward Arnold, London
10. Chorley, R.J. and Hagget, P. (eds.) 1967: *Models in Geography*, Methuen, London
11. Hartshorne, R., 1959: *Perspective on the Nature of Geography*, Indians edition, Scientific Publishers, Jodhpur
12. Johnston, R.J. (ed): *The Dictionary of Human Geography*, Oxford, Basil, Blackwell
13. Harvey, D., 1969: *Explanation in Geography*, St. Martin Press, New York
14. Dikshit, R.D., 1994: *The Art and Science of Geography*, Printice Hall of India, New Delhi
15. Barry R. G. and Carleton A. M., 2001: *Synoptic and Dynamic Climatology*, Routledge, UK.
16. Barry R. G. and Corley R. J., 1998: *Atmosphere, Weather and Climate*, Routledge, New York.
17. Critchfield H. J., 1987: *General Climatology*, Prentice-Hall of India, New Delhi
18. Lutgens F. K., Tarbuck E. J. and Tasa D., 2009: *The Atmosphere: An Introduction to Meteorology*, Prentice-Hall, Englewood Cliffs, New Jersey.
19. Oliver J. E. and Hidore J. J., 2002: *Climatology: An Atmospheric Science*, Pearson Education, New Delhi.
20. Trewartha G. T. and Horne L. H., 1980: *An Introduction to Climate*, McGraw-Hill.
21. Lal, D. S. (2006): JalvayuVigyan, Prayag Pustak Bhavan, Allahabad
22. Bloom A. L., 2003: *Geomorphology: A Systematic Analysis of Late Cenozoic Landforms*, Prentice-Hall of India, New Delhi
23. Bridges E. M., 1990: *World Geomorphology*, Cambridge University Press, Cambridge.
24. Christopherson, Robert W., (2011), Geosystems: *An Introduction to Physical Geography*, 8 Ed.,Macmillan Publishing Company
25. Kale V. S. and Gupta A., 2001: *Introduction to Geomorphology*, Orient Longman, Hyderabad.
26. Knighton A. D., 1984: *Fluvial Forms and Processes*, Edward Arnold Publishers, London.
27. Richards K. S., 1982: *Rivers: Form and Processes in Alluvial Channels*, Methuen, London.
28. Selby, M.J., (2005), *Earth's Changing Surface*, Indian Edition, OUP
29. Skinner, Brian J. and Stephen C. Porter (2000), *The Dynamic Earth: An Introduction to physical Geology*, 4th Edition, John Wiley and Sons
30. Thornbury W. D., 1968: *Principles of Geomorphology*, Wiley.
31. Gautam, A (2010): *Bhautik Bhugol*, Rastogi Punlications, Meerut

DSC-2A

DSC-3A

AECC-1: English/Hindi/MIL
(Communication)

SECOND SEMESTER

Core Course: DSC-1B: General Cartography
Total Marks: 100
60(Th) + 20(P) + 20(IA)
Total Credit: 6 (Total Number of Class: 60)

Unit 1: **Field of Cartography (20 class)**

- Nature and scope of Cartography, trend of development and present day relevance of Cartography in Geography, traditional and digital cartography.
- The concept of shape, size, coordinate system, latitude and longitude, direction and distance of earth.

Unit 2: **Fundamental Concepts in Cartography (20 class)**

- Concept of Scale and Application, Map Scale and Types, Scale factor, Conversion of scale, Concept of least count in Vernier Scale.
- Concept of map, map Classification and Types, Thematic maps and their classification, Base map, Principles of Map Design and layout.
- Mapping techniques and generalization principles

Unit 3: **Cartography and Data Representation (10 class)**

- Concept of Geographical data representation through Chorochromatic, Choroschematic, Isopleths and Choropleth maps.
- Concept of spot heights, Bench Mark, Triangulation stations, Contours and their use in Topographical Maps of India.
- Cartogram and Diagrammatic Data Presentation by Line, Bar and Circle
- Point, Line and Areal Data representation through Cartographic Overlays.

Unit 4: Practical: (10 class)

- Graphical Construction of Plain, Comparative and Diagonal Scale.
- Construction of Thematic Maps with the help of physical and socio-economic geographical data.
- Geographical data representation with the help of Bar diagram, pie chart and Block diagram
- Preparation of Isopleth and Choropleth maps with the help of Geographical Data

Books Suggested:

1. Cuff J. D. and Mattson M. T., 1982: *Thematic Maps: Their Design and Production*, Methuen Young Books

2. Dent B. D., Torguson J. S., and Holder T. W., 2008: *Cartography: Thematic Map Design* (6th Edition), Mcgraw-Hill Higher Education

3. Gupta K. K. and Tyagi V. C., 1992: *Working with Maps*, Survey of India, DST, New Delhi.

4. Kraak M.-J. and Ormeling F., 2003: *Cartography: Visualization of Geo-Spatial Data*, Prentice-Hall.

5. Mishra R. P. and Ramesh A., 1989: *Fundamentals of Cartography*, Concept, New Delhi.

6. Sharma J. P., 2010: *Prayogic Bhugol*, Rastogi Publishers, Meerut.

7. Singh R. L. and Singh R. P. B., 1999: *Elements of Practical Geography*, Kalyani Publishers.

8. Slocum T. A., Mcmaster R. B. and Kessler F. C., 2008: *Thematic Cartography and Geovisualization* (3rd Edition), Prentice Hall.

9. Tyner J. A., 2010: *Principles of Map Design*, The Guilford Press.

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

11. Singh, L R & Singh R (1977): Manchitra or Pryaogatamek Bhugol , Central Book, Depot, Allahabad

12. Bhopal Singh R L and Duttta P K (2012) Prayogatama Bhugol, Central Book Depot, Allahabad.

DSC-2B

DSC-3B

AECC-2: Environmental Studies

THIRD SEMESTER

Core Course: DSC-1C: Human Cartography
Total Marks: 100
60(Th) + 20(P) + 20(IA)
Total Credit: 6 (Total Number of Class: 60)

Unit 1: Nature, Scope and Development of Human Geography (15 Class)

- Meaning, Scope, Branches and Approaches of Human Geography;
- Impact of environment on man; Human adaptation to environment: Eskimo, Masai and Bushman; Mode of living and emerging problems in different environments: cold desert, mountain, plain, hot desert, coastal and riverine lands.
- Evolution of man; Classification of races; Physical Characteristics of major racial (Caucasoid, Mongoloid and Negroid)

Unit 2: Population Geography (20 Class)

- Components of population growth; factors influencing distribution and density of population; Concept of population-resource relationship with reference to optimum population, over population and under population
- Definition, types, and causes and consequences of migration
- Malthus theory of population growth; and Demographic Transition Model.

Unit 3: Settlement Geography (10 Class)

- Meaning and scope of settlement geography.
- Factors influencing origin and growth of rural and urban settlements.
- Morphology and functional characteristics of rural and urban settlements.

Unit 4: Practical (15 Class)

- Mapping of major racial groups in the world.
- Mapping of linguistic and religious regions in the world.
- Trend of world population growth, major population density zones in the world
- Age-Sex pyramid
- Mapping Settlement Types and Pattern
- Determination of Spatial Mean and Median Centres of Settlements

Books Suggested:

1. Huntington, E., 1951: Principles of Human Geography, John Wiley & Sons, Inc, New York
2. Hussain, M., 1994: Human Geography, Rawat Publication, New Delhi.
3. Johnston, R.J. et al (eds.): The Dictionary of Human Geography, Basil Blackwell, Oxford.
4. Leong, G.C. and Morgan, G.C., 1992: Human and Economic Geography, Oxford University Press, Oxford
5. Chandna, R.C., 1986: A Geography of Population, Kalyani Publisher, New Delhi
6. Hagget, P., 1972: Geography: A Modern Synthesis, Harper & Row, New York
7. Strahler, A.N. & A.H. Strahler, 1976: Geography and Man's Environment, John Willey, New York
8. Park, C., 1997: The Environment, Routledge, London
9. Singh, S., 1991: Environmental Geography, Pustak Bhawan, Allahabad
10. Chhokas, K.B., Understanding Environment, Sage Publication.
11. Leong, G.C. and Morgan, G.C., 1992: Human and Economic Geography, Oxford University Press, Oxford
12. Chandna, R.C., 1986: A Geography of Population, Kalyani Publishers, New Delhi 18
13. Clarke, J.I., 1972: Population Geography, Pargamon Press, Oxford
14. Singh, R.L. and Sing, K.N. (eds), 1975: Readings in Rural Settlement Geography, BHU, Varanasi
15. Singh., R.Y., 1994: Geography of Settlement, Rawat Publication, Jaipur & Delhi
16. Zelinsky, W., 1966: A Prologue to Population Geography, Printice-Hall, Englewood Cliffs.
17. Hagget, P., 1972: Geography: A Modern Synthesis, Harper & Row, New York
18. Money, D.C., 1972: Patterns of Settlement, Evan Brothers, London

DSC-2C

DSC-3C

Skill Enhancement Course

Skill Enhancement Course: SEC-1: Statistical Methods in Geography
Total Marks: 50
40 (Th) + 10 (IA)
Total Credit: 2 (Total Number of Class: 30)

Unit 1: **Nature of Geographic Data (20 class)**

- Use of Data in Geography, Geographical Data Matrix, Significance of Statistical Methods in Geography; Sources of Data, Scales of Measurement (Nominal, Ordinal, Interval, Ratio).
- Tabulation and Descriptive Statistics their use in Geography: Frequencies, Cross Tabulation, Measures of Central Tendency (Mean, Median and Mode) Measures of Dispersion (Range, Quartile deviation, Deciles and Percentile, Mean Deviation, Standard Deviation and Relative Dispersion)

Unit 2: **Quantitative Expression of Geographic Data (10 class)**

- Use of Sampling Technique in Geography, Method of Sampling (Purposive, Random, Systematic and Stratified)
- Probability and Normal Distribution of Geographic Data
- Correlation and Regression analysis (Karl Pearson and Spearman's Rank method), Regression line and Regression Residuals.

Books Suggested:

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

FOURTH SEMESTER

Core Course: DSC-1D: Geography of India
Total Marks: 100
60 (Th) +20 (P) + 20 (IA)
Total Credit: 6 (Total Number of Class: 60)

Unit 1: Regional Basis of India (20 class)

- Locational entity of India, Strategic location of India,
- Physiographic division of India, Drainage system, Climate, Soil, Natural Vegetation

Unit 2: **Social Basis of India (15 class)**

- Population distribution, growth and Density of India
- Distribution of population by race, caste, religion, language, tribes and their correlates

Unit 3: **Economic Basis of India (15 class)**

- Agriculture: Problems of Indian Agriculture, Agricultural modernization and development in India and Agro-climatic regions of India.
- Industry: Development of major industrial sectors in India, industrial backward regions of India and regionalization of Industries throughout the country.
- Distribution and production pattern of major Industries (Iron and steel, cotton textile, petrochemicals, sugar, paper and cement industries), Industrial policies and industrial trade.
- Transport: Roads and railways, air transport, water and pipe transport

Unit 4: Practical: (10 class)

- Mapping of Physiographic, climatic regions and Agricultural regions of India,
- Mapping of major drainage system of India
- Trend of population growth, population density and religious composition of India
- Preparation of Age-Sex pyramid of population data of India
- Distribution pattern of major industries of India.

Book Suggested:

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. Sdyasuk Galina and P Sengupta (1967): *Economic Regionalisation of India*, Census of India
4. Sharma, T. C. 2003: India - Economic and Commercial Geography. Vikas Publ., New Delhi.
5. Singh R. L., 1971: *India: A Regional Geography*, National Geographical Society of India.
6. Singh, Jagdish 2003: *India - A Comprehensive & Systematic Geography*, Gyanodaya Prakashan, Gorakhpur.
7. Tirtha, Ranjit 2002: *Geography of India*, Rawat Publs., Jaipur & New Delhi.
8. Pathak, C. R. 2003: *Spatial Structure and Processes of Development in India*. Regional Science Assoc., Kolkata.
9. Tiwari, R.C. (2007) Geography of India. Prayag Pustak Bhawan, Allahabad
10. Sharma, T.C. (2013) Economic Geography of India. Rawat Publication, Jaipur.

DSC-2D

DSC-3D

Skill Enhancement Course

Skill Enhancement Course: SEC-2: Research Methodology
Total Marks: 50
40 (Th) + 10 (IA)
Total Credit: 2 (Total Number of Class: 30)

.Unit 1: Fundamentals of Research (15 class)

- Concept of Research Definition of research, identification of research problem – major criteria and considerations, Essentials of formulating research questions and hypothesis
- Key methods and skills in Geography - Literacy (Descriptive /Qualitative), Numeracy (Quantitative) and Graphicacy (Cartographic): Their significance, need and limitations
- Sources of geographic data, data processing, analysis and presentation

Unit 2: Field Work in Geographical Studies (15 class)

- Literature Review and Referencing Systems in research - its needs, functions, significance and limitations;
- Introductory idea on use of theory and model in Geography
- Research and field report writing - Guiding principles, reporting components, techniques

Books Suggested:

1. Burrough, P. A. (1998): Principles of Geographical Information Systems for Land Resources Assessment, Oxford University Press.
2. Burrough P. A. and McDonnell R. A., (2000): Principles of Geographical Information Systems–Spatial Information Systems and Geostatistics, Oxford University Press.
3. Chorley, R. J., Hagget, P. (1979): Integrated Models in Geography, Methuen & Co. Ltd., London.
4. Gonjalez, R. C., Woods, R.E. (2000): Digital Image Processing, Addiso- Wesley Longman (Singapore), Pvt. Ltd, Delhi-92.
5. Hammond, R. and McCullagh, P. (1965): Statistical Methods in Geographical Studies, Oxford University Press.
6. Jensen J. R., 2004: Introductory Digital Image Processing: A Remote Sensing Perspective, Prentice Hall.
7. Jensen, John R. (2011): Remote Sensing of Environment: An Earth Resource Perspective, Pearson Education India, Noida
8. King, L. J., (1969): Statistical Analysis in Geography, Prentice-Hall.
9. Mahmood, A.: Quantitative Methods in Geography, Rajesh Publications., New Delhi.
10. Mathew, J. A., David, H.J., (2008): Geography: A Very Short Introduction, Oxford, New York
11. Pal S. K., (1998): Statistics for Geoscientists, Tata McGraw Hill, New Delhi.

FIFTH SEMESTER

Discipline Specific Elective: DSE-1A: Soil and Biogeography

Total Marks: 100

60(Th)+20(P)+20(IA)

Total Credit: 6 (Total Number of Class: 60)

Unit 1: Nature and Scope of Soil Geography (15 class)

- Definition and Scope of Soil Geography, Soil Formation, Characteristics and Properties, Soil as life supporting system;
- Soil profile (Soil horizon) – their characteristics and significance; Processes and factors of soil formation;

Unit 2: Soil and Land Management (15 class)

- Physical and Chemical properties of soil: Soil texture, Structure and Moiture, Soil colour, pH value, Organic Matter and NPK.
- Processes and Controlling factors of soil erosion, Various measures of soil conservation,
- Principles of soil classification: Genetic School and USDA

Unit 3: Concepts of Biogeography (15 class)

- Definition and scope of biogeography, Concept and Components of Biosphere, vertical and horizontal limits of biosphere;
- Concept of Ecology and Ecosystem, Types of Ecosystem, Trophic Structure, Food Chain and Food Web, Energy flow in Ecosystem.
- Ecological Aspects of Biogeography: Bio-geo-chemical cycles, concepts of biomes, Ecotone and Community.
- Concept of biodiversity, its types and conservational issues, Nature and distribution of biodiversity in N.E. India and Assam; Man as an agent of environmental/ecological change

Unit 4: Practical (15 class)

- Construction and interpretation of soil profile with the data derived from the field (college campus/ river site/ foot hill, etc.)
- Drawing and interpretation of soil map of India/North East India
- Mapping of vegetation of India/north east India, Representation of soil-vegetation relationship along selected cross-section of India and North-East India Biogeographic regions of the world
- Mapping of the national parks and sanctuaries of India with the major species therein.
- Showing location of the megalopolis, and metropolitan and port cities of the world

Book Suggested:

1. Bunting, B. T., 1967: The Geography of Soil, Hutchinson, London.
2. Foth, H. D. and Turk, L. M. 1972: Fundamentals of Soil Science, John Wiley, New York.
3. GovindaRajan, S. V. and Gopala Rao, H. G., 1978: Studies on Soils of India, Vikas, New Delhi.
4. Goudie, Andrew, 1981: The Human Impact, Basil Blackwell, Oxford.
5. Hussain, M. (ed), 1994: Biogeography (Part I&II), Anmol Publications Pvt. Ltd., New Delhi.
6. Newbiggin: Plant and Animal Geography.
7. Pears, N., 1985: Basic Biogeography. 2nd Edition, Longman, London.
8. Robinson, H., 1982: Biogeography, E.L.B.S., Mc Donald & Evans, London.

DSE-2A

GE-1: Physical GeographyTotal Marks: 100

60(Th) + 20(P) + 20(IA)

Total Credit: 6 (Total Number of Classes: 60)

Unit 1: **Field of Geography (10 class)**

- Nature and scope of Geography, Physical Geography and Human Geography: Nature, Contents and Interrelationship.
- Earth: Chemical Composition and Interior Structure of the Earth, Geological Time scale; Era, period and epoch.

Unit 2: **Basics of Geomorphology (20 class)**

- Types of landform – First order, second order and third order, Forces for landform development - endogenetic and exogenetic, Landform development processes- weathering, erosion, transportation and deposition
- Landform development under different conditions – fluvial, arid and glacial
- Cycle concepts in geomorphology Weathering, Mass Wasting, Cycle of Erosion (Davis and Penck).
- Evolution of Landforms (Erosional and Depositional): Fluvial, Aeolian, Glacial, Karst and Coastal.

Unit 3: **Climatology and Oceanography (15class)**

- Atmosphere: Composition, Structure and Functions
- Elements of Weather: Temperature, Pressure, Wind and Humidity
- Heat Zones, Atmospheric Pressure Belt and Atmospheric Circulation; Mechanism of Monsoon, Jet-stream, El-Nino; Cyclones: Tropical and subtropical
- Koppen's Climatic Classification
- Ocean Basin: Major features of the ocean floor; Coral reefs and atolls: types and factors, coral and volcanic islands;
- Ocean Current and Tides; Ocean currents and their influence.

Unit 4: Practical (15 class)

- Drawing of a representative part from topographical map, such as - Mountain, Plateau, Hills and Ridges, Piedmont, Floodplain, Valley (U-shaped and V-shaped), spurs and their characteristics.
- Relief representation through serial profiles, superimposed profiles, composite profiles and Projected profiles.
- Demarcation of basin and representation of basin relief through profiles, interpretation.
- Drawing and analysis of Average Slope Map by Wentworth's Method
- Drawing and interpretation of rainfall-temperature-humidity graph of tropical, sub-tropical and temperate regions/stations.
- Study of weather condition depicted by Indian Weather maps and prediction of weather conditions for next 48 hours.
- Calculation of average annual rainfall and variability of annual rainfall, and mapping and interpretation thereof.

Books Suggested:

32. Hussain, M., 1989: *Evolution of Geographic Thought*, Rawat Publications, Jaipur
33. Dikshit, R.D., 1997: *Geographical Thoughts: A Contextual History of Ideas*, Printice Hall ofIndia, New Delhi
34. Adhikari, S., 1992: Geographical Thought, Chaitanya Pustak Allahabad
35. Abler, R., Adams, J. and Gould, P.P., 1971: *Spatial Organization: the Geographers' View ofthe World*, Prentice Hall, Englewood Cliff
36. Hussain, M.: *Human Geography*, Rawat Publications, Jaipur 3
37. Brunhes, J., 1920: *Human Geography*, edited by Isaisah Bowman
38. Hartshorne, R., 1939: *The Nature of Geography*, Rand Mckully, Chicago
39. Knox, P.L., 1975: *Social Well-being: A Spatial Perspective*, Oxford University
40. Smith, David M., 1977: *Human Geography*: A Welfare Approach, Edward Arnold, London
41. Chorley, R.J. and Hagget, P. (eds.) 1967: *Models in Geography*, Methuen, London
42. Hartshorne, R., 1959: *Perspective on the Nature of Geography*, Indians edition, Scientific Publishers, Jodhpur
43. Johnston, R.J. (ed): *The Dictionary of Human Geography*, Oxford, Basil, Blackwell
44. Harvey, D., 1969: *Explanation in Geography*, St. Martin Press, New York
45. Dikshit, R.D., 1994: *The Art and Science of Geography*, Printice Hall of India, New Delhi
46. Barry R. G. and Carleton A. M., 2001: *Synoptic and Dynamic Climatology*, Routledge, UK.
47. Barry R. G. and Corley R. J., 1998: *Atmosphere, Weather and Climate*, Routledge, New York.
48. Critchfield H. J., 1987: *General Climatology*, Prentice-Hall of India, New Delhi
49. Lutgens F. K., Tarbuck E. J. and Tasa D., 2009: *The Atmosphere: An Introduction to Meteorology*, Prentice-Hall, Englewood Cliffs, New Jersey.
50. Oliver J. E. and Hidore J. J., 2002: *Climatology: An Atmospheric Science*, Pearson Education, New Delhi.
51. Trewartha G. T. and Horne L. H., 1980: *An Introduction to Climate*, McGraw-Hill.
52. Lal, D. S. (2006): JalvayuVigyan, Prayag Pustak Bhavan, Allahabad
53. Bloom A. L., 2003: *Geomorphology: A Systematic Analysis of Late Cenozoic Landforms*, Prentice-Hall of India, New Delhi
54. Bridges E. M., 1990: *World Geomorphology*, Cambridge University Press, Cambridge.
55. Christopherson, Robert W., (2011), Geosystems: *An Introduction to Physical Geography*, 8 Ed.,Macmillan Publishing Company
56. Kale V. S. and Gupta A., 2001: *Introduction to Geomorphology*, Orient Longman, Hyderabad.
57. Knighton A. D., 1984: *Fluvial Forms and Processes*, Edward Arnold Publishers, London.
58. Richards K. S., 1982: *Rivers: Form and Processes in Alluvial Channels*, Methuen, London.
59. Selby, M.J., (2005), *Earth's Changing Surface*, Indian Edition, OUP
60. Skinner, Brian J. and Stephen C. Porter (2000), *The Dynamic Earth: An Introduction to physical Geology*, 4th Edition, John Wiley and Sons
61. Thornbury W. D., 1968: *Principles of Geomorphology*, Wiley.
62. Gautam, A (2010): *Bhautik Bhugol*, Rastogi Punlications, Meerut

Skill Enhancement Course: SEC-3: Basics of Remote Sensing (RS) and Geographic Information System (GIS)

Total Marks: 50
30 (Th) + 10 (Pr) +10 (IA)
Total Credit: 2 (Total Number of Class: 30)

Unit 1: Fundamentals of Remote Sensing and GIS (12 class)

- Remote Sensing and GIS: Definition, Components and Principles, Electro Magnetic Radiation, Interaction with Atmosphere and Earth Surface
- Remote Sensing, Platforms and Types, Global Positioning System (GPS) Principles and application
- Aerial Photography: Types and Geometry of Aerial Photograph, Satellites (Landsat and IRS) and Sensors, Type of resolution.

Unit 2: Geographic Information System (10 class)

- GIS Data Structures: Types (spatial and Non-spatial), Raster and Vector Data Structure
- Elements of Image interpretation and application of Remote Sensing and GIS: Land use/ Land Cover, Urban Sprawl Analysis; Forests Monitoring.

Unit 3: Practical (8 class)

- Geo-Referencing the map/Toposheet, Drawing base map from Satellite imagery/Toposheet,
- Mapping point, line and polygon features, Land use/ Land Cover mapping (Supervised and Un- supervised), Isopleths, Choropleth and Chorochrometic mapping, Proportional mapping,

Books Suggested:

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.

SIXTH SEMESTER

Discipline Specific Elective: DSE-1B: Social and Political Geography
Total Marks: 100
60(Th)+20(P)+20(IA)
Total Credit: 6 (Total Number of Class: 60)

Unit 1: Situating Social Geography (20 Class)

- Origin, Nature and Scope of Social Geography,
- Concept of Social Space: First, Second and third Space,
- Social Categories: Defining Caste, Class, Religion, Ethnicity and Gender and their Spatial Underpinnings.
- Concepts of Social differentiation and integration and social change.

Unit 2: Political Geography and Geopolitics (20 Class)

- Definition and Scope of Political Geography, Geopolitics;
- State, Nation and Nation State – Concept of Nation, State and Nation State, Attributes of State –Frontiers, Borders, Shape, Size, Territory and Sovereignty, Nation Building, Concepts of Lebensraum, Heartland and Rimland, Colonialism, desalinization and Neocolonialism,

Unit 3: Geography of Welfare and Well-being (10 Class)

- Social Geographies of Inclusion and Exclusion, Slums, Gated Communities, Communal Conflicts and Crime.
- Political Geography of Resource Conflicts – Water Sharing Disputes, Disputes and Conflicts Related to Forest Rights and Minerals, issues of land locked states in Asia and Africa.

Unit 4: Practical (10 Class)

- Mapping Frontiers, buffer zone, boundaries and border zones; boundary problems with reference to India and North East India
- Showing distribution of displaced people of India by using cartograms (with reference to Dams) and Special Economic Zones.

Books Suggested:

1. Ahmed A., 1999: *Social Geography*, Rawat Publications.
2. Casino V. J. D., Jr., 2009) *Social Geography: A Critical Introduction*, Wiley Blackwell.
3. Panelli R., 2004: *Social Geographies: From Difference to Action*, Sage.
4. Sen, Jyotirmoy: A text book of Social and Cultural Geography
5. Taher, M 1994: An Introduction to Social Geography, NEIGS
6. Ahmed, A: 1999 Social Geography, Rawat Publications Jaipur & New Delhi
7. Dikshit, R.D.1982: Political Geography – A Contemporary Perspective, Tata McGraw Hill Publishing Co. Ltd, NewDelhi
8. Carlson: Geography and World Politics
9. Taylor, P. J., 1989: Political Geography, Longman, London
10. Sukhuwal, B.J., 1979: Modern Political Geography of India, Sterling, New Delhi
11. Adhikari 1996: Political Geography, Rawat Publications Jaipur & New Delhi

DSE-2B

GE-2: General CartographyTotal Marks: 100

60(Th) + 20(P) + 20(IA)

Total Credit: 6 (Total Number of Class: 60)

Unit 1: **Field of Cartography (20 class)**

- Nature and scope of Cartography, trend of development and present day relevance of Cartography in Geography, traditional and digital cartography.
- The concept of shape, size, coordinate system, latitude and longitude, direction and distance of earth.

Unit 2: **Fundamental Concepts in Cartography (20 class)**

- Concept of Scale and Application, Map Scale and Types, Scale factor, Conversion of scale, Concept of least count in Vernier Scale.
- Concept of map, map Classification and Types, Thematic maps and their classification, Base map, Principles of Map Design and layout.
- Mapping techniques and generalization principles

Unit 3: **Cartography and Data Representation (10 class)**

- Concept of Geographical data representation through Chorochromatic, Choroschematic, Isopleths and Choropleth maps.
- Concept of spot heights, Bench Mark, Triangulation stations, Contours and their use in Topographical Maps of India.
- Cartogram and Diagrammatic Data Presentation by Line, Bar and Circle
- Point, Line and Areal Data representation through Cartographic Overlays.

Unit 4: Practical: (10 class)

- Graphical Construction of Plain, Comparative and Diagonal Scale.
- Construction of Thematic Maps with the help of physical and socio-economic geographical data.
- Geographical data representation with the help of Bar diagram, pie chart and Block diagram
- Preparation of Isopleth and Choropleth maps with the help of Geographical Data

Books Suggested:

13. Cuff J. D. and Mattson M. T., 1982: *Thematic Maps: Their Design and Production*, MethuenYoung Books

14. Dent B. D., Torguson J. S., and Holder T. W., 2008: *Cartography: Thematic Map Design* (6thEdition), Mcgraw-Hill Higher Education

15. Gupta K. K. and Tyagi V. C., 1992: *Working with Maps*, Survey of India, DST, New Delhi.

16. Kraak M.-J. and Ormeling F., 2003: *Cartography: Visualization of Geo-Spatial Data*,Prentice-Hall.

17. Mishra R. P. and Ramesh A., 1989: *Fundamentals of Cartography*, Concept, New Delhi.

18. Sharma J. P., 2010: *Prayogic Bhugol*, Rastogi Publishers, Meerut.

19. Singh R. L. and Singh R. P. B., 1999: *Elements of Practical Geography*, Kalyani Publishers.

20. Slocum T. A., Mcmaster R. B. and Kessler F. C., 2008: *Thematic Cartography andGeovisualization* (3rd Edition), Prentice Hall.

21. Tyner J. A., 2010: *Principles of Map Design*, The Guilford Press.

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

23. Singh, L R & Singh R (1977): Manchitra or Pryaogatamek Bhugol , Central Book, Depot, Allahabad

24. Bhopal Singh R L and Duttta P K (2012) Prayogatama Bhugol, Central Book Depot, Allahabad.

Skill Enhancement Course: SEC-4: Field Techniques and Surveying
Total Marks: 50
20 (P) + 20 (R) +10 (IA)
Total Credit: 2 (Total Number of Class: 30)
Unit 1: **Map Projection (30 class)**

- Definition, need of Map Projection, Principles, Function and Classification of map projection, Choice of Map Projection.
- Graphical Construction of Zenithal group of projection both polar and equatorial case.
- Concept and Principles of Geodetic and Plane Surveying, Principles of triangulation
- Principles and techniques of surveying by Plane Table (Radiation and Intersection Method), Prismatic Compass (Closed Traverse and Open Traverse).
- Principle of Enlargement and Reduction of Maps by Graphical and Instrumental Methods.

Unit 2: Dissertation

- Report on Physical characteristics of the nearby Physiographic features or Socio-Economic characteristics of population groups.

Books Suggested:

1. Campbell, J., 1984: Introductory Cartography, Prentice Hall Inc., Englewood Cliff
2. Misra, R.P. and Ramesh, A., 1995: Fundamentals of Cartography, Concept Publishing Company, New Delhi
3. Robinson, A.H., et al: Elements of Cartography, John Wiley & Sons, New York
4. Raisz, E. : Principles of Cartography, McGraw Hills, London
5. Kenetkar, T.P. and Kulkarni, S.U.: Surveying and Levelling, Vol. I & II, VidyarthiGrithaPrakashan, Pune
6. Kellaway, G.P.: Map Projection, Methuen & Co., London
7. Steers, J.A., 1965: An Introduction to the Study of Map Projection, University of London, London
8. Bygott, J., An Introduction to Map work and Practical Geography 17
9. Talukder, S., 2008: Introduction to Map Projections, Eastern Book House, Guwahati.
10. Mahmood, A., 1999: Statistical Methods in Geographical Studies, Rajesh Publications, New Delhi.
11. Hammond, R. and McCullagh, P. (1965): Quantitative Techniques in Geography, Clarendon Press, Oxford Sarkar, Ashis, Practical Geography: A Systematic Approach, Orient Longman Pvt. Ltd., Kolkata.
12. Elhance, D.N., 1972: Fundamentals of Statistics, KitabMahal, Allahabad
13. Monkhouse, F.J. & Wilkinson, H.R., 1989: Maps & Diagrams, B.I. Publications, New Delhi
14. Gregory, S., 1963: Statistical Methods and Geographers, Longman, London
15. Singh, R. & Singh, R.: Map Work & Practical Geography, Central Book Depot, Allahabad.
16. Sarkar, Ashis, Practical Geography: A Systematic Approach, Orient Longman Pvt. Ltd., Kolkata.

Abbreviation

DSC: Discipline Specific Core
DSE: Discipline Specific Elective
AECC: Ability Enhancement Compulsory Course
SEC: Skill Enhancement Course
GE: Generic Elective
Th: Theory
P: Practical
IA: Internal Assessment
R: Report
L: Lecture
T: Teaching

Mark Distribution

1. Discipline Specific Core Paper **(DSC)** Total: 100
   Th (60) + P (20) + IA (20)

2. Discipline Specific Elective paper **(DSE)** Total: 100
   Th (60) + P (20) + IA (20)

3. Generic Elective Paper **(GE)** Total: 100
   Th (60) + R (20) + IA (20)

4. Skill Enhancement Course Paper **(SEC)** Total: 50
   i. **SEC-1** and **SEC-2**: Th (40) + IA (10)
   ii. **SEC-3**: Th (30) + P(10) + IA (10)
   iii.**SEC-4**: P (30) + R (10) + IA (10)