CURRICULUM FOR
FOUR YEAR UNDERGRADUATE PROGRAMME OF
GEOGRAPHY

AS PER FRAMEWORK OF NEP-2020

Department of Geography
Nagaland University
2023

1. MINIMUM CREDIT REQUIREMENTS TO AWARD DEGREE UNDER EACH CATEGORY

Sl. No.	Broad Category of Course	Minimum Credit Requirement	
		3-year UG	4-year UG
1	Major (Core)	60	80
2	Minor Stream	24	32
3	Multidisciplinary Courses	09	09
4	Ability Enhancement Courses (AEC)	08	08
5	Skill Enhancement Courses (SEC)	09	09
6	Value Added Courses common for all UG	06-08	06-08
7	Summer Internship	02-04	02-04
8	Research Project/ Dissertation	-	12
	Total Credits	120	160

2. COURSE STRUCTURE FOR CURRICULUM AND CREDIT FRAMEWORK FOR UNDER GRADUATE PROGRAMME

SEMESTER-WISE COURSE AND CREDIT DISTRIBUTION OF UNDER GRADUATE PROGRAMME

Semester	Course Categories	Credits	Remark
I	**2 Major Courses [C-1, C-2], (4 + 4)**	8	Core papers of one discipline will be the Minor papers of other discipline
	1 Minor Course (4)	4	
	1 Multidisciplinary Course	3	
	1 Ability Enhancement course (AEC)	2	
	1 Skill Enhancement Course (SEC), (3)	3	
	Total	**20**	
II	**2 Major Courses [C-3, C-4], (4+4)**	8	
	1 Minor Course (4)	4	
	1 Multidisciplinary Course	3	
	1 Ability Enhancement Course (AEC)	2	
	1 Common Value-Added Course	3	
	Total	**20**	
Students exiting the programme after securing 40 credits will be awarded UG Certificate in the relevant Discipline / Subject provided they secure 4 credits in work based vocational courses offered during summer term or internship/ apprenticeship.			
III	**2 Major Courses [C-5, C-6], (4+4)**	8	
	1 Minor Course	4	
	1 Multidisciplinary Course	3	
	1 Ability Enhancement Course (AEC)	2	
	1 Skill Enhance Course (SEC), (3)	3	
	Total	**20**	
IV	**2 Major Courses [C-7, C-8], (4+4)**	8	
	1 Minor Course	4	
	1 Ability Enhancement Course (AEC)	2	
	1 Skill Enhancement Course (SEC)	3	
	1 Common Value-Added Course	3	
	Total	**20**	

Students exiting the programme after securing 80 credits will be awarded UG Diploma in the relevant Discipline / Subject provided they secure additional 4 credits in skill based vocational courses offered during first year or second year summer term.			
Semester	**Course Categories**	**Credits**	**Remark**
V	**3 Major Courses [C-9, C-10, C-11], (4+4+4)**	12	
	1 Minor Course (4)	4	
	1 Internship	2	
	1 Common Value-Added Course	2	
	Total	**20**	
VI	**4 Major Courses [C-12, C-13, C-14, C-15], (4+4+4+4)**	16	
	1 Minor Course (4)	4	
	Total	**20**	
Students who want to undertake 3-year UG programme will be awarded UG Degree in the relevant Discipline / Subject upon securing 120 Credits.			
VII	**4 Major Courses [C-16, C-17, C-18, C-19], (4+4+4+4)**	16	
	1 Minor Course (5)	5	
	Total	**20**	
VIII	1 Minor Course*	4	*It will be finalized once UGC brings out the PG NEP guidelines
	3 Major Courses [C-20, C-21, C-22] * /Research Project	12	
	Total	**20**	
Students will be awarded UG Degree (Honours) with Research in the relevant Discipline /Subject provided they secure 160 credits.			

3. CREDIT DISTRIBUTION

Science	**Remarks**	**Arts (Non- experimental)**	**Remarks**
Total Credit 4	Theory 3 + Practical 1	Total Credit 4	Theory 3 + Tutorial 1
Total Credit 5	Theory 3 + Practical 2	Total Credit 5	Theory 3 + Tutorial 2

GEOGRAPHY COURSE STRUCTURE: CORE PAPERS

Paper Code	Course Code	Title of the paper	Total Credit
FIRST SEMESTER			
C-1		Physical Geography	4
C-2		Human Geography	4
SECOND SEMESTER			
C-3		Geomorphology	4
C-4		Cartographic Techniques	4
THIRD SEMESTER			
C-5		Geography of India	4
C-6		Economic Geography	4
FOURTH SEMESTER			
C-7		Resource geography	4
C-8		Agricultural geography	4
FIFTH SEMESTER			
C- 9		Regional Planning and Development	4
C-10		Political Geography	4
C-11		Environmental Geography	4
SIXTH SEMESTER			
C-12		North east India with special focus on Nagaland	4
C-13		Climatology	4
C-14		Hydrology	4
C-15		Oceanography	4
SEVENTH SEMESTER			
C-16		Statistical methods in Geography	4
C-17		Urban Geography	4
C-18		Disaster management	4
C-19		Research Methodology (common for whole UG)	4
EIGHTH SEMESTER			
C-20	It may be planned once the UGC brings out P.G. NEP guidelines		4
C-21			4
C-22			4

Skill Enhancement Courses (3 Credits Each)
(refer to common pool)

Semester	Course Code	Title of the Paper
FIRST	SEC S1	Thematic maps
THIRD	SEC S3	Remote Sensing
FOURTH	SEC S4	Geographical Information System

The Semester-wise and Broad Course Category-wise Distribution of credits of the Undergraduate Programme:

Semester	Discipline Specific Courses – Core	Minor	Interdisciplinary/ Multidisciplinary courses	Ability Enhancement Courses (language)	Skill Enhancement Courses /Internship /Dissertation	Common Value-Added Courses	Total Credits
1	2	3	4	5	6	7	8
I	C1- Physical Geography C2 -Human Geography	M1	Environmental Science 3 credit	ENG-I (2 credit)	SEC S1 Thematic Maps (common pool)		**20**
II	C3 -Geomorphology C4 -Cartographic Techniques	**M2**	Common pool/ Swayam 3 credit	MIL-I (2 credit)		Soft Skill 3 credit	**20**
	Students exiting the programme after securing 40 credits will be awarded UG Certificate in the relevant Discipline /Subject provided they secure 4 credits in work based vocational courses offered during summer term or internship / Apprenticeship in addition to 6 credits from skill-based courses earned during first and second semester.						*40*
III	C5 - Geography of India C6 - Economic Geography	M3	Understanding Heritage/ Common pool/ Swayam 3 Credit	ENG-2 (2 credit)	SEC S3 Remote Sensing (common pool)		**20**
IV	C7- Resource geography C8 -Agricultural geography	**M4**		MIL-2 (2 credit)	SEC S4 Geographical Information System (common pool)	NCC/NSS/CP (3 credit)	**20**
	Students exiting the programme after securing 80 credits will be awarded UG Diploma in the relevant Discipline /Subject provide d they secure additional 4 credit in skill based vocational courses offered during first year or second year summer term.						*80*
V	C9 -Regional Planning and Development C10 -Political Geography C11- Environmental Geography	M5			(Internship) 2 credit	Work Ethics (2 credit)	**20**
VI	C12- North east India with special focus on Nagaland C13- Climatology C14- Hydrology	**M6**					**20**

	C15- Oceanography						
	Students who want to undertake 3-year UG programme will be awarded UG Degree in the relevant Discipline /Subject upon securing 120 credits						*120*
VII	C16- Statistical Method in Geography C17- Urban Geography C18- Disaster management C19- Research Methodology**	M7			Research dissertation will start		**20**
VIII	C20-*** C21-*** C22-***	**M8**			(Research Project/ Dissertation)		**20**
	Students will be awarded UG Degree (Honours) with Research in the relevant Discipline /Subject provided they secure 160 credits						*160*

****Paper is not included due to common structure.**

***** It may be planned once the UGC brings out P.G. NEP guidelines**

Core Courses

Course Name: Physical Geography
Paper Code: C1
Total Credits: 4

Course Objectives

- This paper introduces students to the field of Physical Geography and its specificities inter-relationship with other branches of Physical and Social Sciences
- It seeks to understand the Origin of the Earth and the dynamic geomorphic processes responsible for development of major landforms of varied types and nature.
- To make the students learn about the origin and types of rocks as well as soil formation and types.

Course outcomes

- After gaining knowledge based on the contents embodied in this paper, the students will
  be able to realize the importance of the nature and scope of Physical Geography.
- The paper be very useful for students preparing for UGC NET-JRF / SLET exam and other competitive exams including civil services

C-1: Theory **Credits 3**

1. Physical geography- nature and scope: Branches of physical Geography: relation of Geography with physical Science (Geology, Meteorology & Hydrology) and Social Sciences (Economics, Political Science, Anthropology and History)
2. Origin of Solar System and earth (Tidal Hypothesis of Jeans and Jeffrey's, Gaseous Theory by Kant, Nebular Hypothesis of Laplace and Big Bang theory)
3. Earth's Crust (Endogenetic and Exogenetic forces)
4. Major landforms (Types and classification of Mountains, Plateau and Plains)
5. Origin and types of rocks; Classification of igneous, sedimentary and Metamorphic rocks

C-1: Practical **Credit 1**

1. Relief representation from the topographical sheet (V-shaped valley, U-shaped valley, waterfall, cliff).
2. Construction of graphical scale (linear, diagonal and comparative), conversion of map scale.
3. Plane Table/theodolite/GPS Survey
4. Viva voce and practical notebook.

Reading List:

1. Bryant, H. Richard (2001): Physical Geography Made Simple, Rupa and Company, New Delhi.
2. Negi, B.S (2000): Physical Geography, Kedar Nath Ram Nath, Meerut
3. Singh, S. (2003): Physical Geography, Physical Geography, Prayag Pustak Bhawan, Allahabad.
4. Sharma, Y.K. (2007): Physical Geography, Lakshmi Narain Agarwal, Agra
5. Thornbury, W.D. (1960): Principles of Geomorphology, John Willey and Sons, New York.

Course Name: Human Geography
Paper Code: C2
Total Credits: 4

Course objectives

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

Course outcomes

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

C-2: Theory **Credits 3**

1. Meaning, nature and scope of Human Geography; Development and branches of Human Geography.
2. Space and Society; Race; Religion and Language.
3. Population: Population Growth and demographic transition theory; Factors influencing distribution of population; density of population.
4. Migration: Factors influencing migration; types of migration; consequences of migration.
5. Settlements: Geographical factors influencing human settlement. Origin and growth of Rural and Urban settlements. Rural Settlements: Types and pattern; Urban Settlements: Morphology and functional classification.

C-2: Practical **Credit 1**

1. Representation of population data by point (Dot and Proportionate Circles).
2. Graphical representation and analysis- Age-Sex pyramids.
3. Chain and tape Survey
4. Viva voce and practical note book.

Reading List

1. Chandna, R.C. (2010) Population Geography, Kalyani Publisher.
2. Hussain,Majid, N (2018) Human Geography, Rawat Publications, Jaipur
3. Hassan, M.I. (2005) Population Geography, Rawat Publications, Jaipur
4. Daniel, P.A. and Hopkinson, M.F. (1989). The Geography of Settlement, Oliver & Boyd, London.
5. Johnston R; Gregory D, Pratt G. et.al. (2008). The Dictionary of Human Geography, Blackwell Publication.

Course name: Geomorphology
Paper Code- C3
Total Credit: 4

Course objectives

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

Course outcomes

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

C-3: Theory **Credits 3**

1. Geomorphology– Nature and scope; Development of Geomorphology- Geomorphological school in USA, Europe and India.
2. Earth's interior; Wegener's theory of Continental Drift; Plate Tectonics.
3. Geomorphic Processes- Weathering, Mass Wasting; Drainage patterns and types.
4. Cycle of Erosion (Davis and Penck)
5. Evolution of Landforms (Erosional and Depositional)- Fluvial, Karst, Aeolian, Glacial, and Coastal.

C-3 Practical **Credit 1**

1. Interpretation of Topographical Maps.
2. Preparation of profile (serial, superimposed, projected and composite).
3. Preparation of Slope Map/ Relative Relief Map using Wentworth's method and Smith's method.
4. Viva voce and practical note book.

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. Selby, M.J., (2005), Earth's Changing Surface, Indian Edition, OUP
7. Thornbury W. D., 1968: Principles of Geomorphology, Wiley.

Course Name: Cartographic Techniques
Paper Code: C4
Total Credits: 4

Course objectives

- Understanding the importance of various cartographic techniques in geographical study.
- General understanding of map scale and map content for topographical map interpretation.
- Acquaintance of different cartographic techniques for measurement and representation of various facets of topography or terrain condition of any area.

Course outcomes

• Understanding the importance of various cartographic techniques in geographical study.

• General understanding of map scale and map content for topographical map interpretation.

• Acquaintance of different cartographic techniques for measurement and representation of various facets of topography or terrain condition of any area.

C-4 Theory **Credits 3**

1. Cartography – Meaning, Scope and Branches of Cartography.
2. Development of cartography- Ancient period, Medieval period, Early Modern period and Recent period
3. Map Scales– Concept, types of scales and their conversion; representation of point, line and area in maps.
4. Study of Topographical Maps: Topographical map content and numbering system, general interpretation of toposheets in respect of physical and cultural details.
5. Map Projections– Concept of Map Projection, Classification of Map Projections and basics properties and uses.

C-4 Practical **Credit 1**

1. Conversion of map scale.
2. Construction of graticules of Cylindrical Equal-area projection, Polar Orthographic projection along with their properties, uses and limitations.
3. Contouring by Theodolite or Dumpy Level.
4. Viva voce and practical note book.

Reading List

1. Gupta K.K. and Tyagi, V.C., 1992: Working with Map, Survey of India, DST, New Delhi.
2. Mishra R.P. and Ramesh, A., 1989: Fundamentals of Cartography, Concept, New Delhi.
3. Rhind D. W. and Taylor D. R. F., (eds.), 1989: Cartography: Past, Present and Future, Elsevier, International Cartographic Association.
4. Singh R.L. and Singh R.P.B., 1999: Elements of Practical Geography, Kalyani Publishers.
5. Sarkar, A. (2015) Practical geography: A systematic approach. Orient Black Swan

Course Name: Geography of India

Paper Code: C5
Total Credits: 4

Course objectives

- This paper is a core paper that intends to introduce students to the India as a geographical entity.
- It seeks to develop new insights among students on the relevance of geographical studies and India's con temporary geographical issues.

Course outcomes

- The paper will be useful for students in developing perspectives on Indian geography and its systematic study.
- The paper will be useful for students preparing for UGC NET/SLET exams and other competitive exams including the civil services

C-6: Theory **Credits 3**

a. Physical: Physiographic Divisions, soil and vegetation, climate
b. Population: Factors influencing spatial distribution; density and growth.
c. Social: Distribution of population by religion and language.
d. Economic: Mineral and power resources-distribution and utilization of iron ore,coal, petroleum; Agricultural- production and distribution of rice and wheat.
e. Transport: Roads, railways and air transport.

C-6 Practical **Credits 1**

1. Monthly temperature and rainfall graphs of five selected stations from differentphysiographic regions of India.
2. Representation of geographical data using Ergograph.
3. Representation of population data using age sex pyramid.
4. Viva voce and practical note book.

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, NewDelhi.
3. Sdyasuk Galina and P. Sengupta (1967): Economic Regionalisation of India, Census ofIndia
4. Sharma, T.C. 2003: India- Economic and Commercial Geography. Vikas Publ., NewDelhi.
5. Singh R. L., 1971: India: A Regional Geography, National Geographical Society ofIndia.
6. Tirtha, Ranjit 2002: Geography of India, Rawat Publs., 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

Course name: Economic Geography
Paper Code- C6
Total Credits: 4

Course objectives

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

Course outcomes

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

C-5 Theory **Credits 3**

1. Introduction: Concept and classification of economic activity; Theories-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),
4. Tertiary Activities: Transport and communication- air, water and land transport,
5. Bases of International trade; major trading blocs-EU and ASEAN.

C-5 Practical **Credit 1**

1. Representation of economic data by graph (line, bar,).
2. Representation of economic data by statistical diagrams (pie and block pile diagram).
3. Representation of economic data by distribution maps (choropleth and isopleth)
4. Viva voce and practical note book.

Reading List

1. Alexander J. W., 1963: Economic Geography, Prentice-Hall Inc., Englewood Cliffs,New Jersey.
2. Coe N. M., Kelly P.F. and Yeung H.W., 2007: Economic Geography: A ContemporaryIntroduction, 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 ofRegins 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. Mahmood A., 1977: Statistical Methods in Geographical Studies, Concept.
9. Pal S. K., 1998: Statistics for Geoscientists, Tata McGraw Hill, New Delhi.

Course Name: Resource Geography

Paper Code: C7
Total Credits: 4

Course objectives

- This theory course basically deals with concept of resource and its classification, and the distribution, utilization and management of land, water, forest and energy resources.
- It also focuses on the natural resource base and its problems of conservation and management.
- It also provides basic idea about sustainable development of resources.

Course outcomes

- Understanding the basic concept of resource and its various types and their utilities
- Acquiring basic information about potentials and management of resources like land, water, forest and power in global context.
- Understanding the prevailing natural resource potentials and problems of management.

C-7: Theory **Credits 3**

1. Definition, Nature and Scope of Resource Geography: Types of resources
2. Distribution, Utilization, Problems and Management of Mineral Resources (Coal,Petroleum) and Water Resources.
3. Distribution, Utilization, Problems and Management of Forests and Energy Resources
4. Issues Related to Human resources: Social and Demographic issues; Carryingcapacity of the land.
5. Conservation of natural resources and Sustainable Resource Development

C-7: Practical **Credits 1**

1. Satellite imagery interpretation- Forest cover, Water bodies.
2. Satellite imagery interpretation- Settlements.
3. Representation of Human Development Index in India using choropleth method.
4. Viva voce and practical notebook.

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, New York.
2. 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.
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.

Course Name: Agricultural Geography
Paper Code: C8
Total Credits: 4

Course objectives

- This paper introduces students to the field of agricultural geography and itsspecificities
- It seeks to develop new insights among students on the relevance of agriculture andallied activities shape the economy and geography of an area, region, country or the globe.

Course outcomes

- The paper will be useful for students in developing ideas on how geographical factors tangent on agricultural activities and how geographers seek toaddress issues of agricultural development and agricultural disparities.
- It will build skills for students seeking to enrol in a research programmeand/or provide openings for them with agricultural /rural planning agencies

C-8: Theory **Credits 3**

1. Introduction, nature and scope; definition and classification of land use/land cover.
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 AgriculturalLand use model (Von Thunen, modification and relevance).
5. Agricultural Revolutions in India: Green, White, Blue, Pink

C-8: Practical **Credits 1**

1. Preparation and interpretation of crop calendar using Ergograph.
2. Spatial variations in North East India with Pie diagram.
3. Mapping of spatial pattern of Intensity of Cropping in North East India.
4. Viva voce and practical notebook

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, BelhavenPress, London.
3. Burger, A., 1994: Agriculture of the World, Aldershot, Avebury.
4. Ilbery B. W., 1985: Agricultural Geography: A Social and Economic Analysis,Oxford University Press.
5. Shafi, M., 2006: Agricultural Geography, Doring Kindersley India Pvt. Ltd., NewDelhi

Course Name: Regional Planning and Development

Paper Code: C9

Total Credits: 4

Course objectives

• This paper intends to introduce students to the rationale underlying the relevance of balanced regional development and spatial inequalities in geography

• It seeks to develop new insights among students on the issue of development and disparities among geographical regions

Course outcomes

• The paper will be useful for students in developing ideas on disparities within and between countries and their fallout.

• The paper will help provide theoretical insights and perspectives to students if they wish to pursue a research program in future.

• The paper will be very useful for students preparing for UGC NET-JRF / SLET exam and other competitive exams including civil services

C-9: Theory **Credits 3**

1. Region: Concept, types and delineation of planning region.
2. Regional planning: Evolution and types; Objectives and principles of Regional Planning.
3. Regional Planning in India: Macro, meso and micro level planning; Local level planning and Panchayati Raj (GPDP); Participatory approach in planning; NITI Aayog.
4. Concept of Development and Regional Disparity, Concept of sustainable development, Measuring development: Indicators (Economic, Social and Environmental); Human development.
5. Planning regions of India with special reference to North-East India

C-9: Practical **Credit 1**

1. Preparation of flow cartogram to show volume of inter-state movement of different commodities in India/NE India.
2. Thematic maps- Delineation of functional regions.
3. 3. Viva voce and practical note book

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.

Course Name: Political Geography

Paper Code: C10

Total Credits: 4

Course objectives

- This paper seeks to introduce students to the geographical aspects behindpolitical phenomena
- It seeks to develop new insights among students on the relevance of political geographical studies in a changing global scenario.

Course outcomes

- The paper remains useful for students in developing ideas on geopolitics and allied phenomena and will aid students that may pursue a research programmes.
- The paper will be useful for students preparing for UGC NET/SLET exams and other competitive exams including the civil services.

C-10: Theory **Credits 3**

1. Introduction: Concepts, Nature and Scope.
2. Concept of Nation and State; Attributes of State– Shape, Size, Territory and Sovereignty; Frontiers and Boundaries;
3. Development of Geopolitics, Concept of Organic state; Global strategic models (Heartland and Mahan's Sea power concept)
4. Electoral Geography – Geography of Voting, Geographic Influences on voting pattern, Geography of Representation, Gerrymandering.
5. Politics of Displacement; Issues of relief, compensation and rehabilitation with reference to Dams.

C-10: Practical **Credit 1**

1. Assess voting pattern of Nagaland (at least two terms) using graphical/ sphere method
2. Preparation of comparative map to show the spatial distribution of religion/ gender in India.
3. Enlargement and Reduction of Maps by graphical method.
4. Viva voce and practical notebook.

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. Gallaher C., et al, 2009: Key Concepts in Political Geography, Sage Publications.
5. Mathur H M and M M Cernea (eds.) Development, Displacement and Resettlement – Focus on Asian Experience, Vikas, Delhi
6. Taylor P. and Flint C., 2000: Political Geography, Pearson Education.
7. Verma M K (2004): Development, Displacement and Resettlement, Rawat Publications, Delhi

Course Name: Environmental Geography

Paper Code: C11
Total Credits: 4

Course objectives

- This paper intends to introduce students to geography and environment interface.
- It seeks to develop new insights among students on the relevance of environmental studies from a spatial perspective.
- The paper will enable the students to understand the various facets of environment, its degradation as well as management.
- To provide understanding and awareness of Environmental issues at Global and regional level

Course outcomes

- The paper will be useful for students in developing ideas on environmental issuesthat geographers usually address.
- The paper will be useful for students preparing for UGC NET/SLET exams andother competitive exams including the civil services.

C-11: Theory **Credits 3**

1. Environmental Geography – Concept, Scope and Significance
2. Human-Environment Relationships – Historical Progression, Adaptation indifferentBiomes.
3. Eco-system: concept, types and components, structure and functions; Ecology–Concept and principles.
4. Major Global Environmental Problems: Pollution, Deforestation, Desertification,GlobalWarming, Bio-Depletion
5. Environmental Programmes and Policies – Global, National and Local

C-11: Practical **Credit 1**

1. Quality assessment of soil (Organic matter and NPK) or water (pH and TotalDissolved Solids) using field kit.

(OR)

2. Project on environmental problems of North East India (select any one state).

Reading List

1. Chandna, R. C., 2002: Environmental Geography, Kalyani, Ludhiana.
2. Singh, R.B. (Eds.) (2009) Biogeography and Biodiversity. Rawat Publication, Jaipur
3. MoEF, 2006: National Environmental Policy-2006, Ministry of Environment and Forests, Government of India.
4. Odum, E. P. et al, 2005: Fundamentals of Ecology, Ceneage Learning India.
5. Singh S., 1997: Environmental Geography, Prayag Pustak Bhawan. Allahabad.
6. 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

Course Name: North East India with Special Focus on Nagaland

Paper Code: C12
Total Credits: 4

Course objectives

- This paper that intends to introduce students to North East India as a geographical entity.
- To understand the geographical setting of North East India and Nagaland and to analyze the regions potentially for sustainable development

Course outcomes

- The paper will be useful for students in developing perspectives on geography of North East India and its systematic study.
- The paper will be useful for students preparing for UGC NET/SLET exams and other competitive exams including the civil services.

C-12: Theory **Credits 3**

1. North East India: Physical characteristics: Physiography, Drainage, Climate, Soil and Natural vegetation
2. Population of North East India: Growth, Distribution and Density, Age- Sex Composition, Rural-Urban Composition
3. Economy- Classification and types, Problems and Prospects (Agriculture, Industries, transport and Communication)
4. Nagaland: Physiography and Natural Vegetation; Biodiversity and its conservation issues.
5. Nagaland: Demographic characteristics- Population Growth, Distribution and Density, Age Sex Composition.

C-12: Practical **Credits 1**

1. Trend of population growth and growth rates in N.E. India/Nagaland since 1901 using Census of India data
2. Choropleth mapping to show density of population in Nagaland.
3. Types of Cartograms- Isochronic and Trafficflow.
4. Viva voce and practical notebook.

Reading List

1. Taher, M. and Ahmed, P. (Revised Edition, 2014): Geography of North East India, Mani Manik Prakash, Guwahati
2. Bhattacharyya, N.N. (2005): North East India: A Systematic Geography, Rajesh Pub. New Delhi.
3. Gopal Krishnan, R. Geography of North East India.
4. Gopal Krishnan, R. (1991): North East India: Land, People and Economy, Vikash Publishing House, New Delhi.
5. Sebu, Sonyhulo (2013): Geography of Nagaland, Spectrum Publications Guwahati, Delhi.
6. Singh, S. (1994): Agricultural Development in North East India: A Regional Analysis, Kaushal Publications, Shillong.

Course Name: Climatology
Paper Code:C13
Total Credits: 4

Learning Outcomes

- This paper intends to introduce students to the rationale underlying climatological studies in geography
- It seeks to develop new insights among students on the relevance of climatic variable strengthening on climate change.

Course outcome

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

Theory Credits 3

1. Definition and significance of Climatology; Composition and Structure of Atmosphere
2. Insolation and Heat Budget; horizontal and vertical distribution of temperature.
3. Atmospheric Pressure- Pressure belts; Types of winds.
4. Airmasses- meaning and characteristics; Fronts (formation, classification and types); cyclones (temperate and tropical)
5. Classification of world climate (Koppen, Thornthwaite); Role and response of manin climate change.

Practical Credits 1

1. Handling and use of weather instruments.
2. Interpretation of weather map of India.
3. Construction and interpretation of hythergraph and climograph.
4. Viva voce and practical note book.

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, NewYork.
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.

Course Name: Hydrology
Paper Code: C14
Total Credits: 4

Course objectives

- Understand the basic components of hydrological cycle and comprehend practices ofintegrated watershed management.
- Evaluate the water balancing and river basin and water disputes.
- Study the soil as a basic resource, focusing its distribution, problems and management.

C-14: Theory **Credits 3**

1. Hydrological Cycle: Systems approach in hydrology, human impact on the hydrologicalcycle; Precipitation, interception, evaporation, evapo-transpiration, infiltration, ground- water, runoff and overland flow;
2. Water Balance: input and output; water balance; floods and droughts; Integrated water resource management.
3. River Basin: Characteristics and problems of river basins, basin surface run-off, and measurement of river discharge. Watershed management
4. River Water Dispute; River linkages; Case studies
5. Application of remotes sensing and GIS in monitoring and studying water resource/ water bodies.

C-14: Practical **Credit 1**

1. Cross section profiling of river banks, mapping of drainage
2. Thematic mapping: River water dispute area in India
3. Calculation of water balance
4. Viva voce and practical notebook.

References:

1. Andrew. D. ward, and Stanley, Trimble., (2004): Environmental Hydrology, 2nd edition, Lewis Publishers, CRC Press.
2. Fetter, C.W. (2005):Applied Hydrogeology, CBS Publishers & Distributors, New Delhi.
3. Reddy, K. Ramamohan, Venkateswara Rao,B, Sarala, C., (2014):Hydrology and Watershed Management, Allied Publishers.
4. Karanth, K.R., (1988): Ground Water: Exploration, Assessment and Development,
5. Tata- McGraw Hill, New Delhi.
6. Ramaswamy, C., (1985): Review of floods in India during the past 75 years: A Perspective, Indian National Science Academy, New Delhi.
7. Rao, K.L., (1982): India's Water Wealth, 2nd edition, Orient Longman, Delhi.
8. 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.
9. Singh, Vijay P., (1995): Environmental Hydrology. Kluwar Academic Publications, The Netherlands.

Course Name: Oceanography

Paper Code: C15

Total Credits: 5

Course objectives

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

Course outcomes

- The students will learn the dynamic processes associated with the oceans and alsothe importance and values of the ocean resources.

C- 15: Theory **Credits 3**

1. Meaning, scope, branches and growth of oceanography; oceanography as a branch of science and geography.
2. Surface configuration of Ocean Floor; Oceanic Movements – Waves, Currents andTides.
3. Ocean Salinity and Temperature – Distribution and Determinants.
4. Coral Reef- Theories, types of coral reefs, Factors affecting formation of Coral Reefs.
5. Types & Classification of Marine Deposits.

C- 15: Practical **Credits 1**

1. Construction and interpretation of Hypsometric and Bathymetric curve.
2. Mapping of ocean mineral resources
3. Interpretation and mapping of ocean currents (Kuroshio, Labrador etc) from satellite imageries
4. Viva voce and practical note book.

Reading List

1. Anikouchine W. A. and Sternberg R. W., 1973: The World Oceans: An Introduction toOceanography, Prentice-Hall.
2. Garrison T., 1998: Oceanography, Wordsworth Company, Belmont.
3. Kershaw S., 2000: Oceanography: An Earth Science Perspective, Stanley Thornes,UK.
4. Pinet P. R., 2008: Invitation to Oceanography (Fifth Edition), Jones and Barlett Publishers, USA, UK and Canada.
5. Sharma R. C. and Vatal M., 1980: Oceanography for Geographers, Chaitanya Publishing House, Allahabad.
6. Sverdrup K. A. and Armbrust, E. V., 2008: An Introduction to the World Ocean, McGrawHill, Boston.
7. Singh, M., Singh, R.B. and Hassan, M.I. (Eds.) (2014) Landscape ecology and water management. Proceedings of IGU Rohtak Conference, Volume 2. Advancesin Geographical and Environmental Studies, Springer.
8. Wolcott, H. 1995. The Art of Fieldwork. Alta Mira Press, Walnut Creek, CA.

Course Name: Statistical Methods in Geography

Paper Code: C16

Total Credits: 4

Course objectives

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

C-16: Theory **Credits 3**

1. Importance and significance of statistics in Geography
2. Sources of Geographical data for statistical analysis
3. Sampling: Need and types; Significance and methods of random sampling.
4. Theoretical distribution: Frequency, Cumulative frequency, normal and probability.
5. Measures of dispersion- range, mean deviation, standard deviation, coefficient of variation.

C-16: Practical **Credits 1**

1. Measures of Central Tendency (Mean, Median and Mode).
2. Measures of Dispersion (Quartile deviation); Time series analysis of Temporal data.
3. Correlation (Karl Pearson method) and regression analysis.
4. Viva voce and practical note book

References:

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. Gragory,S., :1963: Statistical
4. Hammond P. and McCullagh P. S., 1978: Quantitative Techniques in Geography: An Introduction, Oxford University Press.
5. King L. S., 1969: Statistical Analysis in Geography, Prentice-Hall.
6. Mahmood A., 1977: Statistical Methods in Geographical Studies, Concept.

Course Name: Urban Geography

Paper Code: C17

Total Credits: 4

Course objectives

- This paper introduces students to the field of urban geography and its specificities
- It seeks to develop new insights among students on the relevance of an urban economy and geography and associated problems in a rapidly urbanizing world.

Course outcomes

- The paper will be useful for students in developing ideas on how geographical factors organize urban spaces and how geographers seek to address city specific problems and issues.
- It will build skills for students seeking to enrol in a research programmeand/or provide openings for them with urban/city planning agencies.

C-17: Theory Credits 3

1. Urban geography: Introduction, nature and scope.
2. Patterns of Urbanization in developed and developing countries.
3. Functional classification of towns; Models in Urban studies (Concentric Zone Model, Multiple Nuclei model)
4. Urban Issues: problems of housing, slums, civic amenities (water and transport)
5. Case studies of Delhi and Chandigarh with reference to Land use and Urban Issues.

C-17: Practical Credits 1

1. Map showing distribution of class I and II urban centres in NE India by using proportionate sphere method.
2. Calculation of distribution pattern of urban settlements in a District/State of N.E. India using Nearest Neighbour Analysis.
3. Choropleth map showing spatial pattern of level of urbanization in N.E.India.
4. Viva voce and practical notebook.

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. Ramachandran R (1989): Urbanisation and Urban Systems of India, Oxford University Press, New Delhi
6. Ramachandran, R., 1992: The Study of Urbanisation, Oxford University Press, Delhi
7. 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.
8. Singh, R.B. (Ed.) (2015) Urban development, challenges, risks andresilience in Asian megacities Advances in Geographical and Environmental Studies, Springer

Course Name: Disaster Management
Paper Code: C18
Total Credits: 4

Course objectives

- To impart knowledge on different types of disasters to the students
- To provide practical knowledge in the field on the causes and impacts of disasters occurring in time and over space.
- To make the students learn about the disaster-specific management strategies to be adopted to reduce loss and damages.

Course outcomes

- The students will experience ground reality of destructive damage of disasters inthe field.
- The students with their experience may extend all possible help and co-operationto the victims as well as authorities engaged in disaster management.
- The students will gain practical experience in the entire process of disaster management through their project work assigned on a specific problem.

C-18 (a): Theory **Credits 3**

1. Disaster –definition and concepts: hazards disaster-risk and vulnerability.
2. Classification of Disaster: Manmade and Natural Disasters.
3. Disasters in India – Flood, landslide, earthquake and cyclone (causes, impact distribution and mapping).
4. Human induced disaster: Fire hazard, chemical, industrial accidents.
5. Responses and mitigation to disaster: Mitigation and preparedness, NDMA and NDIM; Indigenous Knowledge and Community Based Disaster management; Do's and Don'ts During and Post Disasters.

C-18 (a): Practical **Credits 1**

A Project Report based on any one of the following-

1. Floods
2. Cyclone and Hailstorms
3. Earthquake
4. Landslides
5. Human Induced Disasters: Fire Hazards, Chemical, Industrial accidents

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 excluding figures, tables, photographs, maps, references and appendices.
3. One typed copy of the report on A 4 size paper should be submitted.

Reading List

1. Kapur, A. (2010) Vulnerable India: A Geographical Study of Disasters, Sage Publication, New Delhi.
2. Modh, S. (2010) Managing Natural Disaster: Hydrological, Marine and Geological Disasters, Macmillan, Delhi.
3. Singh, R. B. (ed.), (2006) Natural Hazards and Disaster Management: Vulnerability and

Mitigation, Rawat Publications, New Delhi.
4. Stoltman, J.P. et al. (2004) International Perspectives on Natural Disasters, Kluwer Academic Publications. Dordrecht.
5. Singh Jagbir (2007) “Disaster Management Future Challenges and Oppurtunities”, 2007. Publisher- I.K. International Pvt. Ltd. S-25, Green Park Extension, Uphaar Cinema Market, New Delhi, India (www.ikbooks.com).

Skill Enhancement Course (SEC)

Course Name: Thematic Maps
Paper Code:S1
Total Credits: 3

Course outcomes

- General understanding of map characteristics and map design.
- Understanding the techniques of preparing different thematic maps

Course content

1. Maps – Classification and Types; Principles of Map Design.
2. Diagrammatic Data Presentation – Line, Bar and Circle.
3. Thematic Mapping Techniques – Properties, Uses and Limitations; Areal Data -- Choropleth, Dot, Proportional Circles; Point Data – Isopleths.
4. Cartographic Overlays – Point, Line and Areal Data.

Reading list

1. Singh, R. L, and Duttta, P. K., (2012): *Prayogatama Bhugol*, Central Book Depot, Allahabad
2. Cuff, J. D. and Mattson, M. T., (1982): *Thematic Maps: Their Design and Production*, Methuen Young Books
3. Dent, B. D., Torguson, J. S., and Holder, T. W., (2008): *Cartography: Thematic Map Design* (6th Edition), McGraw Hill Higher Education
4. Gupta, K. K. and Tyagi, V. C., (1992): *Working with Maps*, Survey of India, DST, New Delhi.
5. Kraak, M.J. and Ormeling, F., (2003): *Cartography: Visualization of Geo-Spatial Data*, Prentice-Hall.

Course Name: Remote Sensing

Paper Code: S3

Total Credits: 3

Course outcomes

- This paper intends to introduce students to the interface of Remote Sensing.
- It seeks to develop new insights among students on the relevance of geospatialstudies within the field of geography.

Course outcomes

- The paper remains useful for students in developing skills in spatial data analysis ifthey wish to pursue a research programme.
- The students will be equipped with the application of remote sensing in various fields.

Course content

1. Remote Sensing: Definition, Development; Platforms and Types
2. Aerial Photography and Satellite Remote Sensing: Principles, Types and Geometry of Aerial Photograph; EMR Interaction with Atmosphere and Earth Surface; Satellites – geostationary and remote sensing (Landsat and IRS) and Sensors, Resolution (spatial and temporal).
3. Introduction to Image Processing and Data Analysis: Geo-Referencing; Editing and Output.
4. Application of Remote Sensing in Forests Monitoring, Water Resources and Natural hazards.

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).

Course Name: Geographical Information system

Paper Code: S4

Total Credits: 3

Course objectives

- This paper intends to introduce students to the interface of Geo-technological science and application.
- It seeks to develop new insights among students on the relevance of geospatial studies within the field of geography.

Course outcomes

- The paper remains useful for students in developing skills in spatial data analysis ifthey wish to pursue a research programme.
- The students will be equipped with the application of GIS in various fields.

Course content

1. GIS Data Structures: Types (spatial and Non-spatial)
2. Raster and Vector Data Structure.
3. Functions in GIS- Overlay function, rubber sheeting, big data .
4. Interpretation and Application of GIS: Land use/ Land Cover, Urban Sprawl Analysis, crime study.

Reading list

1. Anji Reddy, M. (2008): Textbook of Remote Sensing and Geographic Information System, B.S. Publication, Hyderabad
2. Nag P. and Kudra, M., 1998: Digital Remote Sensing, Concept, New Delhi.
3. Rees W.G., 2001: Physical Principles of Remote Sensing, Cambridge University Press.
4. Singh R. B. and Murai S., 1998: Space-informatics for Sustainable Development, Oxford and IBH Pub.
5. Campbell, J. B., (2007): Introduction to Remote Sensing, Guildford Press.