ASSAM UNIVERSITY

UG (BA/BSc) SYLLABUS

UNDER CHOICE BASED CREDIT SYSTEM

GEOGRAPHY (HONOURS AND GENERAL)

Course Structure
Details of courses for B.Sc. (Honors) Geography

Course	*Credits	
	Theory+ Practical	Theory+ Tutorial
I. Core Course		
Core Course Theory **(14 Papers)**	14X4= 56	14X5=70
Core Course Practical / Tutorial* **(14 Papers)**	14X2=28	14X1=14
II. Elective Course		
A.1. Discipline Specific Elective **(4 Papers)**	4X4=16	4X5=20
A.2. Discipline Specific Elective Practical/Tutorial* **(4 Papers)**	4 X 2=8	4X1=4
B.1. Generic Elective **(4 Papers)** to be chosen from other discipline	4X4=16	4X5=20
B.2. Generic Elective Practical/ Tutorial* **(4Papers)**	4 X 2=8	4X1=4
III. Ability Enhancement Courses		
A.1. Ability Enhancement Compulsory **(2 Papers)**		
Environmental Science	1 X 4=4	1 X 4=4
English/MIL Communication	1 X 4=4	1 X 4=4
A.2. Ability Enhancement Elective (Skill Based) **(2 Papers)**	2 X 4=8	2 X 4=8
Total credit	148	148

- Each credit is equivalent to 1 hour of activity per week

SCHEME FOR CHOICE BASED CREDIT SYSTEM IN
B. Sc. Honours (Geography)

	CORE COURSE (14)	Ability Enhancement Compulsory Course (AECC) (2)	Ability Enhancement Elective Course (AEEC) (2) (Skill Based)	Elective: Discipline Specific DSE (4)	Elective: Generic (GE) 4 To be taken from other discipline
I	GEOGRAPHY-C-101	Environmental Science			GE-1
	GEOGRAPHY -C-102				
II	GEOGRAPHY -C-201	English/Hindi/MIL Communication			GE-2
	GEOGRAPHY -C-202				
III	GEOGRAPHY -C-301		GEOGRAPHY -SEC-301		GE-3
	GEOGRAPHY -C-302				
	GEOGRAPHY -C-303				
IV	GEOGRAPHY -C-401		GEOGRAPHY -SEC-401		GE-4
	GEOGRAPHY -C-402				
	GEOGRAPHY -C-403				
V	GEOGRAPHY -C-501			GEOGRAPHY -DSE-501	
	GEOGRAPHY -C-502			GEOGRAPHY -DSE -502	
VI	GEOGRAPHY -C-601			GEOGRAPHY -DSE -601	
	GEOGRAPHY -C-602			GEOGRAPHY -DSE -602	

PROPOSED SCHEME FOR CHOICE BASED CREDIT SYSTEM IN
B. Sc. (General)

Course	Credits	
	Theory+ Practical	Theory+ Tutorial
I. Core Course		
Core Course Theory **(12 Papers)** 04 papers from each of the 03 disciplines of choice	12X4= 48	12X5=60
Core Course Practical / Tutorial* **(12 Practical/ Tutorials*)** 04 papers from each of the 03 Disciplines of choice	12X2=24	12X1=12
II. Elective Course		
Elective Course Theory **(6 Papers)** 02 papers from each discipline of choice	6x4=24	6X5=30
Elective Course Practical / Tutorials* **(6 Practical / Tutorials*)** 02 Papers from each discipline of choice	6 X 2=12	6X1=6
III. Ability Enhancement Courses		
Ability Enhancement Compulsory **(2 Papers)** Environmental Science English/MIL Communication	2 X 4=8	2X4= 8
Skill Enhancement Course (Skill Based) **(4 Papers)**	4 X 4=16	4X4=16
	Total credit= 132	**Total credit= 132**

- Each credit is equivalent to 1 hour of activity per week

SCHEME FOR CHOICE BASED CREDIT SYSTEM IN
B. Sc. with Geography

	CORE COURSE (12)	**Ability Enhancement Compulsory Course (AECC) (2)**	**Skill EnhancementCourse (SEC)** (4)	**Discipline Specific Elective DSE (6)**
I	GEOGRAPHY -DSC-101	Environmental Science		
	DSC- 2 A			
	DSC- 3 A			
II	GEOGRAPHY -DSC-201	English/Hindi/MIL Communication		
	DSC- 2 B			
	DSC- 3 B			
III	GEOGRAPHY -DSC-301		GEOGRAPHY -SEC-301	
	DSC- 2 C			
	DSC- 3 C			
IV	GEOGRAPHY -DSC-401		GEOGRAPHY -SEC-401	
	DSC- 2 D			
	DSC- 3 D			
V			GEOGRAPHY -SEC-501	GEOGRAPHY -DSE-501
				DSE-2 A
				DSE-3 A
VI			GEOGRAPHY -SEC-601	GEOGRAPHY -DSE-601
				DSE-2 B
				DSE-3 B

PROPOSED SCHEME FOR CHOICE BASED CREDIT SYSTEM IN
B. A (General)

Course	Credits	
	Theory+ Practical	Theory+ Tutorial
I. Core Course (6 credit each)		
(12 Papers) Two papers – English Two papers – Hindi/MIL Four papers – Discipline 1. Four papers – Discipline 2.	12X4= 48	12X5=60
Core Course Practical / Tutorial* **(12 Practical/ Tutorials*)** Four papers from each of the Three Disciplines of choice	12X2=24	12X1=12
II. Elective Course (6 credit each)		
(6 Papers) Two papers- Discipline 1 specific Two papers- Discipline 2 specific Two papers- Inter disciplinary Two papers from each discipline of choice and two papers of interdisciplinary nature.	6x4=24	6X5=30
Elective Course Practical / Tutorials* **(6 Practical / Tutorials*)**	6 X 2=12	6X1=6
III. Ability Enhancement Courses		
Ability Enhancement Compulsory **(2 Papers)** Environmental Science English/MIL Communication	2 X 4=8	2X4= 8
Skill Enhancement Course (Skill Based) **(4 Papers)**	4 X 4=16	4X4=16
	Total credit= 132	**Total credit= 132**

- Each credit is equivalent to 1 hour of activity per week

SCHEME FOR CHOICE BASED CREDIT SYSTEM IN

B. A. with Geography

	CORE COURSE (12)	**Ability Enhancement Compulsory Course (AECC) (2)**	**Skill EnhancementCourse (SEC)** (4)	**Discipline Specific Elective DSE (6)**	**Generic Elective (2) From disciplines other than core**
I	English -I GEOGRAPHY -DSC-101 DSC- 2A	Environmental Science			
II	English -II GEOGRAPHY -DSC-201 DSC- 2 B	English/Hindi/MIL Communication			
III	MIL-I GEOGRAPHY -DSC-301 DSC- 2 C		GEOGRAPHY -SEC-301		
IV	MIL-II GEOGRAPHY -DSC-401 DSC- 2 D		GEOGRAPHY -SEC-401		
V			GEOGRAPHY -SEC-501	GEOGRAPHY -DSE-501 DSE-2 A DSE-3 A	GE1
VI			GEOGRAPHY -SEC-601	GEOGRAPHY -DSE-601 DSE-2 B DSE-3 B	GE2

Semester wise list of Geography papers to be studied by a Geography (H) student

SEMESTER	Course Code	Course Name	Credit
I	GEOGRAPHY-C-101	Geomorphology	6
	GEOGRAPHY-C-102	Cartographic Techniques (Practical)	6
II	GEOGRAPHY-C-201	Human Geography	6
	GEOGRAPHY-C-202	Thematic Cartography (Practical)	6
III	GEOGRAPHY-C-301	Climatology	6
	GEOGRAPHY-C-302	Statistical Methods in Geography (Practical)	6
	GEOGRAPHY-C-303	Geography of India	6
	GEOGRAPHY-SEC-301	Remote Sensing (Practical)	6
IV	GEOGRAPHY-C-401	Economic Geography	6
	GEOGRAPHY-C-402	Environmental Geography	6
	GEOGRAPHY-C-403	Field and Research Methodology (Practical)	6
	GEOGRAPHY-SEC-401	Geographical Information System (Practical)	6
V	GEOGRAPHY-C-501	Regional Planning and Development	6
	GEOGRAPHY-C-502	Remote Sensing and GIS (Practical)	6
	GEOGRAPHY-DSE-501	Population Geography	6
	GEOGRAPHY-DSE-502	Agricultural Geography	6
VI	GEOGRAPHY-C-601	Evolution of Geographical Thought	6
	GEOGRAPHY-C-602	Disaster Management based Project Work (Practical)	6
	GEOGRAPHY-DSE-601	Political Geography	6
	GEOGRAPHY-DSE-602	Social Geography	6

Semester wise list of Geography Generic Elective papers for students taking honours in other disciplines

SEMESTER	Course Code	Course Name	Credit
I	GEOGRAPHY-GE-101	Physical Geography	6
II	GEOGRAPHY-GE-201	Human Geography	6
III	GEOGRAPHY-GE-301	General Cartography (Practical)	6
IV	GEOGRAPHY-GE-401	Environmental Geography	6

Semester wise list of Geography papers to be studied by a BA/B.Sc. student with Geography.

Core Course (*for students choosing Geography as one of core discipline***)**

SEMESTER	Course Code	Course Name	Credit
I	GEOGRAPHY-DSC-101	Physical Geography	6
II	GEOGRAPHY-DSC-201	Human Geography	6
III	GEOGRAPHY-DSC-301	General Cartography (Practical)	6
IV	GEOGRAPHY-DSC-401	Environmental Geography	6

Generic Elective *(for BA students having other disciplines as core discipline)*

SEMESTER	Course Code	Course Name	Credit
V	GEOGRAPHY-GE-501	Disaster Risk Reduction	6
VI	GEOGRAPHY-GE-601	Sustainability and Development	6

Discipline Specific Elective (DSE) Courses(*for students choosing Geography as one of core discipline***)**

SEMESTER	Course Code.	Course Name	Credit
V	GEOGRAPHY-DSE-501	Geography of India	6
VI	GEOGRAPHY-DSE-601	Disaster Management	6

Skill Enhancement Courses (SEC)

SEMESTER	Course Code	Course Name	Credit
III	GEOGRAPHY-SEC-301	Regional Planning and Development	4
IV	GEOGRAPHY-SEC-401	Remote Sensing and GPS based Project Report	4
V	GEOGRAPHY-SEC-501	Cartography (Practical)	4
VI	GEOGRAPHY-SEC-601	Field Techniques and Survey based Project Report (Practical)	4

SYLLABI FOR CORE COURSE PAPERS (HONOURS)

GEOGRAPHY C 101
Geomorphology

Full Marks: 150 [End Semester Exam: 105, Internal Assessment :45]
Pass Marks: 60 [End Semester Exam: 42, Internal Assessment :18]
Contact Hours: 60

Learning Objectives: To introduce the students to the basics of geomorphology, interior structure of the earth, earth movements, geomorphic processes, and evolution of landforms.

Unit 1: Geomorphology: Nature and Scope.
Unit 2: Earth: Interior Structure and Isostasy.
Unit 3: Earth Movements: Plate Tectonics, Types of Folds and Faults, Earthquakes and Volcanoes.
Unit 4: Geomorphic Processes: Weathering, Mass Wasting, Cycle of Erosion (Davis and Penck).
Unit 5: Evolution of Landforms (Erosional and Depositional): Fluvial, Karst, Aeolian, Glacial, and Coastal.

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.Gautam, A (2010): *Bhautik Bhugol*, Rastogi Punlications, Meerut
11. Tikkaa, R N (1989): *Bhautik Bhugol ka Swaroop*, Kedarnath Ram Nath, Meerut
12. Singh, S (2009):*Bhautik Bhugol ka Swaroop*, Prayag Pustak,Allahabad

GEOGRAPHY C 102
Cartographic Techniques (Practical)

Full Marks: 150 [End Semester Exam: 105, Internal Assessment :45]
Pass Marks: 60 [End Semester Exam: 42, Internal Assessment :18]
Contact Hours: 120

Learning Objectives: To give the students to the discipline of cartography, map projections, slope analysis, and surveying method using theodolite.

1. Cartography – Nature and Scope.
2. Map Projections – Classification, Properties and Uses; Graphical Construction of Polar Zenithal Stereographic, Bonne's and Mercator's Projections.
3. Topographical Map – Interpretation of a Mountain area with the help of Cross and Longitudinal Profiles.
4. Slope Analysis – Wentworth's method.
5. Surveying: Theodolite – Height determination.

Practical Record: A Project File comprising one exercise *each*, on map projection, interpretation of topographic sheet, slope analysis and theodolite survey.

Reading List

1. Anson R. and Ormelling F. J., 1994: *International Cartographic Association: BasicCartographic Vol.* Pregmen Press.
2. Gupta K.K. and Tyagi, V. C., 1992: *Working with Map*, Survey of India, DST, New Delhi.
3. Mishra R.P. and Ramesh, A., 1989: *Fundamentals of Cartography*, Concept, New Delhi.
4. Monkhouse F. J. and Wilkinson H. R., 1973: *Maps and Diagrams*, Methuen, London.
5. Rhind D. W. and Taylor D. R. F., (eds.), 1989: *Cartography: Past, Present and Future*, Elsevier, International Cartographic Association.
6. Robinson A. H., 2009: *Elements of Cartography*, John Wiley and Sons, New York.
7. Sharma J. P., 2010: *Prayogic Bhugol*, Rastogi Publishers, Meerut.
8. Singh R. L. and Singh R. P. B., 1999: *Elements of Practical Geography*, Kalyani Publishers.
9. Sarkar, A. (2015) Practical geography: A systematic approach. Orient Black Swan Private Ltd., New Delhi
10. Singh R L & Rana P B Singh(1991) Prayogtmak Bhugol ke Mool Tatva, Kalyani Publishers, New Delhi
11. Sharma, J P (2010) Prayogtmak Bhugol ki Rooprekha, Rastogi Publications, Meerut
12. Singh, R L & Dutta, P K (2012) PrayogatmakBhugol, Central Book Depot, Allahabad

GEOGRAPHY C 201
Human Geography

Full Marks: 150 [End Semester Exam: 105, Internal Assessment :45]
Pass Marks: 60 [End Semester Exam: 42, Internal Assessment :18]
Contact Hours: 60

Learning Objectives: To give the students an introduction to the subject of human geography, space and society, population, settlements, and population-resource relationship.

1. Introduction: Defining Human Geography; Major Themes; Contemporary Relevance
2. Space and Society: Cultural Regions; Race; Religion and Language
3. Population: Population Growth and Distribution; Population Composition; Demographic Transition Theory
4. Settlements: Types of Rural Settlements; Classification of Urban Settlements; Trends and Patterns of World Urbanization
5. Population-Resource Relationship

Reading List

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

GEOGRAPHY C 202

Thematic Cartography (Practical)

Full Marks: 150 [End Semester Exam: 105, Internal Assessment :45]
Pass Marks: 60 [End Semester Exam: 42, Internal Assessment :18]
Contact Hours: 120

Learning Objectives: To give the students an introduction to cartography, maps, thematic mapping techniques, thematic maps, and surveying method using prismatic compass.

1. Maps – Classification and Types; Principles of Map Design.
2. Presentation of climatic and economic data: Hythergraph, Climograph, Ergograph and Band Graph.
3. Thematic Mapping Techniques – Properties, Uses and Limitations; Areal Data -- Choropleth, Dot, Proportional Circles; Point Data – Isopleths.
4. Thematic Maps – Preparation and Interpretation.
5. Surveying: Open and Close Traverse by Prismatic Compass.

Practical Record: A Thematic Atlas should be prepared on a specific theme with five plates of any state in India.

Reading List

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

GEOGRAPHY C 301
Climatology

Full Marks: 150 [End Semester Exam: 105, Internal Assessment :45]
Pass Marks: 60 [End Semester Exam: 42, Internal Assessment :18]
Contact Hours: 60

Learning Objectives: To introduce the students to the basics of climatology, atmospheric composition and structure, insolation and temperature, atmospheric pressure and winds, atmospheric moisture, and cyclones.

1. Atmospheric Composition and Structure – Variation with Altitude, Latitude and Season.
2. Insolation and Temperature – Factors and Distribution, Heat Budget, Temperature Inversion.
3. Atmospheric Pressure and Winds – Planetary Winds, Forces affecting Winds, General Circulation, Jet Streams.
4. Atmospheric Moisture – Evaporation, Humidity, Condensation, Fog and Clouds, Precipitation Types, Stability and Instability; Climatic Regions (Koppen)
5. Cyclones – Tropical Cyclones, Extra Tropical Cyclones, Monsoon - Origin and Mechanism.

Reading List

1. Barry R. G. and Carleton A. M., 2001: *Synoptic and Dynamic Climatology*, Routledge, UK.
2. Barry R. G. and Corley R. J., 1998: *Atmosphere, Weather and Climate*, Routledge, New York.
3. Critchfield H. J., 1987: *General Climatology*, Prentice-Hall of India, New Delhi
4. Lutgens F. K., Tarbuck E. J. and Tasa D., 2009: *The Atmosphere: An Introduction to Meteorology*, Prentice-Hall, Englewood Cliffs, New Jersey.
5. Oliver J. E. and Hidore J. J., 2002: *Climatology: An Atmospheric Science*, Pearson Education, New Delhi.
6. Trewartha G. T. and Horne L. H., 1980: *An Introduction to Climate*, McGraw-Hill.
7. Gupta L S(2000): Jalvayu Vigyan, Hindi Madhyam Karyanvay Nidishalya, Delhi Vishwa Vidhyalaya, Delhi
8. Lal, D S (2006): Jalvayu Vigyan, Prayag Pustak Bhavan, Allahabad
9. Vatal, M (1986): Bhautik Bhugol, Central Book Depot, Allahabad
10. Singh, S (2009): Jalvayu Vigyan, Prayag Pustak Bhawan, Allahabad

GEOGRAPHY C 302
Statistical Methods in Geography (Practical)

Full Marks: 150 [End Semester Exam: 105, Internal Assessment :45]
Pass Marks: 60 [End Semester Exam: 42, Internal Assessment :18]
Contact Hours: 120

Learning Objectives: To give the students an introduction to statistics, types of data, tabulation and descriptive statistics, sampling, time series, and association and correlation.

1. Use of Data, Significance of Statistical Methods in Geography, Source of Data.
2. Tabulation and Descriptive Statistics: Central Tendency (Mean, Median and Mode), Dispersion (Standard Deviation, Variance and Co-efficient Variation).
3. Sampling: Purposive, Random, Systematic and Stratified.
4. Time Series Analysis and Index Number.
5. Association and Correlation: Rank correlation, Product moment correlation, Simple and Bi-variate Regression.

Class Record: Each student will submit a record containing five exercises:
1. Based on the above table, a frequency table, measures of central tendency and dispersion would be computed and interpreted for any two attributes.
2. Histograms and frequency curve would be prepared **on the entire data set** and attempt to fit a normal curve and interpreted for one or two variables.
3. From the data used a sample set (20 Percent) would be drawn using, random - systematic and stratified methods of sampling and locate the samples on a map with a short note on methods used.
4. Based on of the sample set and using two relevant attributes, a scatter and regression line would be plotted with a short interpretation.

Reading List

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

10. Yeates M., 1974: *An Introduction to Quantitative Analysis in Human Geography*, McGraw Hill, New York.
11. Sinha, Indira (2007) Sankhyiki Bhugol. Discovery Publishing House, New Delhi.

GEOGRAPHY C 303
Geography of India

Full Marks: 150 [End Semester Exam: 105, Internal Assessment :45]
Pass Marks: 60 [End Semester Exam: 42, Internal Assessment :18]
Contact Hours: 60

Learning Objectives To give an introduction to the students regarding physical, population, economic, and social aspects of India.

1. Physical: Physiographic Divisions, soil and vegetation, climate (characteristics and classification)
2. Population: Distribution and growth, Structure
3. Economic: Mineral and power resources distribution and utilisation of iron ore, coal, petroleum, gas; agricultural production and distribution of rice and wheat, industrial development: automobile and Information technology
4. Social: Distribution of population by race, caste, religion, language, tribes and their correlates
5. Regional Study of North-East India: Physiography, Water and Mineral resources.

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 Intenational Perspective. Vol. 3 – Indian Perspective*.
4. Sdyasuk Galina and P Sengupta (1967): *Economic Regionalisation of India*, Census of India
5. Sharma, T. C. 2003: India - Economic and Commercial Geography. Vikas Publ., New Delhi.
6. Singh R. L., 1971: *India: A Regional Geography*, National Geographical Society of India.
7. Singh, Jagdish 2003: *India - A Comprehensive & Systematic Geography*, Gyanodaya Prakashan, Gorakhpur.
8. Spate O. H. K. and Learmonth A. T. A., 1967: *India and Pakistan: A General and Regional Geography*, Methuen.
9. Tirtha, Ranjit 2002: *Geography of India,* Rawat Publs., 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

GEOGRAPHY C 401
Economic Geography

Full Marks: 150 [End Semester Exam: 105, Internal Assessment :45]
Pass Marks: 60 [End Semester Exam: 42, Internal Assessment :18]
Contact Hours: 60

Learning Objectives: To give the students an introduction to economic geography, the factors affecting economic activity, and primary, secondary and tertiary economic activities.

1. Introduction: Concept and classification of economic activity
2. Factors Affecting location of Economic Activity with special reference to Agriculture (Von Thunen theory), Industry (Weber's theory).
3. Primary Activities: Subsistence and Commercial agriculture, forestry, fishing and mining.
4. Secondary Activities: Manufacturing (Cotton Textile, Iron and Steel), Concept of Manufacturing Regions, Special Economic Zones and Technology Parks.
5. Tertiary Activities: Transport, Trade and Services.

Reading List

1. Alexander J. W., 1963: *Economic Geography*, Prentice-Hall Inc., Englewood Cliffs, New Jersey.
2. Coe N. M., Kelly P. F. and Yeung H. W., 2007: *Economic Geography: A Contemporary Introduction*, Wiley-Blackwell.
3. Hodder B. W. and Lee Roger, 1974: *Economic Geography*, Taylor and Francis.
4. Combes P., Mayer T. and Thisse J. F., 2008: *Economic Geography: The Integration of Regions and Nations*, Princeton University Press.
5. Wheeler J. O., 1998: *Economic Geography*, Wiley.
6. Durand L., 1961: *Economic Geography*, Crowell.
7. Bagchi-Sen S. and Smith H. L., 2006: *Economic Geography: Past, Present and Future*, Taylor and Francis.
8. Willington D. E., 2008: *Economic Geography*, Husband Press.

GEOGRAPHY C 402
Environmental Geography

Full Marks: 150 [End Semester Exam: 105, Internal Assessment :45]
Pass Marks: 60 [End Semester Exam: 42, Internal Assessment :18]
Contact Hours: 60

Learning Objectives: To give an introduction to the students regarding environmental geography, human-environment relationships, ecosystem, climate change, and environmental programmes and policies.

Question Paper Setting Guidelines:

1. Environmental Geography – Concept and Scope
2. Human-Environment Relationships – Historical Progression, Adaptation in different Biomes.
3. Ecosystem – Concept, Structure and Functions
4. Climate Change – Depletion of Ozone Layer, Global Warming and rising sea surface temperature and level
5. Environmental Programmes and Policies – Global, National and Local levels

Reading List

1. Chandna R. C., 2002: *Environmental Geography*, Kalyani, Ludhiana.
2. Cunninghum W. P. and Cunninghum M. A., 2004: *Principals of EnvironmentalScience: Inquiry and Applications*, Tata Macgraw Hill, New Delhi.
3. Goudie A., 2001: *The Nature of the Environment*, Blackwell, Oxford.
4. Singh, R.B. (Eds.) (2009) Biogeography and Biodiversity. Rawat Publication, Jaipur
5. Miller G. T., 2004: *Environmental Science: Working with the Earth,* Thomson BrooksCole, Singapore.
6. MoEF, 2006: *National Environmental Policy-2006,* Ministry of Environment andForests, Government of India.
7. Singh, R.B. and Hietala, R. (Eds.) (2014) Livelihood security in Northwestern Himalaya: Case studies from changing socio-economic environments in Himachal Pradesh, India. Advances in Geographical and Environmental Studies, Springer
8. Odum, E. P. et al, 2005: *Fundamentals of Ecology,* Ceneage Learning India.
9. Singh S., 1997: *Environmental Geography,* Prayag Pustak Bhawan. Allahabad.
10. UNEP, 2007: *Global Environment Outlook: GEO4: Environment For Development,* United Nations Environment Programme.
11. Singh, M., Singh, R.B. and Hassan, M.I. (Eds.) (2014) Climate change and biodiversity: Proceedings of IGU Rohtak Conference, Volume 1. Advances in Geographical and Environmental Studies, Springer
12. Singh, R.B. (1998) Ecological Techniques and Approaches to Vulnerable Environment, New Delhi, Oxford & IBH Pub..

13. Singh, Savindra 2001. *Paryavaran Bhugol,* Prayag Pustak Bhawan, Allahabad. (in Hindi)

GEOGRAPHY C 403
Field Work and Research Methodology (Practical)

Full Marks: 150 [End Semester Exam: 105, Internal Assessment :45]
Pass Marks: 60 [End Semester Exam: 42, Internal Assessment :18]
Contact Hours: 60

Learning Objectives: To give an introduction to the students regarding field work in geography, defining field and identifying case study, field techniques, use of field tools, and designing of field report.

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 /Environmental.
3. Field Techniques – Merits, Demerits and Selection of the Appropriate Technique; Observation (Participant / Non Participant), Questionnaires (Open/ Closed / Structured / Non-Structured); Interview with Special Focus on Focused Group Discussions; Space Survey (Transects and Quadrants, Constructing a Sketch)
4. Use of Field Tools – Collection of Material for Physical and Socio-Economic Surveys.
5. Designing the Field Report – Aims and Objectives, Methodology, Analysis, Interpretation and Writing the Report.

Practical Record

1. Each student will prepare an individual report based on primary and secondary data collected during field work.
2. The duration of the field work should not exceed 10 days.
3. The word count of the report should be about **8000 to 12,000** excluding figures, tables, photographs, maps, references and appendices.
4. One 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.
10. Wolcott, H. 1995. The Art of Fieldwork. Alta Mira Press, Walnut Creek, CA.

GEOGRAPHY C 501
Regional Planning and Development

Full Marks: 150 [End Semester Exam: 105, Internal Assessment :45]
Pass Marks: 60 [End Semester Exam: 42, Internal Assessment :18]
Contact Hours: 60

Learning Objectives: To introduce the students to the concept of region, types of regional planning, theories and models for regional planning, concepts of development and underdevelopment, and approaches of measuring 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, Hirschman, Rostow and Friedmann; Village Cluster
4. Changing Concept of Development, Concept of underdevelopment; Efficiency-Equity Debate
5. Measuring development: Indicators (Economic, Social and Environmental); Human development.

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.

GEOGRAPHY C 502
Remote Sensing and GIS (Practical)

Full Marks: 150 [End Semester Exam: 105, Internal Assessment :45]
Pass Marks: 60 [End Semester Exam: 42, Internal Assessment :18]
Contact Hours: 120

Learning Objectives: To introduce the students to remote sensing and GIS, aerial photography and satellite remote sensing, GIS data structures, image processing, and interpretation and application of 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. Image Processing (Digital and Manual) and Data Analysis: Pre-processing (Radiometric and Geometric Correction), Enhancement (Filtering); Classification (Supervised and Un-supervised), Geo-Referencing; Editing and Output; Overlays
5. Interpretation and Application of Remote Sensing and GIS: Land use/ Land Cover, Urban Sprawl Analysis; Forests Monitoring

Practical Record: A project file consisting of two exercises will be done from aerial photos and satellite images (scale, orientation and interpretation) and at least one exercise on using any GIS Software on above mentioned themes.

Reading List

1. Campbell J. B., 2007: *Introduction to Remote Sensing*, Guildford Press.
2. Jensen J. R., 2004: *Introductory Digital Image Processing: A Remote Sensing Perspective*, Prentice Hall.
3. Joseph, G. 2005: *Fundamentals of Remote Sensing*, United Press India.
4. Lillesand T. M., Kiefer R. W. and Chipman J. W., 2004: *Remote Sensing and Image Interpretation*, Wiley. (Wiley Student Edition).
5. Nag P. and Kudra, M., 1998: *Digital Remote Sensing*, Concept, New Delhi.
6. Rees W. G., 2001: *Physical Principles of Remote Sensing*, Cambridge University Press.
7. Singh R. B. and Murai S., 1998: *Space-informatics for Sustainable Development*, Oxford and IBH Pub.
8. Wolf P. R. and Dewitt B. A., 2000: *Elements of Photogrammetry: With Applications in GIS*, McGraw-Hill.
9. Sarkar, A. (2015) Practical geography: A systematic approach. Orient Black Swan Private Ltd., New Delhi
10. Chauniyal, D.D. (2010) Sudur Samvedan evam Bhogolik Suchana Pranali, Sharda Pustak Bhawan, Allahabad

GEOGRAPHY C 601
Evolution of Geographical Thought

Full Marks: 150 [End Semester Exam: 105, Internal Assessment :45]
Pass Marks: 60 [End Semester Exam: 42, Internal Assessment :18]
Contact Hours: 60

Learning Objectives: To introduce the students to paradigms in geography, early origins of geographical thinking, modern geographical thinking, debates, and trends in geography.

1. Paradigms in Geography
2. Pre-Modern – Early Origins of Geographical Thinking with reference to the Classical and Medieval Philosophies.
3. Modern – Evolution of Geographical Thinking and Disciplinary Trends in Germany, France, Britain, United States of America.
4. Debates – Environmental Determinism and Possibilism, Systematic and Regional, Ideographic and Nomeothetic.
5. Trends – Quantitative Revolution and its Impact, Behaviouralism, Systems Approach, Radicalism, Feminism; Towards Post Modernism – Changing Concept of Space in Geography, Future of Geography.

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 and Co.
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.

GEOGRAPHY C 602
Disaster Management based Project Work (Practical)

Full Marks: 150 [End Semester Exam: 105, Internal Assessment :45]
Pass Marks: 60 [End Semester Exam: 42, Internal Assessment :18]
Contact Hours: 120

Learning Objectives: To introduce the students to project work, field based case studies, preparation of disaster preparedness plan, and the writing of project report.

The Project Report based on any two field based case studies among following disasters and one disaster preparedness plan of respective college or locality:

1. Flood
2. Drought
3. Cyclone and Hailstorms
4. Earthquake
5. Landslides
6. Human Induced Disasters: Fire Hazards, Chemical, Industrial accidents, Depletion of Forest and Jhum.

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 Oppurtunities", 2007. Publisher- I.K. International Pvt. Ltd. S-25, Green Park Extension, Uphaar Cinema Market, New Delhi, India.

SYLLABI FOR DSC *(for students with Geography as one of the core paper)* **/GENERIC ELECTIVE** *(for students with Honours in other Disciplines)***PAPERS**

GEOGRAPHY-DSC-101 /GEOGRAPHY-GE-101
Physical Geography

Full Marks: 150 [End Semester Exam: 105, Internal Assessment :45]
Pass Marks: 60 [End Semester Exam: 42, Internal Assessment :18]
Contact Hours: 60

Learning Objectives: To give an introduction to the students regarding physical geography, atmosphere, lithosphere, fluvial cycle of erosion, and hydrosphere.

1. Physical Geography – Definition and Scope, Components of Earth System.
2. Atmosphere – Heat Balance, Global Circulation Pattern, Tropical Cyclones, Monsoon, Climatic Classification (Koppen).
3. Lithosphere – Internal Structure of Earth based on Seismic Evidence, Plate Tectonics and its Associated Features.
4. Fluvial Cycle of Erosion – Davis and Penck.
5. Hydrosphere – Hydrological Cycle, Ocean Bottom Relief Features, Tides and Currents.

Reading List

1. Conserva H. T., 2004: Illustrated Dictionary of Physical Geography, Author House, USA.

2. Gabler R. E., Petersen J. F. and Trapasso, L. M., 2007: Essentials of Physical Geography (8th Edition), Thompson, Brooks/Cole, USA.
3. Garrett N., 2000: Advanced Geography, Oxford University Press.
4. Goudie, A., 1984: The Nature of the Environment: An Advanced Physical Geography, Basil Blackwell Publishers, Oxford.
5. Hamblin, W. K., 1995: Earth's Dynamic System, Prentice Hall, N.J.
6. Husain M., 2002: Fundamentals of Physical Geography, Rawat Publications, Jaipur.
7. Monkhouse, F. J. 2009: Principles of Physical Geography, Platinum Publishers, Kolkata.
8. Strahler A. N. and Strahler A. H., 2008: Modern Physical Geography, John Wiley & Sons, New York.

GEOGRAPHY-DSC-201 /GEOGRAPHY-GE-201
Human Geography

Full Marks: 150 [End Semester Exam: 105, Internal Assessment :45]
Pass Marks: 60 [End Semester Exam: 42, Internal Assessment :18]
Contact Hours: 60

Learning Objectives: To give an introduction to the students regarding definition, nature and subfields of human geography, space and society, population, and settlements.

1. Definition, Nature, Major Subfields, Contemporary Relevance.
2. Space and Society: Cultural Regions; Race; Religion and Language
3. Population: Population Growth and Demographic Transition Theory.
4. World Population Distribution and Composition (Age, Gender and Literacy).
5. Settlements: Types and Patterns of Rural Settlements; Classification of Urban Settlements; Trends and Patterns of World Urbanization

Reading List

1. Chandna, R.C. (2010) Population Geography, Kalyani Publisher.
2. Daniel, P.A. and Hopkinson, M.F. (1989) The Geography of Settlement, Oliver & Boyd, London.
3. Johnston R; Gregory D, Pratt G. et al. (2008) The Dictionary of Human Geography, Blackwell Publication.
4. Jordan-Bychkov et al. (2006) The Human Mosaic: A Thematic Introduction to Cultural Geography. W. H. Freeman and Company, New York.
5. Kaushik, S.D. (2010) Manav Bhugol, Rastogi Publication, Meerut.
6. Maurya, S.D. (2012) Manav Bhugol, Sharda Pustak Bhawan. Allahabad.
7. Ghosh, S. (2015) Introduction to settlement geography. Orient Black Swan Private Ltd.,

Kolkata
8. Hussain, Majid (2012) Manav Bhugol. Rawat Publications, Jaipur

GEOGRAPHY-DSC-301 /GEOGRAPHY-GE-301
General Cartography (Practical)

Full Marks: 150 [End Semester Exam: 105, Internal Assessment :45]
Pass Marks: 60 [End Semester Exam: 42, Internal Assessment :18]
Contact Hours: 60

Learning Objectives: To give an introduction to the students regarding maps, map scale, map projections, and representation of data.

1. Maps – Types, Elements and Uses
2. Map Scale – Types and Application, Reading Distances on a Map.
3. Map Projections – Criteria for Choice of Projections; Attributes and Properties of: Zenithal Gnomonic Polar Case, Zenithal Stereographic Polar Case, Cylindrical Equal Area, Mercator's Projection, Conical Projection with Two Standard Parallel, Bonne's Projection.
4. Representation of Data – Symbols, Dots, Choropleth, Isopleth and Flow Diagrams, Interpretation of Thematic Maps.

Note: This paper is not a practical paper, and the objective is to give basic information about various tools and techniques used in making maps. Students will not be involved in any laboratory work or hands on exercises, though a few demonstrations in the laboratories by teachers are recommended.

Reading List

1. Dent B. D., 1999: *Cartography: Thematic Map Design*, (Vol. 1), McGraw Hill.
2. Gupta K. K and Tyagi V. C., 1992: *Working with Maps*, Survey of India, DST, New Delhi.
3. Mishra R. P. and Ramesh A., 1989: *Fundamentals of Cartography*, Concept Publishing.
4. Robinson A., 1953: *Elements of Cartography*, John Wiley.
5. Sharma J. P., 2010: *Prayogic Bhugol*, Rastogi Publishers.
6. Singh R. L. and Singh R. P. B., 1999: *Elements of Practical Geography*, Kalyani Publishers
7. Singh R. L., 1998: *Prayogic Bhoogol Rooprekha*, Kalyani Publications.
8. Steers J. A., 1965: *An Introduction to the Study of Map Projections*, University of London.

GEOGRAPHY-DSC-401 /GEOGRAPHY-GE-401
Environmental Geography

Full Marks: 150 [End Semester Exam: 105, Internal Assessment :45]
Pass Marks: 60 [End Semester Exam: 42, Internal Assessment :18]
Contact Hours: 60

Learning Objectives: To give an introduction to the students regarding environmental geography, human-environment relationship, environmental problems and policies, and new environmental policy and government policies.

1. Environmental Geography: Concepts and Approaches; Ecosystem – Concept and Structure; Ecosystem Functions.
2. Human-Environment Relationship in Equatorial, Desert, Mountain and Coastal Regions.
3. Environmental Problems and Management: Air Pollution; Biodiversity Loss; Solid and Liquid Waste.
4. Environmental Programmes and Policies: Developed Countries; Developing Countries.
5. New Environmental Policy of India; Government Initiatives.

Reading List

1. Casper J.K. (2010) Changing Ecosystems: Effects of Global Warming. Infobase Pub. New
York.
2. Hudson, T. (2011) Living with Earth: An Introduction to Environmental Geology, PHI Learning Private Limited, New Delhi.
3. Miller, G.T. (2007) Living in the Environment: Principles, Connections, and Solutions, Brooks/ Cole Cengage Learning, Belmont.
4. Singh, R.B. (1993) Environmental Geography, Heritage Publishers, New Delhi.
5. UNEP (2007) Global Environment Outlook: GEO4: Environment for Development, United Nations Environment Programme. University Press, Cambridge.
6. Wright R. T. and Boorse, D. F. (2010) Toward a Sustainable Future, PHI Learning Pvt Ltd,
New Delhi.
7. Singh, R.B. and Hietala, R. (Eds.) (2014) Livelihood security in Northwestern Himalaya:
Case studies from changing socio-economic environments in Himachal Pradesh, India. Advances in Geographical and Environmental Studies, Springer
8. Singh, Savindra 2001. *Paryavaran Bhugol,* Prayag Pustak Bhawan, Allahabad. (in Hindi)

GEOGRAPHY-GE-501
Disaster Risk Reduction

Full Marks: External 105, Internal 45
Pass Marks: External 42, Internal 18
Contact Hours: 6

Learning Objectives: To give an introduction to the students regarding disaster, hazards, risk, vulnerability and disasters; disasters in India; human induced disasters; and disaster risk reduction.

Question Paper Setting Guidelines:

1. Disaster; Hazards, Risk, Vulnerability and Disasters: Definition and Concepts.
2. Disasters in India: (a) Causes Impact, Distribution and Mapping: Flood and Drought.
3. Disasters in India: (b) Causes, Impact, Distribution and Mapping: Earthquake and Cyclone.
4. Human induced disasters: Causes, Impact, Distribution and Mapping.
5. Disaster Risk Reduction: Mitigation and Preparedness, NDMA and NIDM; Community-Based Disaster Management; Do's and Don'ts during Disasters

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 Oppurtunities", 2007.
Publisher- I.K. International Pvt. Ltd. S-25, Green Park Extension, Uphaar Cinema Market,
New Delhi, India (www.ikbooks.com).

GEOGRAPHY-GE-601
Sustainability and Development

Full Marks: External 105, Internal 45
Pass Marks: External 42, Internal 18
Contact Hours: 6

Learning Objectives: To give an introduction to the students regarding sustainability; millennium development goals; sustainable development; and inclusive development.

Question Paper Setting Guidelines:

1. Sustainability: Definition, Components and Sustainability for Development.
2. The Millennium Development Goals: National Strategies and International Experiences
3. Sustainable Development: Need and examples from different Ecosystems.
4. Inclusive Development: Education, Health; Climate Change: The role of higher education in sustainability; The human right to health; Poverty and disease; Sustainable Livelihood Model; Policies and Global Cooperation for Climate Change
5. Sustainable Development Policies and Programmes: Rio+20; Goal-Based Development; Financing for Sustainable Development; Principles of Good Governance; National Environmental Policy, CDM.

Reading List

1. Agyeman, Julian, Robert D. Bullard and Bob Evans (Eds.) (2003) Just Sustainabilities: Development in an Unequal World. London: Earthscan. (Introduction and conclusion.).
2. Ayers, Jessica and David Dodman (2010) "Climate change adaptation and development 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 Briefing 28.
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, pp 1-25.)

8. Osorio, Leonardo et al (2005) "Debates on sustainable development: towards a holistic view of reality". Environment, Development and Sustainability 7: 501-518.
9. Robbins, Paul (2004) Political Ecology: A Critical Introduction. Blackwell Publishing.

SYLLABI FOR DSE COURSES

GEOGRAPHY-DSE-501
Population Geography

Full Marks: 150 [End Semester Exam: 105, Internal Assessment :45]
Pass Marks: 60 [End Semester Exam: 42, Internal Assessment :18]
Contact Hours: 60

Learning Objectives: To give an introduction to the students regarding population geography; population size, distribution and growth; population dynamics; population characteristics; and contemporary issues.

1. Defining the Field – Nature and Scope; Sources of Data with special reference to India (Census, Vital Statistics and NSS).
2. Population Size, Distribution and Growth – Determinants and Patterns; Theories of Growth – Malthusian Theory and Demographic Transition 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.
5. Contemporary Issues – Ageing of Population; Declining Sex Ratio; HIV/AIDS.

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.
10. Panda B P (1988): Janasankya Bhugol, M P Hindi Granth Academy,Bhopal
11. Maurya S D (2009) Jansankya Bhugol, Sharda Putak Bhawan, Allahabad
12. Chandna, R C (2006), Jansankhya Bhugol, Kalyani Publishers, Delhi

GEOGRAPHY-DSE-502
Agricultural Geography

Full Marks: 150 [End Semester Exam: 105, Internal Assessment :45]
Pass Marks: 60 [End Semester Exam: 42, Internal Assessment :18]
Contact Hours: 60

Learning Objectives: To give an introduction to the students regarding agricultural geography, determinants of agriculture, agricultural regions, agricultural systems, and agricultural revolutions.

1. 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, modification and relevance).
5. Agricultural Revolutions in India: Green, White, Blue, Pink

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.

GEOGRAPHY-DSE-601
Political Geography

Full Marks: 150 [End Semester Exam: 105, Internal Assessment :45]
Pass Marks: 60 [End Semester Exam: 42, Internal Assessment :18]
Contact Hours: 60

Learning Objectives: To give an introduction to the students regarding political geography; state, nation and nation state; electoral geography; political geography of resource conflicts; and politics of displacement.

1. Introduction: Concepts, Nature and Scope.
2. State, Nation and Nation State – Concept of Nation and State, Attributes of State – Frontiers, Boundaries, Shape, Size, Territory and Sovereignty, Concept of Nation State; Geopolitics; Theories (Heartland and Rimland)
3. Electoral Geography – Geography of Voting, Geographic Influences on Voting pattern, Geography of Representation, Gerrymandering.
4. Political Geography of Resource Conflicts – Water Sharing Disputes, Disputes and Conflicts Related to Forest Rights and Minerals.
5. Politics of Displacement: Issues of relief, compensation and rehabilitation: with reference to Dams and Special Economic Zones

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*, Routledge.
8. Mathur H M and M M Cernea (eds.) Development, Displacement and Resettlement – Focus on Asian Experience, Vikas, Delhi
9. Painter J. and Jeffrey A., 2009: *Political Geography*, Sage Publications.
10. Taylor P. and Flint C., 2000: *Political Geography*, Pearson Education.
11. Verma M K (2004): Development, Displacement and Resettlement, Rawat Publications, Delhi
12. Hodder Dick, Sarah J Llyod and Keith S McLachlan (1998), *Land Locked States of Africa and Asia* (vo.2), Frank Cass.

GEOGRAPHY-DSE-602
Social Geography

Full Marks: 150 [End Semester Exam: 105, Internal Assessment :45]
Pass Marks: 60 [End Semester Exam: 42, Internal Assessment :18]
Contact Hours: 60

Learning Objectives: To give an introduction to the students regarding social geography; peopling process of India; social categories; geographies of welfare and well being; and modernisation and social change.

1. Social Geography: Concept, Origin, Nature and Scope.
2. Peopling Process of India: Technology and Occupational Change; Migration.
3. Social Categories: Caste, Class, Religion, Race and Gender and their Spatial distribution
4. Geographies of Welfare and Well being: Concept and Components – Healthcare, Housing and Education.
5. Modernisation and Social Change: Modernisation, socio-cultural change and diffusion of Modernisation.

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, Ithaca
11. Valentine G., 2001: *Social Geographies: Space and Society*, Prentice Hall.

SYLLABI FOR SEC PAPERS

GEOGRAPHY-SEC-301
Remote Sensing (Practical)

Full Marks: 100 [End Semester Exam: 70, Internal Assessment :30]
Pass Marks: 40 [End Semester Exam: 28, Internal Assessment :12]
Contact Hours: 60

Learning Objectives: To give an introduction to the students regarding remote sensing; satellite remote sensing; image processing; satellite image interpretation; and application of 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. Image Processing (Digital and Manual): Pre-processing (Radiometric and Geometric Correction); Enhancement (Filtering); Classification (Supervised and Un-supervised)
4. Satellite Image Interpretation.
5. Application of Remote Sensing: Land Use Land Cover.

Practical Record: A project file consisting of 3 exercises on using any method on above mentioned themes.

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. Chauniyal, D. (2010) Sudur SamvedanaAvam Bhaugolik Suchna Pranali, Sharda Pustak Bhawan, Allahabad.
4. Jensen, J. R. (2005) Introductory Digital Image Processing: A Remote Sensing Perspective, Pearson Prentice-Hall.
5. Joseph, G. 2005: *Fundamentals of Remote Sensing*, United Press India.
6. Lillesand T. M., Kiefer R. W. and Chipman J. W., 2004: *Remote Sensing and Image Interpretation*, Wiley. (Wiley Student Edition).
7. Li, Z., Chen, J. and Batsavias, E. (2008) Advances in Photogrammetry, Remote Sensing and Spatial Information Sciences CRC Press, Taylor and Francis, London
8. Mukherjee, S. (2004) Textbook of Environmental Remote Sensing, Macmillan, Delhi.
9. Nag P. and Kudra, M., 1998: *Digital Remote Sensing*, Concept, New Delhi.
10. Singh R. B. and Murai S., 1998: *Space-informatics for Sustainable Development*, Oxford and IBH Pub.

GEOGRAPHY-SEC-401
Geographical Information System (Practical)

Full Marks: 100 [End Semester Exam: 70, Internal Assessment :30]
Pass Marks: 40 [End Semester Exam: 28, Internal Assessment :12]
Contact Hours: 80

Learning Objectives: To give an introduction to the students regarding geographical information system (GIS); global positioning system (GPS); GIS data structure; GIS data analysis; and application of GIS.

1. Geographical Information System (GIS): Definition and Components.
2. Global Positioning System (GPS) – Principles and Uses; DGPS.
3. GIS Data Structures: Types (spatial and Non-spatial), Raster and Vector Data Structure.
4. GIS Data Analysis: Input; Geo-Referencing; Editing, Output and Query; Overlays.
5. Application of GIS**:** Land Use Mapping; Urban Sprawl Analysis; Forests Monitoring.

Practical Record: A project file consisting of 3 exercises on using any GIS Software on above mentioned themes.

Reading List

1. Bhatta, B. (2010) Analysis of Urban Growth and Sprawl from Remote Sensing,Springer, Berlin Heidelberg.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. Chauniyal, D.D. (2010) Sudur Samvedan evam Bhogolik Suchana Pranali, Sharda Pustak Bhawan, Allahabad
4. Heywoods, I., Cornelius, S and Carver, S. (2006) An Introduction to Geographical Information system. Prentice Hall.
5. Jha, M.M. and Singh, R.B. (2008) Land Use: Reflection on Spatial Informatics Agriculture and Development, New Delhi: Concept.
6. Nag, P. (2008) Introduction to GIS, Concept India, New Delhi.
7. Sarkar, A. (2015) Practical geography: A systematic approach. Orient Black Swan Private Ltd., New Delhi
8. Singh, R.B. and Murai, S. (1998) Space Informatics for Sustainable Development, Oxford and IBH, New Delhi.

GEOGRAPHY-SEC-501

Cartography (Practical)

Full Marks: 100 [End Semester Exam: 70, Internal Assessment :30]
Pass Marks: 40 [End Semester Exam: 28, Internal Assessment :12]
Contact Hours: 80

Learning Objectives: To give an introduction to the students regarding nature and scope of cartography; techniques of thematic mapping; representation of contours and profiles; interpretation of topographic maps; and plane table surveying methods.

1. Cartography – Nature and Scope.
2. Techniques of Thematic Mapping: Proportionate Circles, Proportionate Squares, Spheres and Multiple Dots.
3. Representation of Contours and Profiles (with brief description):
   - (i) Ridge and Saddle
   - (ii) River Terraces
   - (iii) Water Divide
   - (iv) Cirque
   - (v) Fiord Coast
   - (vi) Ria Coast
4. Interpretation of Topographic maps with special reference to plain or mountain.
5. Surveying: Plane Table Surveying – Radiation and Intersection Method.

Reading List

1. Singh, Dr. R. L.: Fundamentals of Practical Geography
2. Misra, R. P.: Fundamentals of Cartography
3. Khan, Z. A.: A Textbook of Practical Geography

GEOGRAPHY-SEC-601

Field Techniques and Survey based Project Report (Practical)

Full Marks: 100 [End Semester Exam: 70, Internal Assessment :30]
Pass Marks: 40 [End Semester Exam: 28, Internal Assessment :12]
Contact Hours: 80

Learning Objectives: To give an introduction to the students regarding field work in geographical studies; defining field and identification of case study; field techniques; questionnaires; and designing field report.

1. Field Work in Geographical Studies – Role, Value and Ethics of Field-Work.
2. Defining the Field and Identifying the Case Study – Rural / Urban / Physical / Human / Environmental.
3. Field Techniques – Merits, Demerits and Selection of the Appropriate Technique; Observation (Participant / Non Participant).

4. Questionnaires (Open/ Closed / Structured / Non-Structured); Interview with Special Focus on Focused Group Discussions; Space Survey (Transects and Quadrants, Constructing a Sketch).
5. Designing the Field Report – Aims and Objectives, Methodology, Analysis, Interpretation and Writing the Report.

Practical Record

1. Each student will prepare an individual report based on primary and secondary data collected during field work.
2. The duration of the field work should not exceed 10 days.
3. The word count of the report should be about **8000 to 12,000** excluding figures, tables, photographs, maps, references and appendices.
4. One 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.