



लक्ष्यं विश्वमानम्

# **Draft CBCS Syllabus for Undergraduate Courses in Geography**

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TO BE EFFECTIVE FROM THE ACADEMIC SESSION 2018-19

**West Bengal State University**  
March, 2018

# 1. Scheme for the CBCS Curriculum for Geography General (B.Sc.)

## 1.1 Credit Distribution across Courses

Course Type B.Sc. General	Total Papers	Credits	
		THEORY + PRACTICAL	THEORY + TUTORIAL*
Core Course: 04 courses from each of the 03 disciplines of choice	12	12×4 = 48 12×2 = 24	12×5 = 60 12×1 = 12*
Elective Courses: 02 papers from each discipline of choice	6	6×4 = 24 6×2 = 12	6×5 = 30 6×1 = 06*
Ability Enhancement Courses: 02 papers of 02 credits	2	2×2 = 04	2 × 2=04
Skill Enhancement Courses: 04 papers of 02 credits each	4	4×2 = 08	4 × 2=08
		120	120

\*Tutorials of 1 Credit will be conducted in case there is no practical component

## 1.2 Computation of work-load per week

Type of Course	Credit	Duration of Periods
Tutorial Class	1	1 Theoretical class of 1 hour duration
Theory (T)	1	1 Theoretical class of 1 hour duration
Practical (P)	1	1 Practical class of 2 hour duration
Semester Duration: 15 weeks of direct teaching		

## 1.3 List of subjects to be offered with Geography General

1. Political Science	4. Statistics
2. Economics	5. Zoology
3. Mathematics	6. Anthropology or Computer Science

Any 2 (two) subjects to be chosen from the above list and from each subject four papers to be taken as Core Course and two papers as Elective Course as mentioned in Table 3.2.

#### 1.4 Distribution of Courses across semesters for Geography General (B.Sc.)

Semester	Course	Course Code	Title	Credit	Marks	Remarks
I	Core (DSC 1A)	GEOGCOR01T	Physical Geography	06	75	From Geography
	Core (DSC 2A)	XXXGCOR01T		06	75	Subject 2 apart from Geography
	Core (DSC 3A)	XXXGCOR01T		06	75	Subject 3 apart from Geography
	AECC	ENGSaec01M	Communicative English	02	25	Shared course
II	Core (DSC 1B)	GEOGCOR02T	Human Geography	06	75	From Geography
	Core (DSC 2B)	XXXGCOR02T		06	75	Subject 2 apart from Geography
	Core (DSC 3B)	XXXGCOR02T		06	75	Subject 3 apart from Geography
	AECC	ENVSAEC02T	Environment Studies	02	25	Shared course
III	Core (DSC 1C)	GEOGCOR03T	General Cartography	04	50	From Geography
		GEOGCOR03P	General Cartography (Lab)	02	25	
	Core (DSC 2C)	XXXGCOR03T		04	50	Subject 2 apart from Geography
	Core (DSC 3C)	XXXGCOR03T		06	75	Subject 3 apart from Geography
	SEC1	XXXSSEC01M	Remote Sensing	02	25	Shared course

IV	Core (DSC 1D)	GEOGCOR04T	Environmental Geography	06	75	From Geography
	Core (DSC 2D)	XXXGCOR04T		06	75	Subject 2 apart from Geography
	Core (DSC 3D)	XXXGCOR04T		06	75	Subject 3 apart from Geography
	SEC2	XXXSSEC02M	Advanced Spatial Statistical Techniques	06	75	Shared course
V	DSE1A	GEOGDSE01T	A. Soil and Biogeography			Any one course among A, B and C from Geography
		GEOGDSE02T	B. Regional Development			
		GEOGDSE03T	C. Disaster Management			
	DSE2A	XXXGDSE01T				Subject 2 apart from Geography
	DSE3A	XXXGDSE01T				Subject 3 apart from Geography
	SEC3					Shared course
VI	DSE1B	GEOGDSE04P	Project Report Based on Field Work	06	75	Compulsory from Geography
	DSE2B	XXXGDSE01T		02	25	Subject 2 apart from Geography
	DSE3B	XXXGDSE01T		06	75	Subject 3 apart from Geography
	SEC3			06	75	Shared course

### 1.5 Core Subjects

Code (Theory)	Code (Practical)	Course Name
GEOGCOR01T		Physical Geography
GEOGCOR02T		Human Geography
GEOGCOR03T	GEOGCOR03P	General Cartography
GEOGCOR04T		Environmental Geography

### 1.6 Choices for Two Discipline Specific Electives

Code (Theory)	Course Name
GEOGDSE01T	A. Soil and Biogeography
GEOGDSE02T	B. Regional Development
GEOGDSE03T	C. Disaster Management
GEOGDSE04P	Project Report Based on Field Work

### 1.7 Choices for Two Skill Enhancement Courses

Code (Theory)	Course Name
XXXSSEC01M	Remote Sensing
XXXSSEC02M	Advanced Spatial Statistical Techniques

## 2. Core Course Syllabus

(4 compulsory papers)

### GEOGCOR01T– Physical Geography ✧

6 Credit, 75 Marks [90 classes]

#### Unit I: Geotectonics and Geomorphology

6. Physical Geography – Definition and Scope, Components of Earth System.
7. Internal Structure of Earth based on Seismic Evidence, Plate Tectonics and its associated Features.
8. Influence of rocks on topography: Limestone and Granite
9. Evolution of landforms under fluvial process, Normal Cycle of Erosion of Davis
10. Formation of erosional and depositional landforms by coastal and aeolian processes

#### Unit II: Climatology and Oceanography

11. Insolation and Heat Balance.
12. Horizontal and Vertical distribution of temperature and pressure
13. Planetary wind system, characteristics of Monsoon and Tropical Cyclone
14. Climatic Classification: Köppen
15. Hydrological Cycle, Ocean Bottom Relief Features, ocean currents.

#### Reading List

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

## GEOGCOR02T – Human Geography ✧

6 Credit, 75 Marks [90 classes]

### Unit I Population and Social Geography

1. Factors of Growth and distribution of world population. Demographic Transition Theory.
2. World Population Composition: Age, Gender and Literacy.
11. Migration: Types, causes and consequences.
12. Space and Society: Cultural Regions; Race; Religion and Language
13. Contemporary social issues: Illiteracy and Poverty

### Unit II Economic and Settlement Geography

14. Sectors of the economy: primary, secondary, tertiary and quaternary
15. Types of agriculture: Intensive subsistence rice farming, Plantation agriculture (Tea and Coffee)
16. Location, problems and prospects of Indian industries — Cotton textile, Petroleum refining, Locomotive
17. Types and Patterns of Rural Settlements
18. Classification of Urban Settlements; Trends and Patterns of World Urbanization

### Reading List

Chandna, R.C. (2010) Population Geography, Kalyani Publisher.

Daniel, P.A. and Hopkinson, M.F. (1989) The Geography of Settlement, Oliver & Boyd, London.

Ghosh, S. (2015) Introduction to settlement geography. Orient Black Swan Private Ltd., Kolkata

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

Johnston R; Gregory D, Pratt G. et al. (2008) The Dictionary of Human Geography, Blackwell Publication.

Jordan-Bychkov et al. (2006) The Human Mosaic: A Thematic Introduction to Cultural Geography. W. H. Freeman and Company, New York.

Kaushik, S.D. (2010) Manav Bhugol, Rastogi Publication, Meerut.

Maurya, S.D. (2012) Manav Bhugol, Sharda Pustak Bhawan. Allahabad.

## GEOGCOR03T – General Cartography ✧

4 Credits, 50 Marks [60 classes]

### Cartographic Techniques

4. Concept of map scale: Types and Application. Reading distances on a map.
5. 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, Bonne's Projection. Concept of UTM projection
6. Survey of India topographical maps: Reference scheme of old and open series. Information on the margin of maps.
5. Representation of Data – Symbols, Dots, Choropleth, Isopleth and Flow Diagrams, Interpretation of Thematic Maps.

### Reading List

Dent B. D., 1999: *Cartography: Thematic Map Design*, (Vol. 1), McGraw Hill.

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

Mishra R. P. and Ramesh A., 1989: *Fundamentals of Cartography*, Concept Publishing.

Robinson A., 1953: *Elements of Cartography*, John Wiley.

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

Steers J. A., 1965: *An Introduction to the Study of Map Projections*, University of London.

## GEOGCOR03P – General Cartography ✧

2 Credits, 25 Marks [60 classes]

### Cartographic Techniques

4. Graphical construction of scales: Plain and comparative. [10]
5. Construction of projections: Zenithal Gnomonic Polar Case, Zenithal Stereographic Polar Case, Cylindrical Equal Area, Mercator's Projection, Bonne's Projection. [30]
6. Construction and interpretation of relief profiles from Survey of India topographical map — superimposed, projected and composite, relative relief map, slope map (Wentworth), and Correlation between physical and cultural features from Survey of India topographical maps using transect chart.



## GEOGCOR04T – Environmental Geography ✧

6 Credits, 75 Marks [90 classes]

### Concepts

9. Environmental Geography: Concepts and Approaches
10. Human-Environment Relationship in equatorial, desert, mountain and coastal regions
11. Concept of holistic environment and system approach
12. Ecosystem: Concept, structure and functions

### Environmental problems and policies

13. Environmental Problems and Management: Air Pollution; Water pollution Biodiversity Loss; Solid and Liquid Waste.
14. Environmental problems and management: Desertification and soil erosion
15. Environmental Programmes and Policies: Developed Countries; Developing Countries.
16. New Environmental Policy of India.

### Reading List

- Casper J.K. (2010) Changing Ecosystems: Effects of Global Warming. Infobase Pub. New York.
- Hudson, T. (2011) Living with Earth: An Introduction to Environmental Geology, PHI Learning Private Limited, New Delhi.
- Miller, G.T. (2007) Living in the Environment: Principles, Connections, and Solutions, Brooks/ Cole Cengage Learning, Belmont.
- Singh, R.B. (1993) Environmental Geography, Heritage Publishers, New Delhi.
- UNEP (2007) Global Environment Outlook: GEO4: Environment For Development, United Nations Environment Programme. University Press, Cambridge.
- Wright R. T. and Boorse, D. F. (2010) Toward a Sustainable Future, PHI Learning Pvt Ltd, New Delhi.
- 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

### 3. Discipline Specific Elective

(2 Compulsory papers)

#### GEOGDSE01T – Soil and Biogeography

6 Credits, 75 Marks [90 classes]

##### Unit I: Soil Geography

1. Factors of soil formation.
2. Soil profile. Origin and profile characteristics of Lateritic and Chernozem soils
3. Definition and significance of soil properties: Texture, structure and moisture, pH and organic matter
4. Principles of soil classification: Genetic and USDA. Concept of land capability and its classification.

##### Unit II: Biogeography

5. Concepts of biosphere, ecosystem, biome, ecotone, community, niche and succession.
6. Concepts of food chain and food web. Energy flow in ecosystems
7. Geographical extent and characteristic features of: Tropical rain forest and Grassland biomes
8. Bio-geochemical cycles with special reference to carbon dioxide and nitrogen.

##### Reading List

Biswas, T.D. and Mukherjee, S.K. 1997: Textbook of Soil Science, TataMcGraw Hill,

Brady, N.C. and Weil, R.R. 1996. The Nature and Properties of Soil, 11th edition, Longman, London :

Chapman J.L. and Reiss, M.J. 1993. Ecology: Principle and Applications, Cambridge University Press, Cambridge:

Dash, M.C., 2001. Fundamental of Ecology, 2nd edition, Tata McGrawHill, New Delhi

Huggett, R. 1998. Fundamentals of Biogeography, Routledge, London:

Kormondy, E.J. 1996. Concept of Ecology, 4th edition, Prentice- Hall, India, New Delhi

Myers, A. A. and Giller, P.S. (editors) 1988. Analytical Biogeography: an Integrated Approach to the Study of Animal and Plant Distribution. Chapman and Hall, London

## GEOGDSE02T – Regional Development

6 Credits, 75 Marks [90 classes]

### Concepts of Regions and Regional Planning

1. Definition of Region. Types and Need of Regional planning:
2. Choice of a Region for Planning: Characteristics of an Ideal Planning Region; Delineation of Planning Region
3. Regionalization of India for Planning (Agro Ecological Zones)
4. Strategies/Models for Regional Planning: Growth Pole Model of Perroux; Growth Centre Model in Indian Context.
5. Problem Regions and Regional Planning: Backward Regions and Special Area Development Plans in India.

### Regional Development

6. Changing concept of development and underdevelopment;
7. Indicators of development: Economic, social and environmental. Concept of human development
8. Development and regional disparities in India since Independence: Disparities in agricultural development and industrial development
9. Development and regional disparities in India since independence : Disparities in human resource development in terms of education and health

### Reading List

- Bhargava, G. 2001. Development of India's Urban, Rural, and Regional Planning in 21st Century: Policy Perspective, Gyan Publishing House.
- Bhatt, L.S. 1976 Micro Level Planning in India. KB Publication, Delhi
- Chand, M., Puri, V.K. 2000. Regional Planning In India, Allied Publishers Ltd.
- Chandana, R.C. 2016. Regional Planning and Development, 6th ed, Kalyani Publishers.
- Deshpande C. D., 1992: *India: A Regional Interpretation*, ICSSR, New Delhi.
- Glasson, J. 2017. Contemporary Issues in Regional Planning, Routledge.
- Gregory, D., Johnston, R., Pratt, G., Watts., Whatmore, S. (Eds) 2009. The Dictionary of Human Geography.
- Hall, P., Tewdwr-Jones, M. 2010. Urban and Regional Planning, Routledge.
- Higgins, B., Savoie, D.J. 2017. Regional Development: Theories and Their Application, Routledge.
- Kulshetra, S.K. 2012. Urban and Regional Planning in India: A Handbook for Professional Practitioners, Sage Pub.
- Kumar, A., Meshram, D.S., Gowda, K. (Eds) 2016. Urban and Regional Planning Education: Learning for India, Springer.
- Misra, R.P. 1992. Regional Planning: Concepts, Techniques, Policies and Case Studies, Concept Publishing.
- Rapley, J. 2007. Understanding Development: Theory and Practice in the Third World, Lynne Rienner.
- Rapley, John (2007) Understanding Development: Theory and Practice in the 3rd World. Lynne Raza, M., Ed. (1988). Regional Development. Contributions to Indian Geography. New Delhi,
- Ray, J. 2001. Introduction to Development & Regional Planning, Orient Black swan.
- Raza, M. (Ed.) 1988. Regional Development: Contributions to Indian Geography, Heritage Publishers.

## GEOGDSE03T – Disaster Management

6 Credits, 75 Marks [90 classes]

### Unit I: Concepts

1. Hazards, risk, vulnerability and disasters: definition and concepts.
2. Approaches to hazard study: risk perception and vulnerability assessment. Hazard paradigms.
3. Response and mitigation to disasters: mitigation and preparedness, NDMA and NIDM; indigenous knowledge and community-based disaster management; do's and don'ts during disasters.

### Unit II: Hazard-specific Study with focus on India

4. Disasters in india: (a) causes, impact, distribution and mapping: flood, drought and cyclone
5. Disasters in india: (b) causes, impact, distribution and mapping: earthquake, tsunami and landslide
6. Human induced disasters: causes, impact, distribution and mapping: radioactive fallout.

### Reading List

Government of India. (1997) Vulnerability Atlas of India. New Delhi, Building Materials & Technology Promotion Council, Ministry of Urban Development, Government of India.

Kapur, A. (2010) Vulnerable India: A Geographical Study of Disasters, Sage Publication, New Delhi.

Modh, S. (2010) Managing Natural Disaster: Hydrological, Marine and Geological Disasters, Macmillan, Delhi.

Singh, R.B. (2005) Risk Assessment and Vulnerability Analysis, IGNOU, New Delhi. Chapter 1, 2 and 3

Singh, R. B. (ed.), (2006) Natural Hazards and Disaster Management: Vulnerability and Mitigation, Rawat Publications, New Delhi.

Sinha, A. (2001). Disaster Management: Lessons Drawn and Strategies for Future, New United Press, New Delhi.

Stoltman, J.P. et al. (2004) International Perspectives on Natural Disasters, Kluwer Academic Publications. Dordrecht.

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](http://www.ikbooks.com)).

## **GEOGDSE04P – Project Report based on Field Work**

**6 Credits, 75 Marks**

Project work is compulsory for completing B.Sc Course in Geography. Project Work is intended to provide an opportunity to the candidate to field test the learning.

The Project report should be based on field work on some specified topics as suggested by the Department.

Each student will prepare an individual report based on primary and secondary data collected during field work.

The duration of the field work should not exceed 10 days.

The word count of the report should be about **8000** excluding figures, tables, photographs, maps, references and appendices.

The report should include an introduction, literature review, project aims and objectives, methodology, results and discussion and references.

It should not exceed 20 to 25 pages (A4 pages) including maps, diagrams, and photographs etc.

One copy of the report on A 4 size paper should be submitted prior to examination.

## 4. Skill Enhancement Course Syllabus

(For both Honours and General courses)

### **GEOSSEC01M – Remote Sensing** ✨

2 Credits, 25 Marks [30 classes]

1. Principles of Remote Sensing (RS): Classification of RS satellites and sensors
2. Sensor resolutions and their applications with reference to IRS and Landsat missions, image referencing schemes and data acquisition.
3. Preparation of False Colour Composites from IRS LISS-3 and Landsat TM and OLI data. Principles of image rectification and enhancement.
4. Principles of image interpretation and feature extraction. Preparation of inventories of land use land cover features from satellite images.

*A project file consisting of four exercises on the above themes is to be submitted*

#### Reading List

Bhatta, B. 2011. Global Navigation Satellite Systems: Insights into GPS, GLONASS, Galileo, Compass and Others, CRC Press.

Jensen, J.R., 2013. Remote Sensing of the Environment: An Earth Resource Perspective, Pearson Education India.

Joseph, G. and Jegannathan, C. 2018. Fundamentals of Remote Sensing, 3rd ed, Universities Press.

Lillesand, T.M., Kiefer, R.W. and Chipman, J.W., 2015. Remote Sensing and Image Interpretation, 7th ed, Wiley.

#### WEBSITES:

International Society for Photogrammetry and Remote Sensing: [www.isprs.org](http://www.isprs.org)

NASA Landsat Science: [www.landsat.gsfc.nasa.gov](http://www.landsat.gsfc.nasa.gov)

National Remote Sensing Centre: [www.nrsc.gov.in](http://www.nrsc.gov.in)

USGS Global Visualization Viewer: [www.glovis.usgs.gov](http://www.glovis.usgs.gov)

## GEOSSEC02M – Advanced Spatial Statistical Techniques ✧

2 Credits, 25 Marks [30 classes]

1. Probability theory, probability density functions with respect to Normal, Binomial and Poisson distributions and their geographical applications.
2. Sampling: Sampling plans for spatial and non-spatial data, sampling distributions. Sampling estimates for large and small samples tests involving means and proportions.
3. Correlation and Regression Analysis: Rank order correlation and product moment correlation; linear regression, residuals from regression, and simple curvilinear regression. Introduction to multi-variate analysis.
4. Time Series Analysis: Time Series processes; Smoothing time series; Time series components.

*Any statistical Software Package (e.g., SPSS, MS Excel, R, etc.) may be used for practice. A project file consisting of four exercises on the above themes is to be submitted.*

### Reading List

- Acevedo, M.F. 2012. Data Analysis and Statistics for Geography, Environmental Science and Engineering, CRC Press.
- Harris, R., Jarvis, C. 2011. Statistics for Geography and Environmental Science, Prentice Hall.
- McGrew Jr., J.C., Lembo Jr., A.J., Monroe, C.B. 2014. An Introduction to Statistical Problem Solving in Geography, 3rd ed, Waveland Press.
- Pal S. K., 1998. Statistics for Geoscientists: Techniques and Applications, Concept Pub Co.
- Rogerson, P.A. 2015. Statistical Methods for Geography: A Student's Guide, 4th ed, Sage.

