

Truncated CBCS Syllabus for Undergraduate Honours Courses in Geography

FOR THE END SEMESTER EXAMINATION OF SEMESTERS I, III AND V
EXPECTED TO BE HELD IN MARCH 2021

Distribution of Courses in Semesters I, III and V for Geography Honours for 2019-2020 Session

Semester	Course	Course Code	Title	Credit	Marks	Remarks	
I	Core	GEOACOR01T	Geotectonics and Geomorphology	04	50	Compulsory	
		GEOACOR01P	Geotectonics and Geomorphology (Lab)	02	25	Compulsory	
	Core	GEOACOR02T	Cartographic Techniques	04	50	Compulsory	
		GEOACOR02P	Cartographic Techniques (lab)	02	25	Compulsory	
	GE	XXXHGEC01T		06	75	One course of a subject (Eg. A) chosen from the list of subjects given in section 1.3	
	AECC	ENVSAEC01T	Environment Studies	02	25	Compulsory	
III	Core	GEOACOR05T	Climatology	04	50	Compulsory	
		GEOACOR05P	Climatology (Lab)	02	25		
	Core	GEOACOR06T	Geography of India	06	75		
	Core	GEOACOR07T	Statistical Methods in Geography	04	50		
		GEOACOR07P	Statistical Methods in Geography Lab	02	25		
	GE	XXXHGEC03T		06	75		One course of a subject (Eg. B) chosen from the list of subjects given in section 1.3
	SEC	GEOSSEC01M	Remote Sensing	02	25		Compulsory
	SEC	GEOSSEC02M	Advanced Spatial Statistical Techniques	02	25		Compulsory
V	Core	GEOACOR11T	Field Work and Research Methodology	04	50	Compulsory	
		GEOACOR11P	Field Work and Research Methodology (Lab)	02	25		
	Core	GEOACOR12T	Disaster Management	04	50	Compulsory	
		GEOACOR12P	Disaster Management (Lab)	02	25		
	DSE	GEOADSE01T	Soil and Biogeography	06	75	Compulsory	
	DSE	GEOADSE02T	A. Settlement Geography	06	75	Students to choose any one of the two courses (A or B)	
GEOADSE03T		B. Population Geography	06	75			

Semester I Core Course Syllabus

GEOACOR01T – Geotectonics and Geomorphology ✧

4 Credits, 50 Marks [60 classes]

Unit I: Geotectonics

1. Earth's tectonic and structural evolution with reference to geological time scale
2. Earth's interior with special reference to seismology.
3. Plate Tectonics as a unified theory of global tectonics: Processes and landforms at plate margins and hotspots

Unit II: Geomorphology

4. Degradational processes: Weathering, mass wasting and resultant landforms
5. Development of river network and landforms on folded structures
6. Glacial and glacio-fluvial processes and landforms
7. Aeolian and fluvio-aeolian processes and landforms
8. Models on landscape evolution: Views of Davis and Hack

Reading List

Billings, M.P. 1971. Structural Geology, Pearson.

Frisch, W., Meschede, M., Blakey, R.C. 2011. Plate Tectonics: Continental Drift and Mountain Building. Springer.

Goudie, A.S. (Ed) 2004. Encyclopaedia of Geomorphology, vol. 1 & 2, Routledge.

Gregory, K.J., Lewin, J. 2014. The Basics of Geomorphology: Key Concepts, Sage.

Harvey, A. 2012. Introducing Geomorphology: A Guide to Landforms and Processes, Dunedin Academic Press.

Kale, V.S., Gupta, A. 2001. Introduction to Geomorphology, Orient Longman.

Kearey, P., Klepeis, K.A., Vine, F.J. 2011. Global Tectonics, 3rd ed, Wiley-India.

Knighton, A.D. 1984. Fluvial Forms and Processes, Edward Arnold.

Selby, M.J. 1986. Earth's Changing Surface, Oxford University Press.

Strahler, A. 2016. Introducing Physical Geography, 6th ed, Wiley.

Summerfield, M.J. 2003. Global Geomorphology: An Introduction to the Study of Landforms, Longman.

Thornbury, W.D. 1969. Principles of Geomorphology, 2nd ed, Wiley-India / CBS.

GEOACOR01P – Geotectonics and Geomorphology ✧

2 Credits, 25 Marks [60 classes]

1. Megascopic identification of (a) *mineral samples*: Bauxite, calcite, chalcopryrite, galena, hematite, mica, quartz, tourmaline; and (b) *rock samples*: Granite, basalt, laterite, sandstone, conglomerate, slate, phyllite, schist, gneiss, marble
2. Interpretation of geological maps with unconformity and intrusions on uniclinal structure

Reading List

Farndon, J. 2012. The Illustrated Guide to Rocks & Minerals, Southwater.

McCullough, P.K. 1978. Modern Concept in Geomorphology, Oxford University Press.

Pillent, C. 2002. Smithsonian Handbooks: Rocks & Minerals, Dorling Kindersley.

Sarkar, A. 2015. Practical Geography: A Systematic Approach, 3rd ed, Orient Blackswan Private Ltd.

Sen, P.K. 1989. Geomorphological Analysis of Drainage Basin: An Introduction to Morphometric and Hydrological Parameters, University of Burdwan.

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

GEOACOR02T – Cartographic Techniques ✧

4 Credit, 50 Marks [60 classes]

1. Maps: Classification and types. Components of a map
2. Concept and application of scales: Plain, comparative and diagonal
3. Survey of India topographical maps: Reference scheme of old and open series. Information on the margin of maps
4. Coordinate systems: Polar and rectangular
5. Concept of generating globe and UTM projection
6. Map projections: Classification, properties and uses

Reading List

Kennedy, M., Kopp, S. 2001. Understanding Map Projections, Esri Press.

Kimerling, A.J., Buckley, A.R., Muehrcke, P.C., Muehrcke, J.O. 2011. Map Use: Reading, Analysis, Interpretation, 7th ed, Esri Press.

Monkhouse, F.J., Wilkinson, H.R. 1971. Maps and Diagrams: Their Compilation and Construction, 3rd ed (2017 reprint), Alphaneumera-Kolkata.

Pearson II, F. 1990. Map Projections: Theory and Applications 2nd ed, CRC Press.

Robinson, A.H., Morrison, J.L., Phillip, C.M., Kimerling, A.J., Guptill, S.C. 1995. Elements of Cartography, 6th ed, Wiley.

Sarkar, A. 2015. Practical Geography: A Systematic Approach, 3rd ed, Orient Blackswan Private Ltd.

Singh, R.L., Singh, R.P.B. 2008. Elements of Practical Geography, Kalyani Publishers.

Vaidyanadhan, R., Subbarao, K.V. 2014. Landforms of India from Topomaps and Images, Geological Society of India.

GEOACOR02P – Cartographic Techniques (Lab) ✨

2 Credits, 25 Marks [90 classes]

1. Graphical construction of scales: Plain, comparative and diagonal
2. Construction of projections: Polar Zenithal Stereographic, Bonne's, Cylindrical Equal Area, and Mercator's
3. Delineation of drainage basin from Survey of India topographical map, relative relief map, slope map (Wentworth), and stream ordering (Strahler) on a drainage basin.
4. Correlation between physical and cultural features from Survey of India topographical maps using transect chart.

Reading List

Kennedy, M., Kopp, S. 2001. Understanding Map Projections, Esri Press.

Kimerling, A.J., Buckley, A.R., Muehrcke, P.C., Muehrcke, J.O. 2011. Map Use: Reading, Analysis, Interpretation, 7th ed, Esri Press.

Monkhouse, F.J., Wilkinson, H.R. 1971. Maps and Diagrams: Their Compilation and Construction, 3rd ed (2017 reprint), Alphaneumera-Kolkata.

Pearson II, F. 1990. Map Projections: Theory and Applications 2nd ed, CRC Press.

Robinson, A.H., Morrison, J.L., Phillip, C.M., Kimerling, A.J., Guptill, S.C. 1995. Elements of Cartography, 6th ed, Wiley.

Sarkar, A. 2015. Practical Geography: A Systematic Approach, 3rd ed, Orient Blackswan Private Ltd.

Singh, R.L., Singh, R.P.B. 2008. Elements of Practical Geography, Kalyani Publishers.

Semester III Core Course Syllabus

GEOACOR05T – Climatology ✧

4 Credits, 50 Marks [60 classes]

Unit I: Elements of the Atmosphere

1. Nature, composition and layering of the atmosphere
2. Insolation: controlling factors. Heat budget of the atmosphere
3. Temperature: horizontal and vertical distribution. Inversion of temperature: types, causes and consequences
4. Greenhouse effect and importance of ozone layer

Unit II: Atmospheric Phenomena and Climatic Classification

5. Condensation: Process and forms. Mechanism of precipitation: Bergeron-Findeisen theory
6. Air mass: Typology, origin, characteristics and modification
7. Weather: stability and instability; barotropic and baroclinic conditions
8. Circulation in the atmosphere: Planetary winds, jet stream, index cycle
9. Tropical and mid-latitude cyclones
10. Monsoon circulation and mechanism with reference to India
11. Climatic classification after Köppen

Reading List

Books

- Ahrens, C.D. 2012. Essentials of Meteorology: An Invitation to the Atmosphere. 9th Ed, Cengage Learning.
- Barry R. G. and Carleton A. M., 2001: Synoptic and Dynamic Climatology, Routledge, UK.
- Barry, R.G, Chorley R.J. 2009. Atmosphere Weather and Climate. 9th Ed, Routledge.
- Critchfield, H. J. 1983. General Climatology. Prentice Hall India Ltd (2010 Reprint).
- Lal, D.S. 2012. Climatology. Sharda PustakBhawan.
- Lutgens, F.K., Tarbuck, E.J. 1998. The Atmosphere : An Introduction to Meteorology, 9th Ed, Prentice-Hall Inc.
- Oliver, J.E., Hidore J.J. 2002. Climatology: An Atmospheric Science, Pearson Education India

GEOACOR05P – Climatology ✧

2 Credits, 25 Marks [60 classes]

1. Interpretation of daily weather map of India: Monsoon
2. Construction and interpretation of hythergraph and climograph (G. Taylor)
3. Construction and interpretation of wind rose
4. A Project File, comprising of one exercise from each of the following is to be prepared and submitted

Reading List

Monkhouse, F.J., Wilkinson, H.R. 1971. Maps and Diagrams: Their Compilation and Construction, 3rd ed (2017 reprint), Alphaneumera-Kolkata.

Sarkar, A. 2015. Practical Geography: A Systematic Approach, 3rd ed, Orient Blackswan.

Singh, R.L., Singh, R.P.B. 2008. Elements of Practical Geography, Kalyani Publishers.

GEOACOR06T – Geography of India ✨

6 Credits, 75 Marks [90 classes]

Unit I: Geography of India

1. Physiographic divisions
2. Climate and soil: Characteristics and classification
3. Population: Distribution, growth, structure and policy
4. Tribes of India with special reference to Toda and Jarwa
5. Agricultural regions. Green revolution and its consequences
6. Mineral and power resources distribution and utilisation of iron ore, coal and petroleum
7. Industrial development: Automobile and information technology
8. Regionalisation of India: Economic (P. Sengupta)

Unit II: Geography of West Bengal

9. Physical perspectives: Physiographic divisions, forest and water resources
10. Resources: Agriculture, mining, and industry
11. Population: Growth, distribution and human development
12. Regional Issues: Darjeeling Hills and Sundarban

Reading List

- Bandyopadhyay, S., Kar, N.S., Das, S., Sen, J. 2014. River system and water resources of West Bengal: A Review. In: Vaidyanadhan, R. (Ed) Rejuvenation of Surface Water Resources of India: Potential, Problems and Prospects, Geological Society of India Special Publication.
- Dhara, M.K., Basu, S.K., Bandyopadhyay, R.K., Roy, B., Pal, A.K. (Eds.) 1999. Geology and Mineral Resources of the States of India, Part-1: West Bengal. Geological Survey of India Miscellaneous Publication.
- Ghurey, G.S. 1963. The Scheduled Tribes of India, 1980 reprint, Transaction Books.
- Johnson, B.L.C. (Ed) 2001. Geographical Dictionary of India, Vision Books.
- Khullar, D.R. 2011. India: A Comprehensive Geography, Kalyani Publishers
- Mandal, H., Mukherjee, S., Datta, A. 2002. India: An Illustrated Atlas of Tribal World, Anthropological Survey of India.
- Pathak, C.R. 2003. Spatial Structure and Processes of Development in India, Regional Science Association-Kolkata.
- Sharma, T.C. 2012. Economic Geography of India, Rawat Publications.
- Singh, J. 2003. India-A Comprehensive & Systematic Geography, GyanodayaPrakashan.
- Singh, R.L. 1971. India: A Regional Geography, National Geographical Society of India.
- Spate, O.H.K., Learmonth, A.T.A. 1967. India and Pakistan: A General and Regional Geography, Methuen.
- Tiwari, R.C. 2007. Geography of India, PrayagPustakBhawan.
- Valdiya, K.S. 2010. The Making of India: Geodynamic Evolution, Macmillan Publishers India Ltd.

GEOACOR07T – Statistical Methods in Geography ✧

4 Credits, 40 Marks [60 classes]

Unit I: Frequency Distribution and Sampling

1. Importance and significance of statistics in Geography
2. Discrete and continuous data, population and samples, scales of measurement (nominal, ordinal, interval and ratio),
3. Sources of geographical data for statistical analysis
4. Collection of data and formation of statistical tables
5. Sampling: Need, types, and significance and methods of random sampling
6. Theoretical distribution: frequency, cumulative frequency, normal and probability

Unit II: Numerical Data Analysis

7. Central tendency: Mean, median, mode, partition values
8. Measures of dispersion range, mean deviation, standard deviation, coefficient of variation
9. Association and correlation: Rank correlation, product moment correlation
10. Regression: Linear and non-linear
11. Time series analysis: Moving average

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.
- Sarkar, A. 2015. Practical Geography: A Systematic Approach, 3rd ed, Orient Blackswan.

GEOACOR07P – Statistical Methods in Geography (Lab) ✧

2 Credits, 25 Marks [60 classes]

1. Construction of data matrix with each row representing an areal unit (districts / blocks / *mouzas* / towns) and corresponding columns of relevant attributes
2. Based on the above, a frequency table, measures of central tendency and dispersion would be computed and interpreted using histogram and frequency curve
3. Based on of the sample set and using two relevant attributes, a scatter diagram and linear regression line would be plotted and residual from regression would be mapped with a short interpretation

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.

Sarkar, A. 2015. Practical Geography: A Systematic Approach, 3rd ed, Orient Blackswan.

Semester V Core Course Syllabus

GEOACOR11T – Fieldwork and Research Methodology ✧

4 Credits, 50 Marks [60 classes]

Unit I: Research Methodology

1. Research in Geography: Meaning, types and significance
2. Literature review and formulation of research design
3. Defining research problem and objectives
4. Research materials and methods
5. Techniques of writing scientific reports: Preparing notes, references, bibliography, abstract and keywords

Unit II: Fieldwork

6. Fieldwork in Geographical studies: Role and significance. Selection of study area and objectives. Pre-field academic preparations. Ethics of fieldwork
7. Field techniques and tools: Observation (participant, non participant), questionnaires (open, closed, structured, non-structured). Interview
8. Positioning and collection of samples. Preparation of inventory from field data.
9. Post-field tabulation, processing and analysis of quantitative and qualitative data

Reading List

- Clifford, N., Cope, M., Gillespie, T.W., French, S. (Eds) 2016. Key Methods in Geography, 3rd ed, Sage.
- Gomes, B., Jones III, J.P. (Eds) 2010. Research Methods in Geography: A Critical Introduction, Wiley-Blackwell.
- Lenon, B., Cleves, P. 2015. Geography Fieldwork and Skills, Harper-Collins.
- Montello, D.R, Sutton, P. 2012. An Introduction to Scientific Research Methods in Geography and Environmental Studies, 2nd ed, Sage.
- Murthy, K.LN. 2004. Research Methodology in Geography: A Text Book, Concept Publishing Co.
- Northey, N., Draper, D., Knight, D.B. 2015. Making Sense in Geography and Environmental Sciences: A Student's Guide to Research and Writing, 6th ed, Oxford University Press.
- Parsons, T., Knight, P.G. 2015. How To Do Your Dissertation in Geography and Related Disciplines, 3rd ed, Routledge.
- Phillips, R., Johns, J. 2012. Fieldwork for Human Geography, Sage.
- Riordan, D. 2013. Technical Report Writing Today, 10th ed, Wadsworth Publishing.
- Thornbush, M.J., Allen, C.D., Fitzpatrick, F.A. (Eds) 2014. Geomorphological Fieldwork, Elsevier.

GEOACOR11P – Fieldwork and Research Methodology (Lab) ✧

2 Credits, 25 Marks [60 classes]

The course will have two parts:

A. Literature Review

The students will do a literature review on a specific topic/ issue decided by the college. The review will be based on at least 10 literatures (published books/ journal articles/ reports/ monographs etc.). It will be completed within ten (10) A4 pages including references/ bibliography.

B. Field Report

1. Each student will select either one rural area (*mouza*) or an urban area (municipal ward) for the study and prepare a report based on secondary data collected from different sources.
 2. Students will collect secondary data both from topographical sheets, Google Earth images and other online available sources (census data, municipality data, agricultural statistical hand book, working plan of different government agencies, pollution control board's website data etc.).
 3. The primary objective of the report will be to evaluate the relation between physical and cultural landscape.
 4. College will decide and provide the mouza or ward map and scanned portion of the corresponding topographical sheet (if possible).
 5. Students will prepare maps and diagrams based on the above data. Maps and diagrams should not exceed 10 pages and students will clearly mention sources of data.
 6. The report should be in English in candidate's own words between 3000 and 3500 words (containing sections on: Introduction, Physical Aspects, Socio-economic Aspects, Conclusion), excluding tables, maps, diagrams and references. The report should not exceed 20 pages.
- ❖ Both the Literature Review and the Field Report should be handwritten. The scanned Literature Review and the scanned complete Field Report (including maps and diagrams) are to be submitted online in PDF format to the Head via e-mail (provided by the concerned department/ college).
 - ❖ In case of online examination the PDF files of Field Report, duly certified by the Head/ concerned teacher will be submitted by the Head to the Examiner. In case there is regular examination, the same should be printed, bound and submitted during viva.
 - ❖ Marks division: Field Report evaluation = 10, Literature Review = 12, Attendance = 3 (Following the stipulated guideline). Here the evaluation of Literature Review to be treated as continuous evaluation.

GEOACOR12T – Disaster Management ✧

4 Credits, 50 Marks [60 classes]

Unit I: Concepts

1. Classification of hazards and disasters.
2. Approaches to hazard study: Risk perception and vulnerability assessment. Hazard paradigms.
3. Responses to hazards: Preparedness, trauma and aftermath. Resilience and capacity building.
4. Hazards mapping: Data and geospatial techniques (for hazards enlisted in Unit II and Core 12P)

Unit II: Hazard-specific Study with focus on India

5. Earthquake: Factors, vulnerability, consequences and management
6. Tropical Cyclone: Factors, vulnerability, consequences and management
7. Riverbank erosion: Factors, vulnerability, consequences and management

Reading List

Coch, N.K. 1994. Geohazards: Natural and Human, Pearson College.

Coenraads, R. (Ed.) 2006. Natural Disasters and How We Cope, Millennium House.

Cutter, S.L. 2006. Hazards Vulnerability and Environmental Justice, Routledge

Government of India. 1997. Vulnerability Atlas of India, Revised ed, Building Materials & Technology Promotion Council, Ministry of Urban Development.

Hyndman, D., Hyndman, D. 2016. Natural Hazards and Disasters, 5th ed, Brooks Cole.

Kapur, A. 2010. Vulnerable India: A Geographical Study of Disasters, Sage.

Keller, E.A., DeVecchio, D.E. 2014. Natural Hazards: Earth's Processes as Hazards, Disasters, and Catastrophes, 4th ed, Routledge.

Pine, J.C. 2014. Hazards Analysis: Reducing the Impact of Disasters, 2nd ed, CRC Press.

Robbins, P., Hintz, J., Moore, S.A. 2014. Environment and Society: A Critical Introduction 2nd ed, Wiley.

Smith, K. 2013. Environmental Hazards: Assessing Risk and Reducing Disaster, 6th ed, Routledge.

Websites:

AGU Landslide Blog: blogs.agu.org/landslideblog

Disaster News Network: secure.disasternews.net

India Meteorological Department Cyclone Page: www.rsmcnewdelhi.imd.gov.in/index.php?lang=en

USGS Earthquake Hazards Programme: www.earthquake.usgs.gov

GEOACOR12P – Disaster Management ✧

2 Credits, 25 Marks [60 classes]

- ❖ An individual Project Report is to be prepared and submitted based on any one case study among the following disasters of West Bengal:
 - 1) Cyclone/ Thunderstorm, 2) Landslide, 3) Flood, 4) Coastal/ riverbank erosion, 5) Fire, 6) Industrial accident, 7) Structural collapse.
- ❖ The report should be prepared on secondary data and handwritten on A4 page in candidates' own words not exceeding 2000 words excluding tables, references/ bibliography, maps and diagrams.
- ❖ The scanned Project Report is to be submitted online in PDF format to the Head via e-mail (provided by the concerned department/college).
- ❖ In case of online examination the PDF files of the Project Report, duly certified by the Head/ concerned teacher will be submitted by the Head to the Examiner. In case there is regular examination, the same should be printed and submitted in a transparent front file during viva.

Marks division: Project Report evaluation = 10, Internal/ Continuous evaluation = 12, Attendance = 3 (Following the stipulated guideline).

Semester V Department Specific Elective Subjects Syllabus

GEOADSE01T– Soil and Biogeography ✧

6 Credit, 75 Marks [90 classes]

Unit I: Soil Geography

1. Factors of soil formation. Man as an active agent of soil transformation.
2. Soil profile. Origin and profile characteristics of Lateritic and Chernozem soils
3. Definition and significance of soil properties: Texture, structure and moisture,
4. Definition and significance of soil properties: pH, organic matter and NPK
5. Soil erosion and degradation: Factors, processes and mitigation measures
6. Principles of soil classification: Genetic and USDA.

Unit II: Biogeography

7. Concepts of biosphere, ecosystem, biome, ecotone, community, niche, succession and ecology
8. Concepts of trophic structure, food chain and food web.
9. Geographical extent and characteristic features of: Tropical rain forest and Grassland biomes
10. Bio-geochemical cycles with special reference to carbon dioxide and nitrogen
11. Measures for conservation of bio-diversity in India: Man and Biosphere Programme

Reading List

- Chapman J.L., Reiz, M.J. 1993. Ecology: Principle and Applications, Cambridge University Press.
- Chiras, D.D., Reganold, J.P. 2009. Natural Resource Conservation: Management for a Sustainable Future. Pearson.
- Cox, B., Moore, P.D., Ladle, R. 2016. Biogeography: An Ecological and Evolutionary Approach, Wiley-Blackwell.
- Daji, J.A., Kadam, J.R., Patil, N.D. 1996. A Textbook of Soil Science, Media Promoters and Publishers Pvt Ltd.
- Dash, M.C., 2001. Fundamentals of Ecology, 2nd edition, Tata McGrawHill, New Delhi
- Dey, N. K., Ghosh.P. 1993. India: A Study in Soil Geography, Sribhumi Publishing Company.
- Franzmeier, D.P., McFee, W.W., Graveel, J.G., Kohnke, H. 2016. Soil Science Simplified, 5th ed, Waveland Press.
- Huggett, R. 1998. Fundamentals of Biogeography, Routledge, London:
- Lomolino, M.V., Riddle, B.R., Whittaker, R.J. 2016. Biogeography, 5th ed, Oxford University Press.
- MacDonald, G. 2001. Biogeography: Introduction to Space, Time, and Life, Wiley
- Morgan, R.P.C. 1995. Soil Erosion and Conservation, 2nd edition, Longman.
- Santra. A. 2006. Handbook on Wild and Zoo Animals, International Book Distributing Co.
- Sharma, P.D. 2011. Ecology and Environment, Rastogi Publications.
- Weil, R.R. and Brady, N.C. 2016. The Nature and Properties of Soil, 15th edition, Pearson.
- White, R. 2006. Principles and Practice of Soil Science: The Soil as a Natural Resource, Blackwell.

GEOADSE02T –Settlement Geography ✧

6 Credit, 75 Marks [90 classes]

Unit I Rural Settlement

1. Scope and content of Settlement Geography; rural, urban and peri-urban areas
2. Rural Settlement: Definition, nature and characteristics
3. Morphology of rural settlements: site and situation, layout-internal and external
4. Rural house types with reference to India, Social segregation in rural areas; Census categories of rural settlements.
5. Problems and policies related to rural infrastructure with reference to India

Unit II Urban Settlement

6. Urban Settlements: Census definition (Temporal) and categories in India
7. Urban morphology: Classical models: Burgess, Homer Hoyt, Harris and Ullman Metropolitan concept.
8. City-region and Conurbation, Functional classification of cities: Nelson and McKenzie
9. Aspects of urban places: Location, site and situation, Size and spacing of cities: the rank size rule, the law of the primate city
10. Urban hierarchies: Central Place Theory

Reading List

- Banerjee Guha, S. (Ed.) 2004. Space, Society and Geography, Rawat Publication.
- Bjelland, M.D., Montello, D.R., Fellmann, J.D., Getis, A., Getis, J. 2000. Human Geography: Landscape of Human Activity, McGraw Hill.
- Carter, H. 1995. The Study of Urban Geography, 4th ed, Arnold.
- Dhanagare, D.N. 2004. Themes and Perspectives in Indian Sociology, Rawat Publication.
- Fern, R.L. 2002. Nature, God and Humanity, Cambridge University Press.
- Fouberg, E.H., Murphy, A.B., de Blij H.J. 2015. Human Geography: People, Place, and Culture, 11th ed, Wiley
- Ghosh, S. 1998. Introduction to Settlement Geography, Sangam Books Ltd.
- Gottdiener, M., Budd, M. Lehtovuori, P. 2016. Key Concepts in Urban Studies, 2nd ed, Sage.
- Gregory, D., Johnston, R., Pratt, G., Watts., Whatmore, S. (Eds) 2009. The Dictionary of Human Geography, Wiley.
- Hudson, F.S. 1970. Geography of Settlements, Macdonald and Evans Ltd.
- Hussain, M. 2007. Models in Geography, Rawat Publication.
- Jordan, T., Rowntree, L. 1990. Human Mosaic, Harper Collins Publishers.
- Knox, P., Pinch, S. 2000. Urban Social Geography, Pearson Education.
- Mandal, R.B. 2001. Introduction to Rural Settlement, 2nd ed, Concept Publishing Company.
- Mitchell, D. 2000. Cultural Geography: A Critical Introduction, Blackwell.
- Singh, R.Y. 2000. Geography of Settlements, Rawat Publication.

GEOADSE03T – Population Geography ✨

75 Marks 6 Credits

Unit I: Population Dynamics

1. Development of Population Geography as a field of specialization. Relation between population geography and demography. Sources of population data, their level of reliability and problems of mapping.
2. Population distribution: density and growth. Classical and modern theories in population distribution and growth, Demographic transition model.
3. World patterns determinants of population distribution and growth. Concept of optimum population.
4. Population distribution, density and growth profile in India.

Unit II: Population and Development

5. Concepts of Age-Sex Composition; Rural and Urban Composition; Literacy and education
6. Measurements of fertility and mortality. Concept of cohort and life table
7. Population composition of India: Urbanisation and Occupational structure.
8. Migration: Causes and types
9. National and international patterns of migration with reference to India.
10. Population and development: Concept of human development index and its components.
11. Population policies in developed and less development countries. India's population policies, population and environment, implication for the future.
12. Contemporary Issues –Declining Sex Ratio; Population and environment dichotomy

Reading List

- Barrett, H.R. 1995. Population Geography, Oliver and Boyd.
- Bartram, D. Poros, M. Monforte, P. 2014. Key Concepts in Migration, Sage.
- Binde, N., Kanitkar, H. 2000. The Principle of Population Studies, Himalaya Publications.
- Chandna, R.C. 2016. Geography of Population: Concepts, Determinants and Patterns, Kalyani Publishers.
- Dyson, T. 2011. Population and Development: The Demographic Transition, Rawat Publications.
- Gregory, D., Johnston, R., Pratt, G., Watts, S., Whatmore, S. (Eds) 2009. The Dictionary of Human Geography, 5th ed.,
- Hassan, M.I. 2005. Population Geography, Rawat publications.
- Hussain, M. 1994. Human Geography, Rawat publications.
- Jhingan, M.L., Bhatt, B.K., Desai, J.N. 2014. Demography, Vrinda Publications.
- Jones, H. R. 2000. Population Geography, 3rd ed, Chapman.
- Lutz, W., Warren, C.S., Scherbov, S. 2004. The End of the World Population Growth in the 21st Century, Earthscan.
- Majumdar, P.K. 2013. India's Demography: Changing Demographic Scenario in India, Rawat Publications.
- Mukherji, S. 2013. Migration in India: Links to Urbanization, Regional Disparities and Development Policies, Rawat Publications
- Newbold, K.B. 2017. Population Geography: Tools & Issues, 3rd ed, Rowman & Littlefield Publishers.
- Pacione, M. 2012. Population Geography: Progress and Prospect, Routledge.

Generic Elective Subjects Syllabus for Honours Students of Other Disciplines

Semester I GEOHGEC01T– Physical Geography ✧

6 Credit, 75 Marks [90 classes]

Unit I: Geotectonics and Geomorphology

1. Physical Geography – Definition and Scope, Components of Earth System.
2. Internal Structure of Earth based on Seismic Evidence, Plate Tectonics and its associated Features.
3. Evolution of landforms under fluvial process, Normal Cycle of Erosion of Davis
4. Formation of erosional and depositional landforms by aeolian processes

Unit II: Climatology and Oceanography

6. Insolation and Heat Balance.
7. Horizontal and Vertical distribution of temperature and pressure
8. Planetary wind system, characteristics of Monsoon and Tropical Cyclone
9. 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.

Semester III GEOHGEC03T – General Cartography ✧

4 Credits, 50 Marks [60 classes]

Cartographic Techniques

1. Concept of map scale: Types and Application. Reading distances on a map.
2. Map Projections: Criteria for choice of projections. Attributes and properties of: Zenithal Gnomonic Polar Case, Zenithal Stereographic Polar Case, Cylindrical Equal Area, Bonne's Projection.
3. Survey of India topographical maps: Reference scheme of old and open series. Information on the margin of maps.
4. 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.

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

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

Singh R. L., 1998: *Prayogic Bhoogol Rooprekha*, Kalyani Publications.

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

GEOHGEC03P – General Cartography ✧

2 Credits, 25 Marks [60 classes]

Cartographic Techniques

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

Truncated CBCS Syllabus for Undergraduate General Courses in Geography

FOR THE END SEMESTER EXAMINATION OF SEMESTERS I, III AND V
EXPECTED TO BE HELD IN MARCH 2021

**Distribution of Courses in Semesters I, III and V for Geography General
for 2019-2020 Session**

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
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	GEOSSEC01M	Remote Sensing	02	25	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

Core Course Syllabus

(4 compulsory papers)

GEOGCOR01T– Physical Geography ✧

6 Credit, 75 Marks [90 classes]

Unit I: Geotectonics and Geomorphology

1. Physical Geography – Definition and Scope, Components of Earth System.
2. Internal Structure of Earth based on Seismic Evidence, Plate Tectonics and its associated Features.
3. Evolution of landforms under fluvial process, Normal Cycle of Erosion of Davis
4. Formation of erosional and depositional landforms by aeolian processes

Unit II: Climatology and Oceanography

5. Insolation and Heat Balance.
6. Horizontal and Vertical distribution of temperature and pressure
7. Planetary wind system, characteristics of Monsoon and Tropical Cyclone
8. Hydrological Cycle, Ocean Bottom Relief Features, ocean currents.

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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.

GEOGCOR03T – General Cartography ✧

4 Credits, 50 Marks [60 classes]

Cartographic Techniques

1. Concept of map scale: Types and Application. Reading distances on a map.
2. Map Projections: Criteria for choice of projections. Attributes and properties of: Zenithal Gnomonic Polar Case, Zenithal Stereographic Polar Case, Cylindrical Equal Area, Bonne's Projection.
3. Survey of India topographical maps: Reference scheme of old and open series. Information on the margin of maps.
4. Representation of Data – Symbols, Dots, Choropleth, Isopleth and Flow Diagrams, Interpretation of Thematic Maps.

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

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

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

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

Singh R. L., 1998: *Prayogic Bhoogol Rooprekha*, Kalyani Publications.

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

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

Discipline Specific Elective

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

Adell, Germán (1999) Literature Review: Theories and Models Of The Peri-Urban Interface: A Changing Conceptual Landscape, Peri-urban Research Project Team, Development Planning Unit, University College London at

Agriculture Organization of the United Nations (FAO) at

Bhatt, L.S. (1976) Micro Level Planning in India. KB Publication, Delhi

Deshpande C. D., 1992: *India: A Regional Interpretation*, ICSSR, New Delhi.

Dreze J. and A. Sen, Indian Development: Select Regional Perspectives (Oxford: Oxford Heritage Publishers.

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,

Rienner, London.

Schmidt-Kallert, Einhard (2005) A Short Introduction to Micro-Regional Planning, Food and

Sdyasuk Galina and P Sengupta (1967): *Economic Regionalisation of India*, Census of India

Sen, Amratya (2000) Development as Freedom. Random House, Toronto University Press, 1996).

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.

Unit II: Hazard-specific Study with focus on India

4. Disasters in India: (a) causes, impact, distribution and mapping: flood and cyclone
5. Disasters in India: (b) causes, impact, distribution and mapping: earthquake 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 Opportunities", 2007. Publisher- I.K. International Pvt. Ltd. S-25, Green Park Extension, Uphaar Cinema Market, New Delhi, India (www.ikbooks.com).

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 image referencing schemes and data acquisition.
- ~~3.~~ Concept of False Colour Composite from IRS LISS-3
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

NASA Landsat Science: www.landsat.gsfc.nasa.gov

National Remote Sensing Centre: www.nrsc.gov.in

USGS Global Visualization Viewer: 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.
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 any two 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.

