Syllabus Geography (Honours)

2018

CBCS Syllabus for 3-Year Undergraduate Honours Course in GEOGRAPHY

BANKURA UNIVERSITY

Bankura, West Bengal, 722155

4. Discipline Specific Elective Subjects Syllabus

5. Skill Enhancement Subjects Syllabus

6. Generic Elective Subjects Syllabus

1. Introduction

The syllabus for Geography at undergraduate level using the Choice Based Credit System (CBCS) has been framed in compliance with model syllabus given by the UGC.

The main objective of framing this new syllabus is to give the students a holistic understanding of the subject giving substantial weightage to both the core contents and techniques used in Geography. The syllabus has given equal importance to both the two main branches of geography – Physical and Human.

The ultimate goal of the syllabus is that the students at the end are able to secure a job. Keeping in mind and in tune with the changing nature of the subject, adequate emphasis has been given on new techniques of mapping and understanding of the subject.

The syllabus has also been framed in such a way that the basic skills of subject are taught to the students, and everyone might not need to go for higher studies and the scope of securing a job after graduation will increase.

While the syllabus is in compliance with the UGC model curriculum, but since it did not offer much choice on electives in Physical Geography, one more elective “Soil and Biogeography” has been added.

This new syllabus will train undergraduates to get jobs in the information technology areas as there is great demand for preparation of digital maps and storage and retrieval of geospatial data.

2. Scheme for CBCS Curriculum

2.1 Credit Distribution across Courses

Course Type	Total Papers	Credits	
		Theory + Practical	Theory*
Core Courses	14	14*4 =56 14*2 =28	14*5 =70 14*1=14
Discipline Specific Electives	4	4*4=16 4*2=8	4*5=20 4*1=4
Generic Electives	4	4*4=16 4*2=8	4*5=20 4*1=4
Ability Enhancement Language Courses	2	2*2=4	2*2=4
Skill Enhancement Courses	2	2*2=4	2*2=4
Totals	26	140	140

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

2.2 Scheme for CBCS Curriculum

Semester	Course Name	Course Detail	Credits
I	Ability Enhancement Compulsory Course – I	English Communication / Environmental Science	2
	Core Course – I	Geotectonic and Geomorphology	6
	Core Course – II Practical	Cartographic Techniques Lab	6
	Generic Elective – 1	TBD	4
	Generic Elective – 1 Practical	TBD	2
II	Ability Enhancement Compulsory Course – II	English Communication / Environmental Science	2
	Core Course – III	Human Geography	6
	Core Course – IV Practical	Cartograms and Thematic Mapping Lab	6
	Generic Elective – 2	TBD	4
	Generic Elective – 2 Practical	TBD	2
III	Core Course – V	Climatology	6
	Core Course – VI	Geography of India	6
	Core Course – VII	Statistical Methods in Geography Lab	6
	Skill Enhancement Course – 1	Computer Basics and Computer Applications	2

	Generic Elective – 3	TBD	4
	Generic Elective – 3 Practical	TBD	2
IV	Core Course – VIII	Regional Planning and Development	6
	Core Course – IX	Geography of Economic Activities	6
	Core Course – X Practical	Environmental Geography Lab	6
	Skill Enhancement Course-2	GIS and GPS	2
	Generic Elective – 4	TBD	4
	Generic Elective – 4 Practical	TBD	2
V	Core Course – XI	Evolution of Geographical Thought	6
	Core Course – XII Practical	Remote Sensing Lab	6
	Discipline Specific Elective – 1	Hydrology and Oceanography	6
	Discipline Specific Elective – 1 Practical	TBD	2
	Discipline Specific Elective – 2	Cultural and Settlement Geography / Urban Geography	6
	Discipline Specific Elective – 2 Practical	TBD	2
VI	Core Course – XIII	Disaster Management	6
	Core Course – XIV Practical	Research Methodology and Field Work Lab	6
	Discipline Specific Elective – 3	Social and Bio-Geography	6
	Discipline Specific Elective – 3 Practical	TBD	
	Discipline Specific Elective- 4	Population Geography / Geography of Health and Wellbeing	6
	Discipline Specific Elective – 4 Practical	TBD	

2.3 Choices for Discipline Specific Electives

Discipline Specific Elective – 1 to 4			
SHGEO /503/DSE-1	**SHGEO/504/DSE-2**	**SHGEO/603/DSE-3**	**SHGEO /604/DSE-4**
Hydrology and Oceanography	Cultural and Settlement Geography	Soil and Biogeography	Population Geography
	Urban Geography		Geography of Health and Wellbeing

2.4 Choices for Skill Enhancement Courses

Skill Enhancement Courses	
SHGEO /305/ SEC-1	**SHGEO /405/SEC- 2**
Computer Basics and Applications	Geographical Information System

2.5 Choices for Generic Electives

Generic Electives – 1 to 4			
SHGEO /103/GE-1	**SHGEO /203/GE-2**	**SHGEO /304/GE-3**	**SHGEO /404/GE-4**
Physical Basis of Earth	Human Geography	Maps and Diagrams	Economic Geography
Climate Change: Vulnerability and Adaptations	Rural Development	Regional Development	Sustainable Development

Note: The choices of GE are subject to the availability of teachers, sufficient classrooms in the college. However, the first options are advised to follow to keep the core aspects of the subject to the students taking geography as combination.

3. Syllabus for Core Subjects

3.1 SHGEO /101/C-1: Geo-Tectonics and Geomorphology

Geo-Tectonics and Geomorphology

6 Credits

Unit 1: Earth: Origin and Evolution

1. Origin of Universe (Big Bang Model), Origin of Earth (Nebular Hypothesis of Laplace and Interstellar Dust Cloud Hypothesis of Schimdt)
2. Geological Time Scale and Geological History of the Earth
3. Isostasy: Origin of the concept, Theories of Airy and Pratt, Isostatic Adjustments, Gravity Anomalies
4. Internal Structure of the Earth: Seismological Evidences, physical, chemical and seismic properties of Earth layers.

Unit 2: Tectonic Theories and Processes

1 Continental Drift Theory of Alfred Wegener
2 Palaeo-Magnetism and Sea Floor Spreading
3 Plate Tectonic Theory; Plate Composition, Plate Movement, Plate Margins, Triple Junctions.
4 Tectonic Processes in relation to Plate Tectonics; Orogenesis, Earthquake, Vulcanicity

Unit 3: Process Geomorphology

1 Evolution of landforms on Uniclinal, Folded and Faulted Strata
2 Landscape Evolution Models: Davis, Penck and Hack
3 Climatic Geomorphology: Basic concepts, Morphoclimatic Zones of Peltier
4 Hillslopes: Genesis and Morphology

Reference Books

- Bloom A. L., 2001: Geomorphology: A Systematic Analysis of Late Cenozoic Landforms, Prentice-Hall of India, New Delhi.
- Bridges E. M., 1990: World Geomorphology, Cambridge University Press, Cambridge.
- Christopherson, Robert W., (2011), Geosystems: An Introduction to Physical

Geography, 8 Ed., Macmillan Publishing Company

- Kale V. S. and Gupta A., 2001: Introduction to Geomorphology, Orient Longman, Hyderabad.
- Knighton A. D., 1984: Fluvial Forms and Processes, Edward Arnold Publishers, London.
- Selby, M.J., (2005), Earth's Changing Surface, Indian Edition, OUP
- Skinner, Brian J. and Stephen C. Porter (2000), The Dynamic Earth: An Introduction to physical Geology, 4th Edition, John Wiley and Sons
- Thornbury W. D., 1969: Principles of Geomorphology, Wiley.

3.2 SHGEO /102/C-2P: Cartographic Techniques

Cartographic Techniques

4 Credits

Unit-1: Scale

1. Scale: Concept and Notations
2. Construction of Linear, Comparative (Unit), Diagonal and Vernier scales.
3. Scale Enlargement and Reduction (Computations)
4. Calculation of area from maps (Graphical Methods)

Unit-2: Map Projections

1 Map Projections: Nature and Classification
2 Basic Concepts: Parallels and Meridians, Datum, Geoid, Scale Factor, Deformation, Orthodrome and Loxodrome.
3 Principles, Theories, Construction and Properties of select Map Projections:
Conical Case- Simple Conical with one and two standard parallels, Polyconic and Sinusoidal
Cylindrical Case- Equal Area, Mercator
Zenithal Case- Gnomonic, Stereographic
4 UTM Grid System.

Unit-3: Surveying

1 Concepts and Principles: Angles, Bearing and Azimuths, Traversing, Radiation, Intersection
2 Prismatic Compass: Preparation of land use maps by open and closed traverse; computations of compass traverse- Included Angle, Area of traverse
3 Levelling by Dumpy Level: Profile and Contouring
4 Calculation of Height and Distance by Transit Theodolite

Reference Books

- Anson R. and Ormelling F. J., 1994: International Cartographic Association: Basic Cartographic Vol. Pregmen Press.
- Gupta K.K. and Tyagi, V. C., 1992: Working with Map, Survey of India, DST, New Delhi.
- Mishra R.P. and Ramesh, A., 1989: Fundamentals of Cartography, Concept, New Delhi.
- Monkhouse F. J. and Wilkinson H. R., 1973: Maps and Diagrams, Methuen, London.
- Rhind D. W. and Taylor D. R. F., (eds.), 1989: Cartography: Past, Present and

Future, Elsevier, International Cartographic Association.

- Robinson A. H., 2009: Elements of Cartography, John Wiley and Sons, New York.
- Singh R. L. and Singh R. P. B., 1999: Elements of Practical Geography, Kalyani Publishers.
- Sarkar, A. (2015) Practical geography: A systematic approach. Orient Black Swan Private Ltd., New Delhi

Instruction for Laboratory

- Practical works are to be completed in the classroom.
- Works are to be done in pencil and neatly hand written and signed by class teachers (No need of Final Sheets).
- Laboratory Note Books will be like those used in other laboratory based science subjects.

List of Practical

A Project File, comprising one exercise each is to be submitted

1. Graphical construction of Scales: Plain, Comparative, Diagonal and Vernier
2. Construction of Projections: Polar Zenithal Stereographic, Gnomonic, Simple Conic with one standard parallel, Bonne's, and Cylindrical Equal Area
3. Preparation of land use maps by open and closed traverse; computations of compass traverse- Included Angle, Area of traverse
4. Levelling by Dumpy Level: Profile and Contouring
5. Calculation of Height and Distance by Transit Theodolite (Base Accessible and Inaccessible)

3.3 SHGEO /201/C-3: Human Geography

Human Geography

6 Credits

Unit 1: Nature and Principles

1. Human Geography: Nature, scope and recent trends
2. Approaches to the study of Human Geography; Resource, Locational, Landscape, Environmental
3. Concept of Race and Ethnicity
4. Space and Society and Cultural regions, Language and Religion

Unit 2: Society and Demography

1. Evolution of human societies: Hunting and food gathering, pastoral nomadism, subsistence farming, industrial and urban societies
2. Population growth and distribution, population composition; Demographic Transition model
3. Population–Resource regions (Ackerman)
4. Trend of population growth (India)

Unit 3: Ekistics and Adaptation

1. Human adaptation to environment: Eskimo and Santhals
2. Human population and environment with special reference to development–environment conflict
3. Social morphology and rural house types in India
4. Types and patterns of Rural Settlements

Reference Books

- Bergman, E.F (1995): Human Geography-Culture, Connections and Landscape, Prentice Hall, New Jersey
- Chisholm. (1975): Human Geography, Penguin Books, Hermondsworth.
- Daniel, P.A. and Hopkinson, M.F. (1989): The Geography of Settlement, Oliver & Boyd, London.
- 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.
- Norton. W. (2001): Human Geography, 4th Edition Oxford University Press, Oxford
- Pearce D. (1995): Tourism Today: A Geographical Analysis, 2nd edition, Longman Scientific & Technical, London
- Pickering K. and Owen A. A. (1997): An Introduction to Global Environmental Issues, 2nd edition Rutledge, London.
- Raw, M. (1986): Understanding Human Geography: A Practical Approach, Bell and Hyman. London
- Rubenstein, J.M. (2002), The Cultural Landscape, 7th edition, Prentice Hall, Englewood Cliffs
- Smith D M (1982): Human Geography: A Welfare Approach, Edward Arnold, London

3.4 SHGEO /202/C-4P: Cartograms and Thematic Mapping

Cartograms and Thematic Mapping

6 Credits

Concepts in Theory

Unit-1: Cartographic Representation of Geographical Data

1. Geographical Data: Nature, Characteristics and Management
2. Cartograms: Line Graph, Bar graph and Pie
3. Climatic Diagrams: Wind Rose, Ergo Graph, Ombrothermic Diagram
4. Age-Sex Pyramid, Dependency Ratio

Unit-2: Mapping Techniques

1 Population Maps and Diagrams: Population Density by Choropleth, Distribution by Dot and Sphere
2 Measures of Inequality: Location Quotient, Gini's Coefficient and Lorenz Curve
3 Measures of Interaction: Nearest Neighbour Analysis
4 Combinational Analysis: Weaver's Crop Combination

Unit-2: Interpretation of Topographical Maps

1 Principles and Nomenclature of Topographical Map (OSM) of Survey of India
2 Topographic Profile and Broad Physiographic Divisions
3 Drainage Basin Morphometry: Relative Relative, Average Slope (Wentworth's Method), Stream Frequency and Drainage Density
4 Interpretation of Physical and Cultural features with the help of Transect Chart

Reference Books

- Cuff J. D. and Mattson M. T., 1982: Thematic Maps: Their Design and Production, Methuen Young Books
- Dent B. D., Torguson J. S., and Holder T. W., 2008: Cartography: Thematic Map Design (6th Edition), McGraw-Hill Higher Education
- Gupta K. K. and Tyagi V. C., 1992: Working with Maps, Survey of India, DST, New Delhi.
- Kraak M.-J. and Ormeling F., 2003: Cartography: Visualization of Geo-Spatial Data, Prentice-Hall.
- Mishra R. P. and Ramesh A., 1989: Fundamentals of Cartography, Concept, New Delhi.

- Singh R. L. and Singh R. P. B., 1999: Elements of Practical Geography, Kalyani Publishers.
- Slocum T. A., Mcmaster R. B. and Kessler F. C., 2008: Thematic Cartography and Geovisualization (3rd Edition), Prentice Hall.
- Tyner J. A., 2010: Principles of Map Design, The Guilford Press.
- Sarkar, A. (2015) Practical geography: A systematic approach. Orient Black Swan Private Ltd., New Delhi

Instruction for Laboratory

- Practical works are to be completed in the classroom.
- Works are to be done in pencil and neatly hand written and signed by class teachers (No need of Final Sheets).
- Laboratory Note Books will be like those used in other laboratory based science subjects.
- Topographical map interpretation has to be done on the basis of Survey of India OSM sheets on 1:50,000 scale

List of practical

A Project File, comprising one exercise each is to be submitted

1. Cartograms: Line Graph, Bargraph and Pie
2. Climatic Diagrams: Wind Rose, Ergograph, Ombrotheric Diagram Age-Sex Pyramid, Dependency Ratio
3. Thematic maps: Choropleth, Isoline map, Chorochromatic map
4. Population Maps and Diagrams: Population Density by Choropleth, Distribution by Dot and Sphere, Dependency Ratio
5. Topographic Profile and Broad Physiographic Divisions
6. Drainage Basin Morphometry: Relative Relief, Average Slope (Wentworth's Method), Stream Order, Number, Bifurcation Ratio, Stream Frequency and Drainage Density
7. Interpretation of Transport and Settlement patterns; Road Density; Settlement Density
8. Interpretation of correlation between Physical and Cultural features with the help of Transect Chart

3.5 SHGEO /301/C-5: Climatology

Climatology

6 Credits

Unit-1: Structure and Composition of Atmosphere

1. Insolation: Factors and Distribution, Global Heat Budget
2. Inversion of Temperature: Processes and Impact on Surface Weather
3. Atmospheric Stability and Instability
4. Forms and processes of Condensation; Mechanism of Precipitation: Ice Crystal and Collision-Coalescence Theory

Unit-2: Atmospheric Circulation

1 Factors controlling Air Motion and resulting Flow Patterns
2 Planetary Wind system with special reference to Tricellular Model
3 Jet Stream and Rossby Waves: Origin, Characteristics and Impact on Surface Weather
4 Genesis of Monsoon with particular reference to South Asia

Unit-3: Extreme Events and Climatic Classification

1 Origin and Classification Airmass; Frontogenesis and Frontolysis
2 Origin and Characteristics of Tropical and Temperate Cyclones
3 Classification of World Climates: Schemes of Koppen and Thornthwaite
4 Climate Change: Causes and Evidences

Reference Books

- Barry R. G. and Carleton A. M., 2001: Synoptic and Dynamic Climatology, Routledge, UK.
- Barry R. G. and Corley R. J., 1998: Atmosphere, Weather and Climate, Routledge, New York.
- Critchfield H. J., 1987: General Climatology, Prentice-Hall of India, New Delhi
- Lutgens F. K., Tarbuck E. J. and Tasa D., 2009: The Atmosphere: An Introduction to Meteorology, Prentice-Hall, Englewood Cliffs, New Jersey.
- Oliver J. E. and Hidore J. J., 2002: Climatology: An Atmospheric Science, Pearson Education, New Delhi.

3.6 SHGEO /303/C-6: Geography of India

Geography of India

6 Credits

Unit 1: Physical Setting

1. Tectonic and stratigraphic provinces, physiographic divisions
2. Climate, soil and vegetation: Characteristics and classification
3. Mineral and power resources distribution and utilisation of Iron ore, Coal, Petroleum, Gas
4. Regionalisation of India: Physiographic Division of India after R. L. Singh

Unit 2: Cultural and Economic setting

1. Population: Distribution, growth, structure and policy
2. Distribution of population by race, caste, religion, language, tribes and their correlates
3. Agricultural regions. Green Revolution and its consequences
4. Industrial development: Automobile and Information Technology

Unit 3: Geography of West Bengal

1. Physical perspectives: Physiographic divisions, forest and water resources
2. Population: Growth, distribution and human development
3. Resources: Mining, agriculture and industries
4. Regional Problem: Darjeeling Hills, Jangalmahal and Sundarban

Reference Books

- Deshpande C. D., 1992: India: A Regional Interpretation, ICSSR, New Delhi.
- Johnson, B. L. C., ed. 2001. Geographical Dictionary of India. Vision Books, New Delhi.
- Mandal R. B. (ed.), 1990: Patterns of Regional Geography – An Intenational Perspective. Vol. 3 – Indian Perspective.
- Sdyasuk Galina and P Sengupta (1967): Economic Regionalisation of India, Census of India
- Sharma, T. C. 2003: India - Economic and Commercial Geography. Vikas Publ., New Delhi.
- Singh R. L., 1971: India: A Regional Geography, National Geographical Society of

India.

- Singh, Jagdish 2003: India - A Comprehensive & Systematic Geography, Gyanodaya Prakashan, Gorakhpur.
- Spate O. H. K. and Learmonth A. T. A., 1967: India and Pakistan: A General and Regional Geography, Methuen.
- Tirtha, Ranjit 2002: Geography of India, Rawat Publs., Jaipur & New Delhi.
- Pathak, C. R. 2003: Spatial Structure and Processes of Development in India, Regional Science Assoc., Kolkata.
- Tiwari, R.C., 2007: Geography of India. Prayag Pustak Bhawan, Allahabad
- Sharma, T.C., 2013: Economic Geography of India. Rawat Publication, Jaipur

3.7 SHGEO /302/C-7P: Statistical Methods in Geography

Statistical Methods in Geography

6 Credits

Unit-1: Data Collection and Representation

1 Geographical Data Management: Collection (Sampling Techniques- Significance and Types), Classification, Tabulation, Interpretation and Analysis of Geographical Data
2 Frequency Distribution: Attribute and Variable, Discrete and Continuous, Graphical Representation of Frequency Distribution (Histogram, Polygon, Curve and Ogives)
3 Measures of Central Tendency: Mean, Median and Mode; Skewness
4 Measures of Dispersion: Range, Quartile Deviation, Mean Deviation and Standard Deviation

Unit-2: Data Analysis and Interpretation

1 Scatter Diagram, Simple Correlation and Linear Regression
2 Time Series Analysis: Actual Trend, Semi Average, Moving Average,
3 Standard Error of Estimate and Standard Scores (Computations and Graphical Representation)
4 Absolute Residual Mapping

Unit-3: Computer Application in Statistics

1 Data Entry: Arrangement into ascending and descending order
2 Representation of Frequency Distribution: Histogram, Frequency Polygon, Curve, Ogives,
3 Calculation of Mean, Median, Mode, Standard Deviation using formula
4 Bivariate Techniques: Scatter Diagram and Fitting of Trend lines, Moving Average

Reference Books

- Berry B. J. L. and Marble D. F. (eds.): Spatial Analysis – A Reader in Geography.
- Ebdon D., 1977: Statistics in Geography: A Practical Approach.
- Hammond P. and McCullagh P. S., 1978: Quantitative Techniques in Geography: An Introduction, Oxford University Press.
- King L. S., 1969: Statistical Analysis in Geography, Prentice-Hall.
- Mahmood A., 1977: Statistical Methods in Geographical Studies, Concept Pub. Co.
- Pal S. K., 1998: Statistics for Geoscientists, Tata McGraw Hill, New Delhi.
- Sarkar, A. (2013) Quantitative geography: techniques and presentations. Orient

Black Swan Private Ltd., New Delhi

- Silk J., 1979: Statistical Concepts in Geography, Allen and Unwin, London.
- Spiegel M. R.: Statistics, Schaum's Outline Series.
- Yeats M., 1974: An Introduction to Quantitative Analysis in Human Geography, McGraw Hill, New York.

Instruction for Laboratory

- Practical works are to be completed in the classroom.
- Works are to be done in pencil and neatly hand written and signed by class teachers (No need of Final Sheets).
- Laboratory Note Books will be like those used in other laboratory based science subjects.

List of Practical

A Project File, comprising one exercise each is to be submitted

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.
3. Histograms and Frequency Curve would be prepared on the dataset.
4. From the Data Matrix a sample set (20%) 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.
5. Based on the sample set and using two relevant attributes, a scatter diagram and regression line would be plotted and residual from regression would be mapped with a short interpretation.

3.8 SHGEO/401/C-8: Regional Planning and Development Regional

Planning and Development

6 Credits

Unit 1: Regional Planning

1. Concept of Regions: Types of regions and Methods of delineation.
2. Types of Planning, principles and objectives of regional planning,
3. Steps of Regional Planning, need for regional planning in India, multi- level planning in India
4. Planning Regions in India

Unit 2: Regional Development

1. Development: Meaning, growth versus development
2. Concept of Growth Pole model of Perroux; and Growth Centers model in Indian context
3. Theories and models for regional development: Cumulative Causation (Myrdal), Core Periphery (Hirschman and Friedman) and Economic Growth Stage Model (Rostow)
4. Indicators of development: Economic Development, Human Development.

Unit 3: Regional Planning & Development in India

1. Concept and strategies of regional development in India
2. Nature of regional inequalities and disparities in India
3. Historical perspective of regional imbalance in India
4. Need for Regional Planning in India

Reference Books

- Berry, BJ.L. and Horton, F.F. (1970): Geographic Perspectives on Urban Systems. Prentice Hall, New Jersey.
- Bhat L.S. (1972): Regional Planning In India, Statistical Publishing Society
- Blij H. J. De, 1971: Geography: Regions and Concepts, John Wiley and Sons.
- Chand ,M and Puri V.K. (1983) : Regional Planning In India , Allied publishers , New Delhi
- Claval P.I, 1998: An Introduction to Regional Geography, Blackwell Publishers,

Oxford and Massachusetts.

- Dickinson, R.E. (1964): City and Region, Rutledge, London.
- Friedmann J. and Alonso W. (1975): Regional Policy - Readings in Theory and Applications,

  MIT Press, Massachusetts.
- Gore C. G., 1984: Regions in Question: Space, Development Theory and Regional Policy, Methuen, London.
- 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.
- Hall, P. (1992): Urban and Regional Planning, Routledge, London.
- Haynes J., 2008: Development Studies, Polity Short Introduction Series.
- Johnson E. A. J., 1970: The Organization of Space in Developing Countries, MIT Press, Massachusetts.
- Kulshetra, S.K,(2012) : Urban and Regional Planning in India : A Handbook for Professional Practioners , Sage Publication , New Delhi
- Kundu, A. (1992): Urban Development Urban Research in India, Khanna Publ. New Delhi.
- Misra , R.P, Sundaram K.V, Prakash Rao , VLS(1974): Regional Development Planning in India , Vikas Publication , New Delhi
- Misra, R.P (1992): Regional Planning: Concepts, Techniques, Policies and Case Studies , Concept , New Delhi
- Peet R., 1999: Theories of Development, The Guilford Press, New York.
- UNDP 2001-04: Human Development Report, Oxford University Press.
- World Bank 2001-05: World Development Report, Oxford University Press, New Delhi

3.9 SHGEO/402/C-9: Geography of Economic Activities

Geography of Economic Activities

6 Credits

Unit-1: Economic Activity: Agriculture

1 Agricultural System: Plantation Agriculture & Mixed Farming.
2 Crop Combination and Crop Diversification.
3 Classification of World Agricultural Systems after Whittlessey
4 Model in Agricultural Geography: Von Thunen Model

Unit-2: Economic Activity: Industry

1 Location Factors; Role of transport in industrial location
2 Models of Industrial Location: Weber &Losch
3 Industrial Regions: Mumbai-Pune; Asansol-Durgapur, Haldia
4 Impact of Industrial Activities on Environment

Unit-3: Economic Activity: Trade, Transport and Tourism

1 Role of WTO in International Trade
2 Transport Network: Accessibility and Connectivity
3 Tourism Industry and its Components
4 Tourism Evolution Model: TALC Model of R.W. Butler

Reference Books

- Alexander J. W., 1963: Economic Geography, Prentice-Hall Inc., Englewood Cliffs, New Jersey.
- Coe N. M., Kelly P. F. and Yeung H. W., 2007: Economic Geography: A Contemporary Introduction, Wiley-Blackwell.
- Hodder B. W. and Lee Roger, 1974: Economic Geography, Taylor and Francis.
- Combes P., Mayer T. and Thisse J. F., 2008: Economic Geography: The Integration of Regions and Nations, Princeton University Press.
- Wheeler J. O., 1998: Economic Geography, Wiley..
- Durand L., 1961: Economic Geography, Crowell.

- Bagchi-Sen S. and Smith H. L., 2006: Economic Geography: Past, Present and Future,Taylor and Francis.
  Willington D. E., 2008: Economic Geography, Husband Press.
- Clark, Gordon L.; Feldman, M.P. and Gertler, M.S., eds. 2000: The Oxford
- Baud-Bovy, M. and Lawson, F. (1977), “Tourism and Recreation Development”, The Architectural Press Ltd, CBI Publishing Company, Boston
- Boniface, B.G. and Cooper, C.P. (1987), “The Geography of Travel & Tourism”, Heinemann Professional Publishing, Oxford.
- Burton, R. (1991), “Travel Geography”, Pitman Publishing, London.
- Butler, R.W. (2010), ed, “The Tourism Area Life Cycle: Applications and Modifications”, Vol-1, Viva Books Private Limited, New Delhi.
- Butler, R.W. (2010), ed, “The Tourism Area Life Cycle: Conceptual and Theoretical Issues”, Vol-2, Viva Books Private Limited, New Delhi.
- Cooper, C., Fletcher, J., Gilbert, D. and Wanhill, S. (1993), “Tourism : Principles and Practice”, Pitman, London.
- Hall, M. and Stephen, P. (2006) Geography of Tourism and Recreation – Environment, Place and Space, Routledge, London.
- Mathison, A. and Wall, G. (1982), “Tourism: Economic, Physical and Social Impacts”, Longman, Harlow.
- Mill, R. C. and Morrison, A. M. (1985), “The Tourism System: An Introductory Text”, Prentice Hall, New Jersey.
- Pearce, D. (1989), “Tourism and Regional Development”, Longman, London.
- Pearce, D. (1995), Tourism Today: A Geographical Analysis, Longman, London

3.10SHGEO/403/C-10P: Environmental Geography

Environmental Geography

6 Credits

Environmental Issues in Geography

Unit 1: Approach towards environmental study

1. Geographers' approach to environmental studies
2. Perception of environment in different stages of civilization
3. Concept of holistic environment and system approach
4. Modern environmental concept

Unit 2: Ecology and Ecosystem

1. Concept of Ecosystem
2. Structure and function of ecosystem
3. Environmental pollution and degradation
4. Land, water and air pollution

Unit 3: Man-Environment conflict

1. Man Animal Conflict with special reference to Junglemahal area
2. Environmental problems: Local, regional and global
3. Urban environmental issues with special reference to waste management
4. Environmental programmes and policies – Global and national levels

Reference Books

- Chandna R. C., 2002: Environmental Geography, Kalyani, Ludhiana.
- Cunninghum W. P. and Cunninghum M. A., 2004: Principals of Environmental Science: Inquiry and Applications, Tata MacGraw Hill, New Delhi.
- Goudie A., 2001: The Nature of the Environment, Blackwell, Oxford.
- Singh, R.B. (Eds.) (2009): Biogeography and Biodiversity. Rawat Publication, Jaipur
- Miller G. T., 2004: Environmental Science: Working with the Earth, Thomson BrooksCole, Singapore.
- MoEF, 2006: National Environmental Policy-2006, Ministry of Environment and Forests, Government of India.
- 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
- Odum, E. P. et al, 2005: Fundamentals of Ecology, Ceneage Learning India.
- Singh S., 1997: Environmental Geography, Prayag Pustak Bhawan. Allahabad.
- UNEP, 2007: Global Environment Outlook: GEO4: Environment for Development,

United Nations Environment Programme.

- 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
- Das Chatterjee N. 2016: Man-Elephant Conflict: A Case Study from Forests in West Bengal, India, Springer

Instruction for Laboratory

List of Practical

A Project File, comprising one exercise each is to be submitted

1. Preparation of questionnaire for perception survey on environmental problems
2. Preparation of check-list for Environmental Impact Assessment of an urban / industrial project
3. Quality assessment of soil using field kit: pH and Organic Carbon
4. Interpretation of air quality using CPCB / WBPCB data

Reference Books

- Morgan R.K. 2002: Environmental Impact Assessment: A Methodological Perspective, Kluwer Academic Publishers, London
- Eccleston C.H. 2011: Environmental Impact Assessment: A Guide to Best Professional Practices, CRC Press, New York
- Gilpin.A (1994) Environmental Impact Assessment: Cutting Edge for the 21st Century (Eia : Cutting Edge for the Twenty-First Century, Cambridge University Press,
- CPCB Reports, Ministry of Environment, Forest and Climate Change, Govt. Of India, http://www.cpcb.nic.in/Publications.php

3.11SHGEO/501/C-11: Evolution of Geographical Thought

Evolution of Geographical Thought

6 Credits

Unit-1: Development of Geography

1 Definition, Scope and Content of Geography
2 Development of Geography in the Ancient and Mediaeval Periods
3 Development of Modern Scientific Geography in the 19th Century with particular reference to the Contributions of Humboldt and Ritter
4 Development of Geography in the 20th Century: Quantitative Revolution and its impact

Unit-2: Development of Schools of Thought in Modern Geography

1 German School
2 British School
3 American School
4 Indian School

Unit-3: Concepts and Trends in Geography

1 Concepts of Determinism, Possibilism and Neo-Determinism
2 Concepts of Empiricism and Positivism
3 Approaches to Geographic Studies: Systematic vs. Regional approach
4 Recent trend in Geography: Feminism, Post Modernism

Reference Books

- Arentsen M., Stam R. and Thuijis R., 2000: Post-modern Approaches to Space, ebook.
- Bhat, L.S. (2009): Geography in India (Selected Themes). Pearson
- Bonnett A., 2008: What is Geography? Sage.
- Dikshit R. D., 1997: Geographical Thought: A Contextual History of Ideas, Prentice– Hall India.
- Hartshone R., 1959: Perspectives of Nature of Geography, Rand MacNally and Co.
- Holt-Jensen A., 2011: Geography: History and Its Concepts: A Students Guide, SAGE.
- Johnston R. J., (Ed.): Dictionary of Human Geography, Routledge.

- Johnston R. J., 1997: Geography and Geographers, Anglo-American Human Geography since 1945, Arnold, London.
- Kapur A., 2001: Indian Geography: Voice of Concern, Concept Publications.
- Martin Geoffrey J., 2005: All Possible Worlds: A History of Geographical Ideas, Oxford.
- Soja, Edward 1989. Post-Modern Geographies, Verso, London. Reprinted 1997: Rawat Publ., Jaipur and New Delhi.

3.12SHGEO/502/C-12P: Remote Sensing

Remote Sensing

6 Credits

Unit-1: Remote Sensing: Basic Concepts

1 Basic Concepts: Energy Sources, Interactions with Atmosphere, Sensing Systems, Resolutions: Spatial, Spectral, Radiometric and Temporal
2 Principles of preparing Standard False Colour Composites
3. Principles of image interpretation and feature extraction. Preparation of inventories of land use land cover (LULC) features from satellite images.
4. Digital Image Processing: Subset Image, Spectral Signature,
5 Image Classification: Supervised and Unsupervised

Reference Books

- Campbell J. B., 2007: Introduction to Remote Sensing, Guildford Press.
- Jensen J. R., 2004: Introductory Digital Image Processing: A Remote Sensing Perspective, Prentice Hall.
- Joseph, G. 2005: Fundamentals of Remote Sensing, United Press India.
- Lillesand T. M., Kiefer R. W. and Chipman J. W., 2004: Remote Sensing and Image Interpretation, Wiley (Wiley Student Edition).
- Nag P. and Kudra, M., 1998: Digital Remote Sensing, Concept, New Delhi.
- Rees W. G., 2001: Physical Principles of Remote Sensing, Cambridge University Press.
- Singh R. B. and Murai S., 1998: Space-informatics for Sustainable Development, Oxford and IBH Pub.
- Wolf P. R. and Dewitt B. A., 2000: Elements of Photogrammetry: With Applications in GIS, McGraw- Hill.
- Sarkar, A. (2015) Practical Geography: A Systematic Approach. Orient Black Swan Private Ltd., New Delhi

Instruction for Laboratory

- Practical works are to be completed in the classroom.
- Works are to be done in Computer in appropriate software
- Hardbound Copy of A4 Size with computer typed sheets supplemented with maps and diagrams

List of Practical

A Project File, comprising one exercise each is to be submitted

1. Geo-referencing of maps and images; Subset image
2. Image enhancement. Preparation of reflectance libraries of LULC features across different image bands of IRS L3 or Landsat-8 OLI data
3. Image classification, post-classification analysis and class editing
4. Application of Remotely Sensed data on River Course, Forestry and Urban Growth Mapping

3.13 SHGEO/601/C-13T: Disaster Management

Disaster Management

4 Credits

Unit 1: Concepts and Approaches

1. Meaning and concept of hazard and disaster
2. Classification of hazards and disasters
3. Approaches to hazard study: Risk perception and vulnerability assessment.
4. Hazard paradigms

Unit 2: Disaster Case Studies

1. Earthquake: Factors, vulnerability, consequences and management
2. Landslide: Factors, vulnerability, consequences and management
3. Cyclone: Factors, vulnerability, consequences and management
4. Fire: Factors, vulnerability, consequences and management

Unit 3: Disaster Management in India

1. Disaster of Himalayan belt
2. Disaster in lower Ganges plain
3. Disaster in coastal region
4. Hazard mapping in India

Reference Books

- 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.

3.14 SHGEO/602/C-14P: Research Methodology and Field Work

Research Methodology and Field Work

6 Credits

Unit 1: Research Methodology

3.14.1 Research in Geography: Meaning, types and significance

3.14.2 Literature Review and formulation of research design

3.14.3 Defining research problem, objectives and hypothesis. Research materials and methods

3.14.4 Techniques of writing scientific reports: Preparing notes, references, bibliography, abstract and keywords

Unit 2: Field Work

1. Fieldwork in Geographical studies –Selection of study area and objectives. Pre-field preparations
2. Field Enquiry Techniques and Tools: Observation (participant, non-participant), questionnaires (open, closed, structured, non-structured). Interview with special reference to focused group discussions.
3. Field Techniques and Tools: Landscape survey using transects and quadrants, constructing a sketch, photo and video recording.
4. Preparation of inventory from field data. Post-field tasks.

Reference Books

- Creswell J., 1994: Research Design: Qualitative and Quantitative Approaches Sage Publications.
- Dikshit, R. D. 2003: The Art and Science of Geography: Integrated Readings. Prentice-Hall of India, New Delhi.
- Evans M., 1988: “Participant Observation: The Researcher as Research Tool” in Qualitative Methods in Human Geography, eds. J. Eyles and D. Smith, Polity.
- Mukherjee, Neela 2002. Participatory Learning and Action: with 100 Field Methods. Concept Publs. Co., New Delhi

- 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.
- Special Issue on “Doing Fieldwork” The Geographical Review 91:1-2 (2001).
- Stoddard R. H., 1982: Field Techniques and Research Methods in Geography, Kendall/Hunt.
- Wolcott, H. 1995. The Art of Fieldwork. Alta Mira Press, Walnut Creek, CA
- Beaumont, J.R. and Williams, S.W. 1983. Project Work in the Geography Curriculum, Croom Helm, London, 332p

Instruction for Practical

List of Practical

1. Each student will prepare an individual report based on primary data collected from field survey and secondary data collected from different sources for either a rural area (mouza) or an urban area (municipal ward) based on cadastral or municipal maps to study specific problems.
2. The duration of the field work shall not exceed 10 days

   Report writing with the following Tentative Chapter
   Schemes, Preface & Acknowledgement
   Introduction: Objective, Extent and Space Relations, Data sources and Methodology
   Physical Environment: Lithology, Drainage, Slope, Climate, Soil, Vegetation etc.
   Socio Economic Environment: Population Characteristics, Occupational Structure, Ethnic and Religions Composition, Per-Capita Income, any other aspects.
   Problems and Prospects
   Bibliography
   Appendix: Survey Questionnaire(s), Additional Tables if any
   Design & Word Limit: Computer Typed, Line Spacing 1.5 Font-Arial/ Times New Roman/ Calibri, Size-12, Word Limit: 5000 (Excluding Tables and Appendix).
3. A copy of the bound report, duly signed by the concerned teacher, should be submitted

4. **Presentation**
   Individual student has to submit one Power Point Presentation on the Report and has to present in front of External Examiner with the following slides:
   a) Title
   b) Aims and Objectives
   c) Data Sources and Methodology
   d) Important Diagrams and Maps included in the report
   e) Major Problems
   f) Suggestions
   Time allotted for Presentation will be not more than 10 minutes followed by Interactive session of not more than 5 minutes.
   A CD of the ppt file has to be submitted mentioning the Roll No and Registration No of each student. The same has to be submitted by the Centre in Charge to the Chairperson of the said paper.

Reference Books

- Monkhouse, F.J. and Williamson, R.H. (1963): Maps and Diagrams: Their Compilation and Construction, Methuen, London
- Saha, P.K. and Basu, P. (2009): Advanced Practical Geography, Books and Allied (P) Ltd., Kolkata
- Sarkar, A. (2008): Practical Geography: A Systematic Approach, Orient Black Swan, Kolkata
- Narasinha Murthy, R.L. (2014) Research Methodology in Geography, Concept, New Delhi
- Saha, P.K. and Basu, P. (2009): Advanced Practical Geography, Books and Allied (P) Ltd., Kolkata
- Yeates M., (1974): An Introduction to Quantitative Analysis in Human Geography.

4. Department Specific Electives Subjects Syllabus

4.1 SHGEO/504/DSE-1: Hydrology and Oceanography

Hydrology and Oceanography

6 Credits

Unit 1: Hydrology

1. Systems Approach in hydrology. Global hydrological cycle: Its physical and biological role
2. Run off: controlling factors. Infiltration and evapotranspiration. Run off cycle
3. Drainage basin as a hydrological unit. Principles of water harvesting and watershed management
4. Groundwater: Occurrence and storage. Factors controlling recharge, discharge and movement.

Unit 2: Oceanography

1. Major relief features of the ocean floor: characteristics and origin according to plate tectonics.
2. Physical and chemical properties of ocean water
3. Water mass, T–S diagram
4. Ocean temperature and salinity: Distribution and determinants.

Unit 3: Ocean resources and sea level change

1. Coral reefs: Formation, classification and threats
2. Marine resources: Classification and sustainable utilization
3. Concept of wave and tide
4. Sea level change: Types and causes

Reference Books

- Andrew. D. Ward and Stanley, Trimble (2004): Environmental Hydrology, 2nd edition, Lewis Publishers, CRC Press.
- Karanth, K.R., 1988: Ground Water: Exploration, Assessment and Development, Tata-McGraw Hill, New Delhi.
- Ramaswamy, C. (1985): Review of floods in India during the past 75 years: A Perspective. Indian National Science Academy, New Delhi.
- Rao, K.L., 1982: India's Water Wealth 2nd edition, Orient Longman, Delhi,

- Singh, Vijay P. (1995): Environmental Hydrology. Kluwer Academic Publications, the Netherlands.
- Anikouchine W. A. and Sternberg R. W., 1973: The World Oceans: An Introduction to Oceanography, Prentice-Hall.
- Garrison T., 1998: Oceanography, Wordsworth Company, Belmont.
- Kershaw S., 2000: Oceanography: An Earth Science Perspective, Stanley
- Thornes, And UK.
- Pinet P. R., 2008: Invitation to Oceanography (Fifth Edition), Jones and Barlett
- Publishers, USA, UK and Canada.
- Sverdrup K. A. and Armrest, E. V., 2008: An Introduction to the World Ocean,
- McGraw Hill, Boston.
- Singh, M., Singh, R.B. and Hassan, M.I. (Eds.) (2014): Landscape Ecology and Water Management. Proceedings of IGU Rohtak Conference, Volume 2. Advances in Geographical and Environmental Studies, Springer

4.3 SHGEO/503/DSE-2: Cultural and Settlement Geography

Cultural and Settlement Geography

6 Credits

Unit 1: Cultural Geography

1. Definition, scope and content of Cultural Geography, development of cultural geography in relation to allied disciplines
2. Cultural Hearth and Realm; Cultural Diffusion, Cultural Segregation and Cultural Diversity, Diffusion of major world religions and languages
3. Culture, Technology and Development.
4. Races and racial groups of the world

Unit 2: Rural Settlement

1. Rural Settlement: Definition, nature and characteristics of rural settlements
2. Morphology of rural settlements: site and situation, layout-internal and external
3. Rural house types with reference to India, Social segregation in rural areas;
4. Census categories of rural settlements.

Unit-3: Urban Settlement

1. Urban Settlements :Census definition (Temporal) and categories in India
2. Urban morphology: Classical models-Burgess, Homer Hoyt, Harris and Ullman Metropolitan concept.
3. City-region and Conurbation
4. Functional classification of cities: Harris, Nelson and Mackenzie

Reference Books

- Banerjee Guha, S. ed (2004) Space, Society & Geography, Rawat Publication, Delhi
- Bardhan, P., 2003, Poverty, Age Structure & Political Economy in India, Oxford University Press
- Biswas, A.K., Jortajada, C., 2006, Appraising Sustainable Development, Oxford University
- Dhanagare, D.N., 2004, Themes and Perspectives in Indian Sociology, Rawat Publication, Delhi
- Dohrs, I., Sommers,L., 1967, Cultural Geography. Thomas Crowell Company

- Fellmann, J.D.,Getis, A., Getis, J., 2000, Human Geography- Landscape of Human Activity, McGraw Hill
- Fern, R.L., 2002, Nature, God and Humanity, Cambridge university Press
- Gadhil, M., Guha,R.,2000, The Use and Abuse of Nature, Oxford University Press
- Gregory, D.,Urry, J.,1985, Social Relation and Spatial Structure, MacMillan
- Herbert, D.T., Johnston, R.J.,1982, Geography and Urban Environment. John Wiley& Sons
- 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
- Mitchell, D. 2000, Cultural Geography-A Critical Introduction, Black Well.

4.2 SHGEO/503/DSE-2:Urban Geography

Urban Geography

6 Credits

Unit -1: Basic Concepts

1. Urban Geography: nature and scope, different approaches and recent trends in urban geography
2. Origin of urban places in Ancient, Medieval, Modern and Post-Modern periods- factors, stages, and characteristics.
3. Theories of Urban Evolution and Growth: Hydraulic Theory, Economic Theory
4. Urban Hierarchies : Central Place Theory; August Loch's theory of Market Centres

Unit -2: Urban Processes

1. Ecological processes of urban growth; Urban fringe; City- Region
2. Theories of city structure-concentric zone theory, sector theory, multiple nuclei theory
3. Aspects of urban places: Location, site and situation, Size and Spacing of Cities: The Rank Size Rule, The Law of the Primate City
4. Patterns of urbanization in developed and developing countries

Unit 3: Urbanization in India

1. Urban Issues: problems of housing, slums, civic amenities (water and transport)
2. Patterns and trends of urbanization in India
3. Policies on urbanization. Urban change/landscape in post-liberalized period in India
4. Case studies of Delhi, Kolkata, and Chandigarh with reference to land use

Reference Books

- Fyfe N. R. and Kenny J. T., 2005: The Urban Geography Reader, Routledge.
- Graham S. and Marvin S., 2001: Splintering Urbanism: Networked Infrastructures, Technological Mobility and the Urban Condition, Routledge.
- Hall T., 2006: Urban Geography, Taylor and Francis.
- Kaplan D. H., Wheeler J. O. and Holloway S. R., 2008: Urban Geography, John Wiley.
- Knox P. L. and McCarthy L., 2005: Urbanization: An Introduction to Urban Geography, Pearson Prentice Hall New York.
- Knox P. L. and Pinch S., 2006: Urban Social Geography: An Introduction, Prentice-Hall.

- Pacione M., 2009: Urban Geography: A Global Perspective, Taylor and Francis.
- Sassen S., 2001: The Global City: New York, London and Tokyo, Princeton University Press.
- Ramachandran R (1989): Urbanisation and Urban Systems of India, Oxford University Press, New Delhi
- Ramachandran, R., 1992: The Study of Urbanisation, Oxford University Press, Delhi
- Singh, R.B. (Eds.) (2001): Urban Sustainability in the Context of Global Change, Science Pub., Inc., Enfield (NH), USA and Oxford & IBH Pub., New Delhi.
- Singh, R.B. (Ed.) (2015) Urban development, challenges, risks and resilience in Asian megacities. Advances in Geographical and Environmental Studies, Springer

4.4 SHGEO /504/DSE-3: Soil and Biogeography

Soil and Biogeography

6 Credits

Concepts in Theory

Unit 1: Soil Geography

1. Factors of Soil formation. Man as an active agent of soil transformation.
2. Soil profile. Origin and profile characteristics of Lateritic, Podzol and Chernozem soils
3. Definition and significance of Soil properties: Physical - Texture, Structure and Moisture; Chemical - pH, Organic matter and NPK
4. Principles of Soil classification: Genetic and USDA. Concept of land capability and its classification.

Unit 2: Bio-Geography

1. Concepts of biosphere, ecosystem, biome, ecotone, community and ecology
2. Concepts of trophic structure, food chain and food web. Energy flow in ecosystems
3. Geographical extent and characteristic features of Tropical rain forest, Taiga and Grassland biomes
4. Bio-geochemical cycles with special reference to carbon dioxide and nitrogen

Unit 3: Human Behavior and its impact on Soil and Biosphere

1. Soil Erosion and Degradation: Factors, processes and mitigation measures
2. Deforestation: Causes, consequences and management
3. Bio-diversity: Definition, types, threats and conservation measures
4. Response of society to the management

Reference Books

- 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:
- Foth, H.D. 1990. Fundamentals of Soil science, 8th edition, John Wiley and Sons, New York.
- Morgan, R.P.C. 1995. Soil Erosion and Conservation, 2nd edition, Longman, London

- Schwab, G.O., Fangmer, D.D. and Elliot, W.J. 1996. Soil and Water Management Systems, 4th edition, John Eiley and sons Inc., New York
- Young, A. 2000. Land Resource: Now and Future, Cambridge University Press, Cambridge: 332p.
- De, N. K. and Jana, N. C. (2016): The Land: Multifaceted Appraisal and Management, Sribhumi Publishing House, Kolkata, Reprint
- Chapman J.L. and Rens, M.J. 1993. Ecology: Principle and Applications, Cambridge University Press, Cambridge:
- Chairas, D.D. Reganold, J.P. and Owen, O.S. 2002. National Resource Conservation and management for a Sustainable Future, 8th edition, Prentice Hall, Englewood Cliffs
- 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

4.5 SHGEO/603/DSE-4: Population Geography

Population Geography

6 Credits

Unit 1: Basic Concepts

1. Development of Population Geography as a field of specialization. Relation between Population Geography and Demography.
2. Sources of population data, their level of reliability and problems of mapping.
3. Population distribution: Density and growth. Classical and modern theories in population distribution and growth, Demographic Transition model.
4. World patterns of population distribution and growth. Concept of Optimum Population, population distribution in India.

Unit 2: Population Composition

1. Population Composition and Characteristics– Age, Sex Composition; Rural and Urban Composition; Literacy.
2. Measurements of Fertility and Mortality. Concept of Cohort and Life Table
3. Population composition of India (Age, Sex, Rural, Urban and occupational composition)
4. Migration: Causes and types, international patterns of migration with reference to India.

Unit 3: Population Policies

1. Population and Development: Population-Resource regions. Concept of Human Development Index (HDI) and its components.
2. Population policies in developed and less developed countries
3. India's population policies, population and environment, implication for the future.
4. Contemporary Issues – Ageing of Population; Declining Sex Ratio; Population and Environment dichotomy, HIV/AIDS.

Reference Books

- Barrett H. R., 1995: Population Geography, Oliver and Boyd.
- Bhende A. and Kanitkar T., 2000: Principles of Population Studies, Himalaya Publishing House.
- Chandna R. C. and Sidhu M. S., 1980: An Introduction to Population Geography,

Kalyani Publishers.

- Clarke J. I., 1965: Population Geography, Pergamon Press, Oxford.
- Jones, H. R., 2000: Population Geography, 3rd ed. Paul Chapman, London.
- Lutz W., Warren C. S. and Scherbov S., 2004: The End of the World Population Growth in the 21st Century, Earthscan
- Newbold K. B., 2009: Population Geography: Tools and Issues, Rowman and Littlefield Publishers.
- Pacione M., 1986: Population Geography: Progress and Prospect, Taylor and Francis.
- Wilson M. G. A., 1968: Population Geography, Nelson.

4.6 SHGEO/604/DSE-4: Geography of Health and Wellbeing

Geography of Health and Wellbeing

6 Credits

Concepts

Unit-1: Perspectives on Health

1 Definition and Concept of the term Health
2 Introducing Medical Geography: Its Scope and Contents
3 Applications of Medical Geography; Linkage between Health and Society, Taboo, Environment, Development, Education and Awareness
4 Health and Environmental Trends: Population, Urbanization, Poverty and Inequality

Unit-2: Health Risks and Diseases

1 Exposure and Health Risks: Air and Water Pollution, Household and Municipal Waste
2 Occupational Hazards and Health Risks; Nutritional Status of Children and Women
3 Diseases: Types and Distribution; Geographical Factors
4 Tropical Diseases: Malaria and Dengue- Epidemiological Character and Regional Distribution

Unit-3: Climatic Change and Human Health

1 Effects of Climate Change on Weather Elements- Solar Radiation, Temperature, Rainfall
2 Solar Ultraviolet Radiation and Related Health Hazards
3 Climate Change and Ecological Transformation
4 Human Adaptation and Adjustment to Climate Change

Reference Books

- Akhtar Rais (Ed.), 1990: Environment and Health Themes in Medical Geography, Ashish Publishing House, New Delhi.
- Avon Joan L. and Jonathan A Patzed.2001: Ecosystem Changes and Public Health, Baltimin, John Hopling Unit Press(Ed).
- Bradley, D., 1977: Water, Wastes and Health in Hot Climates, John Wiley Chichesten.

- Christaler George and Hristopoles Dionissios, 1998: Spatio Temporal Environment Health Modelling, Boston Kluwer Academic Press.
- Cliff, A.D. and Peter, H., 1988: Atlas of Disease Distributions, Blackwell Publishers, Oxford.
- Gatrell, A., and Loytonen, 1998: GIS and Health, Taylor and Francis Ltd, London.
- Hardham T. and Tannav M., (Eds): Urban Health in Developing Countries; Progress, Projects, Earthgoan, London.
- Murray C. and A. Lopez, 1996: The Global Burden of Disease, Harvard University Press.
- Moeller Dade wed., 1993: Environmental Health, Cambridge, Harward Univ. Press.
- Phillips, D.and Verhasselt, Y., 1994: Health and Development, Routledge, London.
- Tromp, S., 1980: Biometeorology: The Impact of Weather and Climate on Humans and their Environment, Heydon and Son.
-

5. Skill Enhancement Subjects Syllabus

5.1 SHGEO/305/SEC-1: Computer Basics and Applications

Computer Basics and Applications

2 Credits

Concepts in Theory

1. Computation, Storing and Formatting Spreadsheets: Computation of Rank, Mean, Median, Mode, Standard Deviation, Moving Averages, Sample Variation; Derivation of Correlation, Covariance and regression; Selection of technique and interpretation.
2. Preparation of Annoted Diagrams: Scatter diagram and Histogram; selection of technique and interpretation of diagrams
3. Internet Surfing: generation and extraction of information. Cloud computing and drive sharing.

Reference Books

- Bartee, Thomas C. (1977): Digital Computer Fundamental; McGraw Hill.
- Chauhan, S.; Chauhan, A. and Gupta, K. (2006): Fundamental of Computer; Firewall Media.
- Flake, L.J.; McClintock, C.E. and Turner, S. (1989): Fundamental of Computer Education; Wordsworth Pub. Co.
- Leon, A .and Leon,M.(1999): Introduction to Computer, USB Publishers' Distributors Ltd.
- Malvino, A.P. and Leach, D.P. (1981): Digital Principles and Appications; Tata McGraw Hill.
- Mano, Moris M. and Kime, Charles R. (2004): Logic and Computer Design Fundamental; Prentice Hall.
- Rajaraman, V. (2003): Fundamentals of Computer, Prentice Hall Publisher
- Sarkar, A. and Gupta, S.K (2002): Elements of Computer Science, S Chand and Company, New Delhi
- Blissmer (1996): Working with MS Word; Houghton Mifflin Co.
- Johnson, Steve (2007): Microsoft Power Point 2007; Pearson Paravia Bruno.

- Leon, A .and Leon,M.(1999): Introduction to Computer, USB Publishers' Distributors Ltd.
- Leon, A. and Leon, M.(1999): A beginners Guide to Computers, Vikas
- Rajaraman, V. (2008): Computer Primer; Prentice Hall of India Pvt. Ltd.
- Sarkar, A. and Gupta, S.K (2002) Elements of Computer Science, S Chand and Company,

  New Delhi
- Shepard, Aaron (2007): Perfect Pages; Shepard Publications.
- Tyson, Herbert L. (2007): Microsoft Word 2007 Bible; John Wiley.
- Walkenbach, John (2007): Excel 2007 Bible; John Wiley

5.2 SHGEO/405/SEC-1: Geographical Information System and GPS

Geographical Information System and GPS

2 Credits

Unit-1: Geographical Information System

1 G.I.S: Basic Concepts
2 Components of GIS
3 Development of GIS Technology
4 GIS Data structure: Raster and Vector

Unit-2: Global Positioning System

1 Basic Concept: GPS and GNSS, Segments, PRN Code, Waypoints and Tracks
2 Distance Calculation, Open and Closed Traverse.
3 Plotting in Microsoft Excel
4 GPS data downloading in software and mapping.

Unit 3: Mapping in GIS

1 Geo-referencing, Digitization
2 Attribute data creation and uses
3 Map Composition
4 Layout

References

- Jatin Pandey and Darshana Pathak, 2013, Geographic Information System, TERI Publishing House.
- Chor Pang Lo, 2009, Concepts and Techniques of Geographic Information System, Prentice Hall.
- Michael N. Demers, 2012, Fundamentals of Geographic Information Systems, Willy.
- Chairsman, N. 1992. Exploring Geographical Information Systems, John
- Willey and Sons Inc., New York, 198p

6. Generic Elective Subjects Syllabus

6.1 SHGEO/304/GE-1: Physical Basis of Earth

Physical Basis of Earth	6 Credits

Unit 1: Earth: Origin and Evolution

5. Origin of Earth (Nebular Hypothesis of Laplace)
6. Geological Time Scale and Geological History of the Earth
7. Isostasy: Origin of the concept, Theories of Airy and Pratt, Isostatic Adjustments,
8. Internal Structure of the Earth: Seismological Evidences, Physical, chemical and seismic properties of Earth layers.

Unit 2: Tectonic Theories and Processes

1 Continental Drift Theory of Alfred Wegener
2 Palaeo-magnetism and Sea Floor Spreading
3 Plate Tectonic Theory; Plate Composition, Plate Movement, Plate Margins, Triple Junctions.
4 Tectonic Processes in relation to Plate Tectonics; Orogenesis, Earthquake, Vulcanicity

Unit 3: Process Geomorphology

1 Evolution of landforms on Uniclinal, Folded and Faulted Strata
2 Landscape Evolution Models: Davis, Penck and Hack
3 Climatic Geomorphology: Basic concepts,
4 Hillslopes: Genesis and Morphology

Reference Books

- Bloom A. L., 2001: Geomorphology: A Systematic Analysis of Late Cenozoic Landforms, Prentice-Hall of India, New Delhi.
- Bridges E. M., 1990: World Geomorphology, Cambridge University Press, Cambridge.
- Christopherson, Robert W., (2011), Geosystems: An Introduction to Physical Geography, 8 Ed., Macmillan Publishing Company
- Kale V. S. and Gupta A., 2001: Introduction to Geomorphology, Orient Longman, Hyderabad.
- Knighton A. D., 1984: Fluvial Forms and Processes, Edward Arnold Publishers, London.
- Selby, M.J., (2005), Earth's Changing Surface, Indian Edition, OUP
- Skinner, Brian J. and Stephen C. Porter (2000), The Dynamic Earth: An Introduction to Physical Geology, 4th Edition, John Wiley and Sons
- Thornburry W. D., 1969: Principles of Geomorphology, Wiley.

6.2 SHGEO/404/GE-2: Human Geography

Human Geography

6 Credits

Unit 1: Nature and Principles

1. Nature and scope and recent trends. Elements of Human Geography
2. Approaches to the study of Human Geography; Resource, Locational, Landscape, Environmental
3. Evolution of Humans. Concept of Race and Ethnicity
4. Space, Society and Cultural regions (language and religion)

Unit 2: Society, Demography

1. Evolution of Human societies: Hunting and food gathering, pastoral nomadism, subsistence farming, industrial and urban societies
2. Population growth and distribution in India and world
3. Population composition in India
4. Demographic Transition model

Unit 3: Ekistics

1. Rural Settlement pattern in India
2. Rural house types in India
3. Hierarchy of Urban Settlements in India
4. Pattern of Urbanization housing in India

Reference Books

- Bergman, E.F (1995): Human Geography-Culture, Connections and Landscape, Prentice Hall, New Jersey
- Chisholm. (1975): Human Geography, Penguin Books, Hermondsworth.
- Daniel, P.A. and Hopkinson, M.F. (1989) The Geography of Settlement, Oliver & Boyd, London.
- 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.
- Norton. W. (2001): Human Geography, 4th Edition Oxford University press, Oxford
- Pearce D. (1995): Tourism Today: A Geographical Analysis, 2nd edition, Longman Scientific & Technical, London
- Pickering K. and Owen A. A. (1997): An Introduction to Global Environmental Issues, 2nd edition Rutledge, London.
- Raw, M. (1986): Understanding Human Geography: A Practical Approach, Bell and Hyman. London
- Rubenstein, J.M. (2002), The Cultural Landscape, 7th edition, Prentice Hall, Englewood Cliffs
- Smith D M (1982): Human Geography: A Welfare Approach, Edward Arnold, London

6.3 SHGEO/203/GE-3: Maps and Diagrams

Maps and Diagrams

4 Credits

Unit-1: Scale and Cartograms

1. Construction of Linear and Comparative (Unit)
2. Cartograms: Circle, Square and Pie Graph
3. Age-Sex Pyramid, Dependency Ratio
4. Population Maps and Diagrams: Population Density by Choropleth, Distribution by Dot and Sphere

Unit-2: Map Projections

1 Map Projections: Nature and Classification
2 Principles, Theories, Construction and Properties of select Map Projections: Simple Conical with one standard parallel, Cylindrical Equal Area, Polar Zenithal Stereographic

Unit-3: Surveying

1 Concepts and Principles: Angles, Bearing and Azimuths, Traversing, Radiation, Intersection
2 Prismatic Compass: Preparation of land use maps by open and closed traverse; computations of compass traverse- Included Angle, Area of Traverse
3 Levelling by Dumpy Level: Profile

Unit-4: Field Report

Each student will prepare an individual report based on primary data collected from field survey and secondary data collected from different sources for either a rural area (mouza) or an urban area (municipal ward) based on cadastral or municipal maps to study specific problems.
The duration of the field work shall not exceed 3 days

Report should be hand written with the following Tentative Chapter Schemes:

Preface & Acknowledgement
Introduction: Objective, Extent and Space Relations, Data sources and Methodology
Physical Environment: Lithology, Drainage, Slope, Climate, Soil, Vegetation etc.
Socio Economic Environment: Population Characteristics, Occupational Structure, Ethnic and Religions Composition, Per-Capita Income, any other aspects.
Problems and Prospects
Bibliography if any
Appendix: Survey Questionnaire(s), Additional Tables if any
Word Limit: 3000 (Excluding Tables and Appendix).

5. A copy of the bound report, duly signed by the concerned teacher, should be submitted

Reference Books

- Anson R. and Ormelling F. J., 1994: International Cartographic Association: Basic Cartographic Vol. Pregmen Press.
- Gupta K.K. and Tyagi, V. C., 1992: Working with Map, Survey of India, DST, New Delhi.
- Mishra R.P. and Ramesh, A., 1989: Fundamentals of Cartography, Concept, New Delhi.
- Monkhouse F. J. and Wilkinson H. R., 1973: Maps and Diagrams, Methuen, London.
- Rhind D. W. and Taylor D. R. F., (eds.), 1989: Cartography: Past, Present and Future, Elsevier, International Cartographic Association.
- Robinson A. H., 2009: Elements of Cartography, John Wiley and Sons, New York.
- Singh R. L. and Singh R. P. B., 1999: Elements of Practical Geography, Kalyani Publishers.
- Sarkar, A. (2015). Practical Geography: A Systematic Approach. Orient Black Swan Private Ltd., New Delhi

6.7 SHGEO/404/GE-4: Economic Geography

Economic Geography

6 Credits

Unit 1: Development of Agriculture

1. Definition and concept of Agriculture
2. Agricultural System (Intensive subsistence and Extensive Commercial)
3. Commercial dairy farming
4. Model in Agricultural Geography: Von Thunen Model

Unit 2: Industrial Development

1 Location Factors; Role of transport in industrial location
2 Models of Industrial Location: Weber & Losch
3 Industrial agglomeration and deagglomeration
4 Industrial Regions: Asansol-Durgapur, Haldia

Unit 3: Transportation & International organization

1 Transport Network: Accessibility and Connectivity
2 Major transport system in India (Railway and National High ways)
3 Role of WTO, EEC, SAARC in International Trade
4 New industrial policies in India

Reference Books

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

  Taylor and Francis.
- Willington D. E., 2008: Economic Geography, Husband Press.
- Clark, Gordon L.; Feldman, M.P. and Gertler, M.S., eds. 2000: The Oxford
- Baud-Bovy, M. and Lawson, F. (1977), “Tourism and Recreation Development”, The

  Architectural Press Ltd, CBI Publishing Company, Boston
- Boniface, B.G. and Cooper, C.P. (1987), “The Geography of Travel & Tourism”,

Heinemann Professional Publishing, Oxford.

► Burton, R. (1991), “Travel Geography”, Pitman Publishing, London.

► Butler, R.W. (2010), ed, “The Tourism Area Life Cycle: Applications and Modifications”, Vol-1, Viva Books Private Limited, New Delhi.

► Butler, R.W. (2010), ed, “The Tourism Area Life Cycle: Conceptual and Theoretical Issues”, Vol-2, Viva Books Private Limited, New Delhi.

► Cooper, C., Fletcher, J., Gilbert, D. and Wanhill, S. (1993), “Tourism: Principles and Practice”, Pitman, London.

► Hall, M. and Stephen, P. (2006) Geography of Tourism and Recreation – Environment, Place and Space, Routledge, London.

► Mathison, A. and Wall, G. (1982), “Tourism: Economic, Physical and Social Impacts”, Longman, Harlow.

► Mill, R. C. and Morrison, A. M. (1985), “The Tourism System: An Introductory Text”, Prentice Hall, New Jersey.

► Pearce, D. (1989), “Tourism and Regional Development”, Longman, London.

► Pearce, D. (1995), Tourism Today: A Geographical Analysis, Longman, London

7. Semester-wise Structure in Honours

SEMESTER –I

Course ID	Course Code	Course Title	Credit	Marks				No. of Hours		
				I.A.	ESE		Total	Lec	Tu.	Pr.
					T	P				
11901 11911	SH/GEO/ 101/C-1T	Geotectonics and Geomorphology	6	10	40	0	50	5	1	-
11902 11922	SH/GEO/ 102/C-2P	Cartographic Techniques	6	10	0	40	50	4	-	4
11904 11914	SH/GEO/ 103/GE-1	Other than Geography Students C-1: Physical Basis of Earth	6	10	40	0	50	5	1	-
11800 11810	ACSHP/104 / AECC-1	Environmental Studies	4	10	40	0	50			
Total in Semester - I			**22**	**40**	**120**	**40**	**200**			

SEMESTER –II

Course ID	Course Code	Course Title	Credit	Marks				No. of Hours		
				I.A.	ESE		Total	Lec.	Tu.	Pr.
					T	P				
21901 **21911**	SH/GEO/ 201/C-3T	Human Geography	6	10	40	0	50	5	1	-
21902 **21922**	SH/GEO/ 202/C-4P	Cartograms and Thematic Mapping	6	10	0	40	50	4	-	4
21904 **21914**	SH/GEO/ 203/GE-2	Other than Geography Students C-2: Human Geography	6	10	40	0	50	5	1	-
	ACSHP/204 / AECC-2	English/Hind/MIL	2	10	40	0	50			
Total in Semester - II			**20**	**40**	**120**	**40**	**200**			

SEMESTER –III

Course ID	Course Code	Course Title	Credit	Marks				No. of Hours		
				I.A.	ESE		Total	Lec.	Tu.	Pr.
					T	P				
31901 31911	SH/GEO/ 301/C-5	Climatology	6	10	40	0	50	5	1	-
31902 31912	SH/GEO/ 302/ C-6	Geography of India	6	10	40	0	50	5	1	-
31903 31923	SH/GEO/303/ C-7	Statistical Methods in Geography	6	10	0	40	50	4	-	4
31904 31924	SH/GEO/ 304/GE-3	Other than Geography Students C-3: Maps & Diagrams	6	10	0	40	50	4	-	4
31905 31915	SH/GEO/ 305/SEC-1	Computer Basics and Computer Applications	2	10	0	40	50	-	-	4
Total in Semester - III			**26**	**50**	**80**	**120**	**250**			

SEMESTER –IV

Course ID	Course Code	Course Title	Credit	Marks				No. of Hours		
				I.A.	ESE		Total	Lec.	Tu.	Pr.
					T	P				
41901 41911	SH/GEO/401/ C-8	Regional Planning and Development	6	10	40	0	50	5	1	-
41902 41912	SH/GEO/402/ C-9	Geography of Economic Activities	6	10	40	0	50	5	1	-
41903 41923	SH/GEO/403/ C-10	Environmental Geography	6	10	0	40	50	4	-	4
41904 41914	SH/GEO /404/GE-4	Other than Geography Students C-4: EconomiC Geography	6	10	40	0	50	6		
41905 41925	SH/GEO/ 405/SEC-2	GIS and GPS	2	10	0	40	50	-	-	4
Total in Semester - IV			**26**	**50**	**120**	**80**	**250**			

SEMESTER – V

Course ID	Course Code	Course Title	Credit	Marks				No. of Hours		
				I.A.	ESE		Total	Lec.	Tu	Pr.
					T	P				
51901 51911	SH/GEO/ 501/C-11	Evolution of Geographical Thought	6	10	40	0	50	5	1	-
51902 51922	SH/GEO/ 502/C-12	Remote Sensing	6	10	0	40	50	4	-	4
51906 51916	SH/GEO/ 503/DSE-1	Hydrology and Oceanography	6	10	40	0	50	5	1	-
51907 51917	SH/GEO/ 504/DSE-2	Cultural and Settlement Geography / Urban Geography	6	10	40	0	50	5	1	-
Total in Semester – V			**24**	**40**	**120**	**40**	**200**			

SEMESTER – VI

Course ID	Course Code	Course Title	Credit	Marks				No. of Hours		
				I.A.	ESE		Total	Lec.	Tu.	Pr.
					T	P				
61901 61911	SH/GEO/ 601/C-13	Disaster Management	6	10	40	0	50	5	1	-
61902 61922	SH/GEO/ 602/C-14	Research Methodology and Field Work	6	10	0	40	50	4	-	4
61906 61916	SH/GEO/ 603/DSE-3	Soil and Biogeography	6	10	40	0	50	5	1	-
61907 61917	SH/GEO/ 604/DSE-4	Population Geography / Geography of Health and Wellbeing	6	10	40	0	50	5	1	-
Total in Semester – VI			**24**	**40**	**120**	**40**	**200**			

SH=Science Honours, GEO = Geography, ACSHP= Arts Commerce Science Honours Pass, C= Core Course, AECC= Ability Enhancement Compulsory Course, SEC= Skill Enhancement Course, GE= Generic Elective, DSE=

Discipline Specific Elective IA= Internal Assessment,ESE= End-Semester Examination, Lec.=Lecture, Tu.= Tutorial, and Prc.=Practical