

DEPARTMENT OF GEOGRAPHY

MA/MSC SYLLABUS

SEMESTER I

- GEO-PG-C101 Geomorphology (P)
GEO-PG-C102 Climatology and Biogeography (P)
GEO-PG-C103 Economic Geography: Concepts, Principles and Techniques (P)
GEO-PG-C104 Quantitative Methods and Computer Applications in Geography (T and P)
(Hands on training/Practical is compulsory throughout the course)

SEMESTER II

- GEO-PG-C201 Systematic and Regional Geography of India with special reference to NE India (T)
GEO-PG-C202: Remote Sensing and Geographic Information System (Core) (T and P)
(Hands on training/Practical is compulsory throughout the course)
GEO-PG-C203 Regional Development and Planning (P)
GEO-PG-C204 Population and Settlement Geography (P)

SEMESTER III

- GEO-PG-C301 History of Ideas in Geography (Core) (T)
GEO-PG-O302 Environment and Development (Open Paper) (T)
GEO-PG-C303 Regional Geography of Nepal and Eastern Himalayas with special reference to Sikkim
(Core) (T)
GEO-PG-O304 Rural Development – Planning and Policy with special reference to North-East India
(Open Paper) (T)

SEMESTER IV

The students in IV Semester will opt for one of the following streams with a combination of three papers. Each of the papers will be of 4 credits. Writing of dissertation is compulsory in each of the streams.

Stream I: Resources and Development

- GEO-PG- O401 Natural Hazards and Disaster Management
GEO-PG-O407 Geography of Tourism
GEO-PG-O408 Agricultural Geography with special reference to Northeast India
GEO-PG-C409 Geography of Natural Resources

Stream II: Mountain and Development

- GEO-PG- O401 Natural Hazards and Disaster Management
GEO-PG-O405 Political Geography with special reference to Eastern Himalaya and Northeast India
GEO-PG-O408 Agricultural Geography with special reference to Northeast India

Stream III: Social and Cultural Geography

- GEO-PG-O402 Urban Geography
GEO-PG-C411 Social and Cultural Geography with special reference to India and Northeast India
GEO-PG-O403 Geography of Social Well-being
GEO-PG-O404 Population Geography with special reference to India (P)
GEO-PG-O405 Political Geography with special reference to Eastern Himalaya and Northeast India
GEO-PG-O406 Gender and Space

Operational Notes:

1. Sessional tests carry 50 marks in all papers and such tests are aimed at continuous evaluation of a student. A teacher teaching a concerned paper may conduct three tests at regular intervals and a student may be awarded marks by taking into account her/his two best performing tests.
 2. All papers indicated with (T) have assignment components of 25 marks consisting of the following:
 - a. Term paper/reviews: 15 marks;
 - b. Presentation of the assignment: 10 marks
 3. All papers indicated with (P) have a practical component of 25 marks to be instructed and evaluated as part of sessional continuous evaluation with the following mark distribution: Two sessional tests consisting of 15 marks each, records book 5 marks, and viva-voce 5 marks to be conducted by a departmental committee constituting no less than two teachers. If department so considers, they may invite an external examiner to conduct the II practical test. In any case, the practical evaluation as far as possible will be completed two weeks prior to the scheduled end semester examination.
1. All sessionals, practicals and other assignments are suitably scheduled and distributed throughout the semester to enable the students a continuous learning environment and all sessional assignments are completed well ahead of the end-semester examination. The assignment schedules are announced right in the beginning of the semester and deadlines are adhered to by the students, so that the objective of a continuous learning environment is not defeated by carry-over of assignment to the end of the semester.

SEMESTER I **GEO-PG-C101: Geomorphology (P)**

Unit I: Fundamentals

Development of Geomorphologic Thought: classical and modern

Fundamental Concepts in Geomorphology

Recent Trends: process studies, quantitative approach and model of dynamic equilibrium

Unit II: Crustal Movements

Isostasy and Continental Drift, Sea Floor Spreading and Expanding Earth

Crustal Equilibrium in Major Relief Features of the Earth

Plate Tectonics: types of plates, boundaries, movement, Tsunami, Earthquakes

Unit III: Gradation Processes and Landforms

Concept of Gradation: Degradation and Aggradation

Weathering and Mass Movements: types and processes

Fluvial, Glacial, and Aeolian Processes and Landforms and topographic evolution

Origin of ocean floor, relief of ocean bottom, sea level changes, coral formation, tidal/waves sediments of ocean bed, distribution of temperature, salinity, ocean currents

Unit IV: Practical

Students will be required to do at least 8-10 exercises out for the following:

Introduction to Cartography: Nature and trends of development of cartography as a core tool to Geographers

Relief and terrain analysis, determination of average slopes (Wentworth, Smith, Raiz and Henry)
Drainage Analysis: stream order, frequency, density and bifurcation ratio
Interpretation of Geological maps: construction of geological section (folded and faulted, and unconformities).

Note: Practical classes will be of 2 hr duration once a week and the students are to complete the training, drawings and interpretation within the stipulated period, as far as practicable so that the assignments are not carried over.

(Total 3 for theory + 2 hours for practicals =5 contact hours/week)

Essential Readings:

1. Bloom, A.L.: *Geomorphology-A System of Late Cenozoic Landforms*, Prentice Hall, New Delhi, 1978.
2. Dayal, P.: *A Textbook of Geomorphology*, Rajesh Publications New Delhi, 2005.
3. Strahler, A.: *Introduction to Modern Physical Geography*, John Wiley & Sons, New York, 2006.
4. Thornbury, William, D.: *Principles of Geomorphology*, Wiley Eastern. New Delhi, 1989.
5. Hugget, Richard, J.: *Fundamentals of Geomorphology*, Routledge (UK), 2003

GEO-PG-C102: Climatology and Biogeography (P)

Unit I: Fundamentals of Climatology

Introduction: Development of climatology, its scope and its contemporary relevance

Structure and Composition of the atmosphere

Elements of Climate: Insolation, Temperature, Moisture, Pressure Systems; Wind systems and General Circulation of the atmosphere

Air masses and Atmospheric Disturbances, tropical and temperate cyclones; their origin and occlusion

Unit II: Classification and dynamics of climate

Principles of Climatic classification; Classification of world climates by Koppen and Thornthwaite; Major climatic regions of the world

Climates of India, Monsoons and Dynamics of Monsoon, Consequences Monsoon failure in India, Regional climate with special reference to Himalayas

Climate change: Concepts, Evidences and theories of climate change, global warming and its impact on society; IPCC and global climate conventions and protocols

Unit III: Biogeography

Scope and Development of Biogeography

Environment, Habitat and Plant-animal association, biome types

Element of plant geography, distribution of forests and major communities

Zoogeography and Bio-diversity, its significance with special reference to India and bio-diversity resources of the North-East India

Conservation of Biotic Resources

Unit IV: Practical

Students will be required to do at least 8-10 exercises out for the following:

Isopleths and line graphs, Venn diagram, Rainfall dispersion diagrams, Climograph & Heathergraph

Calculation of climatic indices: rainfall-runoff relationship, and Construction of hydrographs.

Reading of weather maps & their interpretation, Synoptic climatology and weather forecasting methods

Note: Practical classes will be of 2 hr duration once a week and the students are to complete the training, drawings and interpretation within the stipulated period, as far as practicable so that the assignments are not carried over.

(Total 3 hours for theory + 2 hours for practicals =5 contact hours/week)

Essential Readings:

1. Chritchfield, H.J.: General Climatology, Prentice Hall of India New Delhi, 1993.
2. D.S Lal: Climatology, Chaitan Publication Allahabad, 2006.
3. Eherlich & Eherlich: Population Resource and Environment, W.H. Freeman, San Francisco, 1977.
4. Glen T. Triwartha and Horen L.H.: An Introduction to Climate, McGraw Hill, 1980.
5. Odum E.P.: Ecology, pub Phila Saundera, 1971.
6. Robinson P.J. and Petty A. (ed): Applied Climatology-Principles and Practices, Routledge, London, 1997.

GEO-PG-C103: Economic Geography: Concepts, Principles and Techniques (P)

Unit I: Fundamentals

Definition, Scope and development of economic geography

Economic activities and sectors (primary, secondary, tertiary and quaternary)

Concept of economic development, sustainable development, indicators of development, Human Development Indices

Disparities in world economic developments, patterns and explanations of developed and less developed countries.

Unit II: Resources and Economic Regions

Concept and taxonomy of resources, resource depletion, conservation and sustainability of resources

World agricultural systems, agricultural regions and problems of food-security of less developed regions

Industrial complexes, Industrial regions of the world

World Trade in major commodities and services, GATT, WTO, EU and Emerging markets

Unit III: Principles and Theories

Development theories: Divergence Convergence Model (Myrdal-Hirschman), Dependency Theory (Frank-Amin)

Industrial Location theories: Transport cost, Weberian Location analysis, agglomerations and Post-Fordist localisation

Agricultural location model (von Thunen) and Diffusion Theory (Haggerstrand)

Spatial organization theories: Christaller's Central place theory and Losch's General theory

Unit IV: Practical

Students will be required to do at least 8-10 exercises out of the following:

Sectoral analysis, Isodapanes and Weight Triangle, Gravity Model

Agricultural Efficiency, Intensity, Crop combination, cropping pattern analysis

Transport Flows and Networks

Note: Practical classes will be of 2 hrs. duration once a week and the students are to complete the training, drawings and interpretation within the stipulated period, as far as practicable so that the assignments are not carried over.

(Total 3 hours for theory +2 hours for practicals=5 contact hours/week)

Essential Readings:

1. Goh Cheng Leong and Gillian C. Morgan: Human and Economic Geography, Oxford University Press, Delhi, 1982.
2. Peter Hagget: Geography: A Global Synthesis, Harlow, England; New York: Pearson Hall, 2001.
3. Hartshorne, T.A. and Alexander J.W.: Economic Geography, Prentice Hall, New Delhi, 1994.
4. Monkhouse, F.J.: Maps and Diagrams, Methuen, London, 1971.
5. Chorley, R.J. and Heggett, P.: Models in Geography, Methuen, London, 1973.
6. Richard Peet and Nigel Thrift: New Models in Geography, Unwin Hymen, London, 1989.

GEO-PG-C104: Quantitative Methods and Computer Applications in Geography (T and P)
(Hands on training/Practical is compulsory throughout the course)

Unit I: Application of Statistics in Geography

Measures of central tendency,
Measures of absolute and relative dispersion, Correlation, Regression
Calculation of Growth rates: simple, compound and exponential
Indexing: Sopher's Index, concentration index, location quotient, Gini co-efficient

Unit II Elements of Probability and Sampling

Probability and probability distribution
Sampling and sampling distribution
Sampling testing, small and large samples, 't' parametric tests: t' and 'F' tests
Hypothesis testing and 'chi'sq tests
Definitions and types of sampling
Universe, Population and samples; random sampling, stratified random sampling and area sampling

Unit III: Computer Applications in Geography

Data-concept, meaning, source, type and validation
Storing of data in Excel spreadsheet and SPSS

Unit IV: Application Software

Analysis
Graphical representation
Interpretation of data and inferences

Essential Readings:

1. David Ebdon: Statistics in Geography, Blackwell Publishers, 1991.
2. Goon Gupta and M.K. Gupta: Fundamental of Statistics, the World Press. And also McGraw Hills Book Company, Delhi, 1991.
3. Mehmood, Aslam: Quantitative Methods in Geography, New Delhi: Rajesh Publications, 1978.
4. Pal, Saroj: Statistics for Geoscientists: Techniques and Applications, New Delhi: Concept, 1998.
5. Yule, G. U. & Kendal, M.G.: An introduction to the Theory of Statistics, 14th Ed, Charles-Griffin, London.

SEMESTER- II

GEO-PG-C201

Systematic and Regional Geography of India with special reference to NE India (T)

Unit I: Physical Bases of Geography of India

Relief, Geology and Physiographic Divisions
Climate and Climatic Divisions
Drainage System and Water Resources
Natural Vegetation and Soils Regions of India

Unit II: Historical, Cultural and Economic Geography of India

Evolution of regions and boundaries since the British period
Languages and Religions in India
Population: Growth, Density and Distribution; population problems
Indian Agriculture: Its regional distribution and problems
Industries, industrial locations and industrial region
Transportation Systems and Routes

Unit III: Regional Divisions of India and Regional Geographies

Basis of Regionalisation of India: OHK Spate, RL Singh, and Asok Mitra
Macro Region: Extra-Peninsular India (The Himalayas) with emphasis on Eastern Himalaya
Selected Meso-regions: UP Himalaya, Upper Ganga Plain, Chotanagpur Plateau, Meghalaya Plateau
Micro-regions: Kashmir Valley, Sikkim Himalaya, Kaveri Delta, and Konkon Coastal Plains

Unit IV: North-Eastern Region

North-East India as a region
Physical divisions and characteristics (Physiography, drainage, climate and bio-diversity);
Population growth and distribution, Population issues in North-East India
Economic activities: agriculture (types and patterns) and Natural resources and manufacturing industries; Development issues and problems;

Note: Study tour is compulsory and part of the paper. The India Study Tour shall be undertaken during the winter vacation after the Semester-I examination and the tour report shall be assessed by methods indicated in notes.

(Total 3 hours for theory +2 hours for consultation =5 contact hours/week)

Essential Readings:

1. Deshpande, C.D.: India – A Regional Interpretation, ICSSR and Northern Book Centre, New Delhi, 1992.
2. Deshpande, C.D.: Regional Geography of Maharashtra, National Book trust of India, New Delhi, 1971.
3. R.L. Singh (ed.): India: A Regional Geography, National Geography Society of India Varanasi, 1972.
4. Sen Gupta, P. and Sdaysuk, Galina: Economic Regionalisation of India – Problems Approaches, Monograph No.8, Census Commissioner, Govt. of India, New Delhi, 1968.
5. Spate, O.H.K: India and Pakistan, Methuen, London, 1956.
6. Taher, M. and Ahmad, A.: Geography North East India, El Dorado Publications, New Delhi, 1998.

GEO-PG-C202: Remote Sensing and Geographic Information System (T and P)
(Hands on training/Practical is compulsory throughout the course)

Unit-I: Basics of RS

Introduction: definition and history and Physics of Remote Sensing
Electro Magnetic Radiation
Platforms, orbits and sensors (optical, microwave and thermal)
Indian Remote Sensing satellite and sensors: current foreign sensors (SPOT, MODUS, RADARSAT, IKONOS)
Aerial photography
Signatures, and Elements of interpretations and Ground truth

Unit II: Basics of GIS

Components of GIS
Data types and data models
Data input (scanning, digitization, topology creation
Non spatial data (linking, query and display)
Overlay and buffer analysis of raster and vector data
GPS

Unit III: Analysis of Remote Sensing Data

Visual interpretation (interpretation keys, preparation of thematic maps)
Accuracy estimation
Digital image processing-data formats, radio metric and geometric correction
Image enhancement-(contrast, low and high pass filters, PCA, and vegetation index transforms
Supervised and unsupervised classification

Unit IV: RS and GIS combined

DEM and 3D visualization, image texture, segmentation and advanced techniques of classification
Geo physical products from RS data
Interferometry and photogrammetry
RS application for environment, atmosphere and ocean

Note: This paper will have 2 Credits for Theory and 2 Credits for Practicals (2 hours for Theory and 4 hours for Practicals/Week). The end semester examination is of 50 marks: of which 30 marks for theory (3 Questions), 15 marks for RS Practicals and 5 marks for viva-voce. The end semester examination is 2 hours of theory (30 marks) and 3 hours of practicals (20 marks). The sessional tests carry 25 marks each. The students will be required to complete a project of 25 marks.

Essential Readings:

1. Burrough, P. A. and McDonnell, R.A.: Principles of Geographic Information Systems, Oxford University Press, Oxford, 1998.
2. Jensen, J.R.: Digital Image Processing, Pearson Education, 2004.
3. Joseph, G.: Fundamentals of Remote Sensing, University Press, Hyderabad, 2003.
4. Lillesand, T. and Kiefer, R.: Remote Sensing and Image Interpretation, Wiley, London, 1999.

GEO-PG-C203 Regional Development and Planning (P)

Unit I: Understanding Regions

Concept of region, regional development and regionalisation
History of development of Regional Planning
Objectives and Scope of Regional planning
Typology of region: Formal, Functional, Planning Regions
Regional planning in Indian National Plans

Unit II: Approaches and principles of Planning

Approaches to planning: Sectoral and spatial planning, short, medium and perspective and indicative planning
Multi-regional and multi-level planning in India
Principles of Regionalisation; Indicators of development and data sources;
Measures of regional development and disparities in India

Unit III: Planning in Action

Planning practices in India
Metropolitan Planning; River Valley planning
National Capital Region Planning
Resource Development Region Planning
Special Purpose Regions Planning: DPAP, NEC and NE Region Planning mechanisms

Unit IV: Practical

Students are required to do the following:

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The practical exercise involves survey and preparation of a regional development plan of either a cluster of 2-3 villages or a small watershed region within 10 Sq Km area, for which GPS based surveys could be carried out, on settlements, farming areas, drainage channels and geological features. This could be a combined project of the entire class; teams of students could work on different aspects in preparation of a micro-regional plan selected by the department for a particular year.

The evaluation process would be as follows: Project report: 15 marks, Teacher's assessment: 5 marks and oral examination: 5 marks. The project may be completed like other practicals two weeks prior to the end-semester examination.

(Total 4 hours for theory)

Essential Readings:

1. Bhat, L.S.: Regional Planning in India, Statistical Publishing Society, Calcutta, 1973.
2. Chand, M. and Puri, V.K.: Regional Planning in India, Allied Publ., New Delhi, 1983.
3. Mishra, R.P. (ed.): Regional Planning: Concepts, Tools, Techniques and Case Studies, Concept, New Delhi, (1992, Revised edition).
4. Mitra, A.: Levels of Development in India, Census of India 1961, Monograph No.7, 1968.
5. Mohapatra, A.C. and Pathak, C.R. (eds.): Economic Liberalisation and Regional Disparities in India, Star Publ. House, Shillong, 2003.

GEO-PG-C204: Population and Settlement Geography (P)

Unit I: Defining the contours of Population Geography

Population Geography: Scope and Subject matter, Evolution of Population Geography, Relation with reference to Demography and other Social Sciences

Concept of Demographic Transition

Population Distribution and Growth: World Patterns and their determinants; Population distribution and growth in India,

Unit II: Composition and Migration

Population Composition: Age and Sex, Literacy and Rural-Urban; Population Composition of Geography.

Migration: Causes and consequences of Internal and International Migration, Population Policies in India

Unit III: Understanding Settlements

Settlement Geography: Nature and Scope of Settlement Geography

Site and Situation of settlements, factors affecting to evolution of Settlements, locational and distributional characteristics; Forms, Types and Patterns of rural settlements with special reference to India

Urban Settlements: urbanization in India since British period; Definition of a city, metropolises; Urban growth and urbanization; Recent trends of urbanization in India.

Distribution of cities in India, Rural-Urban migration into large cities, Slums and urban poor, Problems of Mega-cities

Unit IV: Practical

The students are required to do 8-10 exercises from the following:

Age-Sex pyramid, Population growth curves (CGR, Natural Log and Logistic curves), trend-lines and population forecasts, Population density and distribution maps

Settlement types diagrams, Nearest Neighbour Analysis for pattern analysis, Urban land use maps, Rank-size rule analysis, Distance-decay function and Functional classification of cities by Nelson and Asok Mitra

Note: Practical classes will be of 2 hr duration once a week and the students are to complete the training, drawings and interpretation within the stipulated period, as far as practicable so that the assignments are not carried over.

(Total 3 hours for theory +2 hours for practicals=5 contact hours/week)

Essential Readings:

1. Bhende Asha, A. and Kanitkar, T.: Principles of Population Studies, II Edn., Himalaya Pub, Bombay, 1982.
2. Clarke, John I.: Population Geography, Pergamon, Oxford, 1971.
3. Hegget, P.: Geography a Modern Synthesis, Harper International edition; Harper & Row Publisher New York, 1975.
4. Kinsley Davies: The Population of India and Iraq, Princeton University Press, 1951.
5. Monk House, F.J. and Wilkinson, H.R.: Maps and Diagrams, Methuen London, 1956.
6. Trewartha, G. T.: A Geography of Population: World Patterns, John Wiley, New York, 1969.

SEMESTER III

GEO-PG-C301: History of Ideas in Geography (Core) (T)

Unit I: Emergence of the discipline

Historical Development: Contribution of major proponents in geography in the ancient world (the Greeks, the Romans and Indians)

Development of Geography during the Middle Ages

Age of Discovery and Geography as the cradle of sciences

Reformation, Age of Enlightenment and pre-Modern geographies (Varenius and Kant)

Unit II: Shaping the discipline

Nineteenth Century Geographies: Ritter and Humboldt

Ratzel, Semple, Huntington and Taylor - Environmental Determinism

Possibilist School; La Blache, Brunches and the French school

Influence of Darwinism on Geography

Unit III: Towards scientific explanation and theory building

Early 20th Century Geographies: Sauer--Cultural School; Hartshorne—Regional School (areal differentiation);

Dualisms—Regional Vs. systematic, Physical vs. Human

Positivism in Geography, Quantitative Revolution and Logical Positivism

Unit IV: Social relevance of Geography

Contemporary geography: Behaviouralism and Humanistic Geography

Welfare Geography, Radicalism

Neo-determinism

Neo-environmentalism

Post-modernism in geography

The Gender Question

(Total 4 hours for theory /week)

Essential Readings:

1. D.R. Stoddard: On geography & its History, Basil-Blackwell, 1987.
2. David Livingstone: The Geographical Tradition, Oxford Blackwell London, 1992.
3. Dikshit, R.D: Geographical Thought, A Contextual History of Ideas, Prentice Hall of India, New Delhi, 2003.
4. James, P.E: All Possible Worlds: A History of Geographical Ideas, New York, 1972.
5. Peet, R. (Ed.): Radical Geography, Methuen, London, 1978 (2nd Ed)
6. Peet, R. And Thrift, N. (eds.): New Models in Geography, Vol. 2, Unwin Hyman, London, 2002.

GEO-PG-O302: Environment and Development (Open) (T)

Unit I: Concepts

The concept of environment, ecology and ecosystems, Food web and trophic levels

Classification of Ecosystems: marine and terrestrial, Biomes

Structure and function of ecosystem; stability and resilience of ecosystems

a) Biosphere- main life forms and major bio-geochemical cycles;

b) Hydrosphere and the hydrological cycle

c) Radiation and heat budget

Critical limiting factors of non-renewable natural resources, food supplies,

Global Natural Resources and changing demographics in different ecosystems

Unit II: Global Environmental Issues Related with Development

Issues of degradation of ecosystems

Deforestation and loss of biodiversity

Pollution of air, water and soil

GHG build up and global warming, threats to life support systems

Unit III: India's Environment

India's water Resources: fresh water, ground water and pollution:

Issues connected with large dams

Cities and industrial emissions

Forest depletion and degradation, forest and environment conservation policies

Land and soil degradation

Unit IV: Anthropogenic impact on local environment

India's mountain environment (The Himalaya): Deforestation, Glacial recession, Over-population and threat to carrying capacity and livelihoods

Environmental Hazards: Risks and abatements measures of floods, landslides and earthquakes (special reference to the Himalayan region)

Issues on Indian mountain environment: Coastal, Island and desert

(Total 4 hours for theory /week)

Essential Readings:

1. A.K. Bhagabati et al: Biodiversity of Assam Status strategy and Action Plan for Conservation, EBH Publishers (India), Guwahati, 2006.
2. Ehrlich, Paul R. and Ehrlich, Anne H.: Eco-Science, W. H. Freeman & Co., San Francisco, 1972.
3. Ramakrishnan, P.S.: Ecology and Sustainable Development; National Book Trust of India, 2001.
4. Barrow, C.J.: Environmental Management, Routledge, London, 1999.
5. Dawson, J.A. and Doornkamp, J.C. (eds.): Evaluating the Human Environment: Essays in applied geography, Edward Arnold (Publ.) Ltd., London, 1975 (reprint).
6. Odum, E.P.: Fundamentals of Ecology, W.B. Sanders, Philadelphia, 1971.
7. Owen L. and Unwin, T.: Environmental Management, Blackwell Publ., Oxford, 1997.
8. Park, Chris C.: Ecology and Environmental Management: A Geographical Perspective, Butterworths, London, 1981.

GEO-PG-O303: Regional Geography of Nepal and Eastern Himalayas with special reference to Darjeeling and Sikkim (T)

Unit I: The Setting

General background to Nepal and Eastern Himalayas and its divisions,
Nepal, Darjeeling-Sikkim and Bhutan Himalayas, Arunachal Himalayas,
Geological evolution, Physiography and drainage systems
Climate, natural hazards, natural vegetation and soils

Unit II: Diversities and Plurality

Cultural Evolution, Ethnicities and Cultural diversity and regions
Political history and state formations,
Geo-political contexts of Nepal and Eastern Himalayas and cross border issues.
Population distribution and growth, population problems, rural and urban settlements

Unit III: Economy

Agrarian economy, shifting cultivation, Terrace and plantation farming, Forestry and foraging economies,
Rural livelihoods
Industries, organized sectors and traditional products, occupations and employment
Communications and trade with special emphasis on border trade with China (Tibet), and Bangladesh

Unit IV: Regional Geography of Sikkim

Physiography, climate and ecological zones, drainage and water resources, bio-logical resources and bio-diversity
Peopling, population distribution, ethnicities, Population growth
Economic enterprises in Sikkim, adventure and eco-tourism, Agriculture and plantation economies,
Manufacturing including traditional crafts
Problems of economic and cultural development of Sikkim
(Total 4 hours for theory hours/week)

Essential Readings:

1. Das, H.P.: Geography of Assam, NBT, New Delhi, 1970.
2. Gopalakrishnan, R.: Socio-Political framework of North East India, Vikas, New Delhi, 1996.
3. Lama, M.P.: Sikkim: Human Development Report. Government of Sikkim, Social Science Press, Delhi, India, 2001.
4. Sinha, A.C: Sikkim: Feudal and Democratic, Indus Publishing Company New Delhi, 2009.
5. Taher, M. and Ahmad, A.: Geography North East India, El Dorado Publications, New Delhi, 1998.

GEO-PG-O304: Rural Development – Planning and Policy with special reference to North-East India (T)

Unit I: Concepts and theories

Concepts, definition, scope and significance of Rural Development with particular reference to developing countries

Development theories and rural development

Macro policies of rural-development and micro-level development issues with special reference to India

Planning from above and planning from below

Unit II: Processes and outcomes

Rural Development Processes in India: Major features of colonial and post- Independence period

Rural-Urban Relations: Rural Urban continuum and disparities

Regional dimensions of migration, occupational patterns and changes, levels of living and rural poverty

Unit III: Rural Development at work

Area Approach to Rural Development: Services provision, settlement systems and hierarchy, growth centre approach, issues of spatial equity and efficiency in the provision of rural services, market access to rural produce

Intensive Area Development Programme (IADP), Sectoral and spatial planning, integrated area development model

Target group approach to rural development

Livelihood approach to rural development

Approach to rural development strategy in the North-East

Unit IV: Planning for Rural Development

Rural Infrastructure planning: physical infrastructure-connectivity, water and sanitation, social infrastructure: education and health

Decentralised Planning for rural areas: District, Block Level and village level planning

Institutional framework: panchayat, district council, village council, sixth schedule provision for local institutions in North east.

Civil society institutions, NGOs, CBOs etc.

Rural development programmes and policies in Sikkim

(Total 4 hours for theory hours/week)

Essential Readings:

1. Basant Desai: Rural Development, Vol-1-6, Himalayan Publishing House, New Delhi, 1986.
2. Mishra, G.K.: Block Level Planning Panchayat II Block, Bengal, Rawat Publication, Jaipur, 1988.
3. Ramachandran, H. and J.P.C. Guimaraes: Integrated Rural Development in Asia-Learning from Recent Experience, Concept, New Delhi, 1991.
4. Sudipta Mandal: District Level Planning in India, IIPA, New Delhi, 1994.
5. Wanmali, S.: Rural Infrastructure Settlement Systems and Development of the Regional Economy in South India, International Food Policy Research Institute, Washington, D.C., 1992.

SEMESTER IV

The students in IV Semester will opt for one of the streams with a combination of three papers. Each of the papers will be of 4 credits. Writing of dissertation is compulsory in each of the streams.

Total credits allotted to IVth semester are 16 (4 credits X 3 papers = 12 and 4 credits for Dissertation).

The combination of papers under each of the streams will be as follows

Resources and Development

GEO-PG- O401 Natural Hazards and Disaster Management
GEO-PG-O0407 Geography of Tourism
GEO-PG-O408 Agricultural Geography with special reference to Northeast India
GEO-PG-C409 Geography of Natural Resources

Mountain and Development

GEO-PG- O401 Natural Hazards and Disaster Management
GEO-PG-O405 Political Geography with special reference to Eastern Himalaya and Northeast India
GEO-PG-O408 Agricultural Geography with special reference to Northeast India

Social and Cultural Geography

GEO-PG-O402 Urban Geography
GEO-PG-C411 Social and Cultural Geography with special reference to India and Northeast India
GEO-PG-O403 Geography of Social Well-being
GEO-PG-O404 Population Geography with special reference to India
GEO-PG-O405 Political Geography with special reference to Eastern Himalaya and Northeast India
GEO-PG-O406 Gender and Space

GEO-PG-O401: Natural Hazards and Disaster Management (P)

Unit I: Concepts and Types

Concepts and definitions of hazards and disasters: man-made and natural

Classes of disasters: Natural (Earthquakes, Tropical Cyclones, Tsunamis, Avalanches, Mass movements and Landslides, Floods, forest fire) and Anthropogenic (climate change effects, biological, Industrial, Nuclear/Wars);

Measures of severity of disasters, Disaster prone areas of the world

Unit II: Spatial Dimensions of the Hazards and Disasters

Disaster Zonation of the world in terms of Natural disasters like Earthquakes, Tropical Cyclones, Tsunamis, Avalanches, Mass movements and Landslides, Floods by severity scales,
Principal disasters in India, vulnerability mapping and Disaster Zonation in India, Effects of natural disasters based on historical data, application of RS and GIS in disaster studies.

Unit III: Himalayas and Disasters

Natural Disasters in the Himalayas: Floods, Earthquakes and Landslides with special reference to the Eastern Himalaya

Disaster risks, vulnerability and mitigations, Post-disaster consequences (displacements, housing shortages, relief needs, employment and livelihood, family and psychological needs)
Post-disaster actions: Relief and Rescue, Rehabilitation (Physical, Economic and Psychological)
Strategies of risk reduction, disaster preparedness, support system, organizations, awareness programmes
Disaster Policy and Planning in India, NDMA and GOI policies
Disaster vulnerabilities of Sikkim: Earthquakes, Flooding and Landslides (to be based on Sikkim examples and Data)

Unit IV: Practical

Note: Students are required to prepare a field report based on study of landslide vulnerability zones and landslide areas in and around Gangtok or adjoining areas which could be evaluated with 20 marks on the report and 5 marks on oral presentation as part of sessional assignments. Students could be taken on Saturdays or holidays, 3-4 visits to such sites and areas to collect data, photographs, sketches, and making other types of field inputs to write the reports.

(Total 3 hours for theory +2 hours for Practical=5 hours/week)

Essential Readings:

1. Blaikie, P., Cannon, T., Davis, I., et al.: At Risk: Natural Hazards, People's Vulnerability, and Disasters, Routledge, London, 1994.
2. National Center for Disaster Management (NIDM), Atlas, South-East Asia.
3. Paraswamam, S. and Unnikrishnan, P.V.: India Disaster Report, Oxford University Press, New Delhi, 2000.
4. Quarantelli, E.L. (ed.): What is a Disaster? Perspective on the Question, Routledge, London, 1998.
5. Schneid, T. and Collins, I.: Disaster Management and Preparedness, Lewis Publication, Washington, D.C., 1998.

GEO-PG-O402: Urban Geography (T)

Unit I: Understanding Urban Geography

Nature and scope of urban geography;
Different approaches to the study of urban geography;
Recent trends; Nature of the cities during ancient, medieval and modern times
Urban economy: Economic base; functions and functional classification;
City hierarchy and rank-size relationship;
Urban systems;

Unit II: Internal Structure of cities

Urban morphology and theories regarding morphology;
Changing city land use- urban sprawl and urban fringes
Use of RS and GIS in monitoring urban land use

Unit III: Processes and outcomes of urbanisation

Urbanization process in developed and developing countries and predicament
Urbanisation and Urban expansion in India;
Problems of small and medium towns in India;
Indian Mega-cities

Unit IV: Contemporary cities

Contemporary issues in urban India: a) urban infrastructure b) housing, slums and urban poor;

Urban renewal; Housing problems
Urban environment: pollutions, heat island, urban flooding and urban crimes;
City planning in India
(Total 4 hours for theory /week)

Essential Readings:

1. Bhattacharya, B. (ed.): Urban Development in India: Since Pre-historic Times, Concept, New Delhi, 2006.
2. Harvey, D.: Social Justice and the City, Edward Arnold, London, 1973.
3. Mayer, J. M. & C.F. Kohn: (ed): Readings in Urban Geography, UCP, Chicago, 1959.
4. Ramachandran, R.: Urbanisation and Urban Systems of India, Oxford, New Delhi, 1993.

GEO-PG-O403: Geography of Social Well-being (T)

Unit I: Formulation of welfare geography

Welfare Geography and Social Well Being: Theoretical approaches and development; Human needs and wants; State of Well being and Level of Living, welfare as a focal theme in human geography;
Discrimination, Deprivation and Poverty: Concept of absolute and relative deprivation;
Process of Social differentiation, Discrimination and Deprivation and exclusion, geographic patterns of rural and urban poverty

Unit II: Indicators and causality of well being

Concept of human resource development: Education and human resource development, education and enlarging choices, empowerment and wellbeing
Education and literacy in developing countries and the position of India, female literacy in India, Children in schools and out of schools in India: regional variations, social access to education
Education, occupational changes, employment and un-employment situation in India
Education and social change and enlarging democratic institutions and values

Unit III: Health as a reflection of well being

Health and social wellbeing,
Diseases, disease prevalence and disease ecologies in India; lifestyle disease
Environment and health in India special reference to large urban areas
Occupational health, health risks and mitigation, health GIS

Unit IV: Well being deficits

Poverty and health in India, health care systems (public and private), clinical, community and tele-health systems.
Health in the Himalayan region, water related diseases and other endemic diseases and their effects on society;
Disease ecology and prevalence in Eastern Himalayas, Endemic diseases in Sikkim and their geographic delineation, diseases, cultures and ethnicities;
Health policy and programmes in Sikkim
(Total 4 hours for theory /week)

Essential Readings:

1. Akhtar Rais (Ed.): Environment and Health Themes in Medical Geography, Ashish Publishing House, New Delhi, 1990.
2. Council for Social Development (CSD): Social Development Report-2010, New Delhi.

3. Dandekar, V.M. and Rath: Poverty in India, Indian School of Political Economy, Manohar Publishers and Distributors and also Economic and Political weekly Annual Issue, 1971.
4. Dreze and Sen, Amartya: Hunger and Public Action, Oxford: Clarendon Press. 1989.
5. Fanon Frantz: Wretched of the Earth, Penguin Books Harmondsworth, 1980.
6. Krishna kumar: Raaj Samaaj and Shiksha, Rajkamal Prakashan, New Delhi, 1995.
7. Paulo friere: Pedagogy of oppressed, Penguin Books Harmondsworth, 1980.
8. Planning commission document on poverty, Planning Commission, Govt. of India, 2007.
9. Sen, Amartya: Poverty and Famines: An Essay on Entitlements and Deprivation, Oxford, Clarendon Press, 1982.
10. Smith D.: Human Geography- A Welfare Approach, Edward Arnold, London, 1977.

GEO-PG-O404: Population Geography with special reference to India (P)

Unit I: Nature, scope of population studies

Definitions and significance

Approaches to population studies and relationship with other social sciences

Sources of population data, their level of reliability and associated problems.

Theories of population: Malthus, Boserep and others

Demographic Transition: concept of over population, under population and optimum population

Unit II: World patterns and determinants of population distribution (eccumene and non-eccumene), density (Measures of population) pressure) and growth

Population redistribution: laws and theories of migration

Unit III: Elements of Population, composition and its measures

Fertility, Mortality, Migration, Age & Sex, Literacy & education, Rural & urban population, Occupational structure

Unit IV: Techniques of population projection and spatial analysis (P)

Students will be required to do at least 8-10 exercises.

Note: Practical classes will be of 2 hr duration once a week and the students are to complete the training, drawings and interpretation within the stipulated period, as far as practicable so that the assignments are not carried over.

(Total 3 for theory + 2 hours for practicals =5 contact hours/week)

Essential Readings:

1. Bhattacharya, A.: Population Geography of India, New Delhi. : Shri Publishing House, 1978.
2. Bose, Ashish: Population of India: 2001 Census Results and Methodology, B.R. Publication New Delhi, 2001.
3. Clark, John, I: Population Geography, Pergamon, Press, N. Y., 1973.
4. Kosiniski and K.M. Elahi: Population Redistribution and Development in SE Asia, Rawat, Jaipur, 1991.
5. Massimo, L.B.: A Concise History of World Population, Wiley-Blackwell (4th Edn.), 2006.
6. Mitra, A.: India's Population: Heading towards a billion, B. R. Pub., New Delhi, 1991.
7. Premi, M. K.: India's Population: Heading Towards a Billion. Delhi: B.R. Publishing, 1991.

GEO-PG-O405

Political Geography with special reference India and East and South-East Asia (T)

Unit I: Fundamental concepts of political geography

Emergence and development of political geography;

Basic elements of political geography- territorial base, population, system of governments, economic base, transport and communication;

Approaches to study political geography- Functional, World System and Landscape

Unit II: Concepts and Theories

Concept and theories of nation and nation state; Location, size, shape, and core areas;

Concept of organic state- Ratzel, Spencer and Schaffle;

Frontiers, borders and boundaries; marine jurisdiction;

Theory of Heartland, Rimland, Crush zone and Sea Power Geo-strategy

Unit III: India and its Geopolitical Perspective

Politico-geographic factors in the rise of Indian federalism; identity and identity politics in the North east India and its geopolitical perspective

Geopolitical significance of the Indian Ocean, problems and prospects

Unit IV: India's North-East and South East Asia

India's North-east and neighbouring countries: borders, boundaries; agreements and disputes with China, Myanmar and Bangladesh

India's Look-East Policy, transport and trade expansion with China, ASEAN countries, free-trade agreements

Rise of China as an economic power-house and relationship with India: North-East perspective

(Total 4 for theory /week)

Essential Readings:

1. Adhikari, S.: Political Geography, Rawat Publ., Jaipur, 1997.
2. Agnew, J. (ed.): Political geography: A Reader, Arnold, London, 1997.
3. Dikshit, R.D.: Political Geography- A Century of Progress, Sage Publ., Delhi, 1999.
4. Dikshit, R.D.: Political Geography: A Contemporary Perspective, Tata-McGraw, Delhi, 1996.
5. Gopalkrishnan, R.: Political Geography of north east India, Jawahar, Delhi, 2001.
6. Prescott, J.R.V.: Geography of Frontiers and Boundaries, Aldin, Chicago, 1968.
7. Taylor, P.: Political Geography, Longman, London, 1995 (revised edition).

GEO-PG-O406: Gender and Space (T)

Unit I: Conceptualizing Gender within Geography

Social construction of the feminine and masculine, Development of and theoretical approaches to the study of Gender in geography;

Examining Gender in relation to space: Division of space in to private and public spaces, Gendered environments, gendered access to and experience of space; spatial variations in the construction of gender

Unit II: Spatial Patterns and modes of Gender discrimination and inequalities

Patriarchy, Matriarchy, Matriliny and Matrilocality, Gender and social values;

Social space and gender, creation of gendered space and reproduction of gendered space

Unit III: Gender disparities in education and health

Global pattern and the Indian situation;

Women in occupations and employment, social assignments of work and work preferences

Crime against women (home and work environment), gender stereotypes and representation in media

Unit IV: Gender identity, gender relationships, strategic and practical domains

Gender Policy and practice in India;

Problems of empowerment of women in India

Gender and development

(Total 4 hours for theory /week)

Essential Readings:

1. Karve, I.: Kinship Organisation in India, Asia Publishing House, Bombay, 1968.
2. Krishnaraj, M. R. Sudarshan and A. Shariff: Gender, Population and Development, Oxford University Press New Delhi, 1998.
3. Lefebvre, Henri: The Production of Space, Blackwell, London, 1991.
4. Lund, R.: Gender and Place: Towards a Geography Sensitive to Gender, Place and Social Change- *Vols. I and II*, Department of Geography, University of Trondheim, Norway, 1993.
5. Mc Dowell, L.: Gender, Identity and Place: Understanding Feminist Geographies, Blackwell Publishers, Oxford, 1999.

GEO-PG-O407: Geography of Tourism with special reference to Sikkim (T)

Unit I: Introductory

Definition and scope and types of tourism

Tourism as recreation and leisure; Components of tourism and recreation; Relationship between tourism and recreation

Development and status of the geography of tourism and recreation; Physical and human factors and their relationship to tourism; Tourist sites and their importance

Sources of Data

Unit II: Impacts of Tourism and Recreation

Geography and tourism; the environmental effects of tourism; Physical environmental impact; Social impact; economic impact

Tourist sites and centres: religious and cultural, eco-tourism

Unit III: Tourism in India

Tourism development and planning process

Assessment of tourist demand, infrastructure and employment

Tourism and effects on environment; moral and ethical issues in high-tourist areas

Tourism and public policy in India; carrying capacity

Sustainable tourism and conservation policy

Unit IV: Tourism in Sikkim

Tourism sites and locations in Sikkim; tourist information system

Infrastructure development for tourism and potentials

Hospitality industries: hotels, restaurants, transportation etc. and employment potentials

Eco tourism potentials in Sikkim

(Total 3 for theory + 2 hours for consultation =5 contact hours/week)

Essential Readings:

1. Erlet, C. and Lowman, G.: Ecotourism: A Sustainable Option? John Wiley, New York, 1994.
2. Hall, C.M. and S.J. Page: The Geography of Tourism and Recreation: Environment, Place and Space, Routledge, London, 1999.
3. India's cultural heritage, Indira Gandhi National Centre for the Arts (IGNCA), Ministry of Culture, New Delhi.
4. Stephen, W. and Neil, J.: Ecotourism: Impacts, Potentials and Possibilities, Butterworth- Heinemann, London, 1999.

GEO-PG-O408: Agricultural Geography with special reference to North-East India (T)**Unit I: Origin and Development**

Nature, Scope and Significance of Agricultural Geography

Origin and development of agriculture, diffusion and adoption of crops and animals and gene centres

Approaches to the study of Agricultural Geography: commodity, regional and systematic

Unit II: Determinants of Agriculture

Determinants: Physical, Socio-economic and technological

Agricultural Regionalization: Cropping pattern, crop combination, diversification and specialization, and degree of commercialization

Crop intensity, efficiency and productivity patterns with special reference to India;

Green Revolution - its regional impacts and consequences

Agricultural marketing systems

Unit III: Agricultural Systems in the World

Whittlesey's classification of agricultural regions and recent changes

Von Thunen's theory of agricultural location and recent modifications

Agricultural Land use classes in India

Land capability classification: methods and applications

Unit IV: Agriculture in North-East Region of India

Shifting cultivation: system and patterns; consequences of shifting cultivation in Himalayas;

Shifting cultivation and livelihoods

Peasant farming: small scale rice-farming in plains and hills, terrace farming, land tenancy and rising landlessness in the region

Plantation farming in the North-East: Its colonial history, patterns of tea-plantation, organic planning

Plantation cropping in Sikkim: problems and prospects

(Total 4 hours for theory /week)

Essential Readings:

1. Bhalla, G. S. and Gurmail Singh: Indian Agriculture: Four Decades of Development, Sage Publications (ca), 2001.
2. Hussain, M.: Systematic Agricultural Geography, Rawat Publications, New Delhi, 1996.
3. Morgan W. B. and Norton R.J.C.: Agricultural Geography, Methuen, London, 1971.
4. Singh, J. and Dhillon, S.S.: Agricultural Geography, Tata McGraw Hill, New York, 1994.
5. Symons, L.: Agricultural Geography, G. Bells and Sons, London, 1967.

GEO-PG-C409: Geography of Natural Resources (T)

Unit I: Definition, scope and classification of resources

Natural resources and human societies, Global distribution of natural resources, abundance and scarcities
Club of Rome studies and limits to availability of natural resources, the law of the minimum
Political economy of global natural resources, in respect to oil and oceanic resources

Unit II: Global distribution of energy resources

Coal, oil, natural gas and hydro-power resources, the energy deficit and surplus areas
Global energy trade and situation of India in global energy scenario
Global distribution of principal minerals: Ferrous (Iron), Non-ferrous (Aluminum) and Noble metals (Copper)
India's production, distribution and consumption of principal minerals (Iron, Aluminum & Copper)

Unit III: Forest and bio-diversity resources and their significance to human societies

Global distribution of forest resources; The Equatorial Rainforests, the Tropics, the mid-latitude and high latitude forests; forest products and global trade, India's forest resources and their conservation
Significance of global fresh-water resources, confined, flowing and ground-water resources; their distribution
Identification of chronically water deficit and surplus areas; India's situation in global fresh-water resources

Unit IV: Concept and principles of conservation of resources

Recycling, efficient and multiple-use of natural resources
Principles of Sustainable Development and the Brundtland Report
Economic efficiencies and trade-offs in conservation strategies
Public policies for conservation strategies, market forces, fiscal methods, incentive systems and regulatory systems of management
India's resource management policies (energy, minerals, forests and water resources)
(Total 4 hours for theory /week)

Essential Readings:

1. Bruntland, G.: Our Common Future, World Commission on Environment & Development, Oxford, Oxford University Press, 1987.
2. Eherlich & Eherlich: Ecoscience: Population Resource and Environment, W.H. Freeman, San Francisco, 1977.
3. Meadows, P. and Meadows, D.: Limits to Growth, Donella H. Meadows, Dennis L. Meadows, Jorgen Randers, and William W. Behrens III. (1972): *The Limits to Growth*, New York: Universe Books.
4. Revisiting the Limits to Growth: Could the Club of Rome Have Been Correct, After all? (Part I): Mathew, R. Simons, Published by GreatChange.org, Archived Sep 30, 2000.
5. Sunil Munshi: Resource, regions and regional disparity in India, New Delhi: People's Publishing house, 1984.

GEO-PG-C411

Social and Cultural Geography with special reference to India and North-East India

Unit I: Social Geography- evolution and relevance

Definition: Nature and Scope and evolution of Social Geography in the Anglo-Saxon World
Society and Environment, Social Evolution, Social Structure, Social Diversity and Plurality (Examples

should be drawn from North-East India, as far as practicable)

Unit II: Concepts and themes

Social Space-, Social exclusion and Social Justice; Geography of Social Well-being, Social Pathology, (caste division of India) and Social Action (Examples should be drawn from North East India, as far as practicable)

Unit III: Cultural Geography

Definition, Scope and evolution of Cultural Geography

Concepts of Culture –Traits, Diffusion, Acculturation

Themes and Concepts in Cultural Geography: Culture Area, Cultural Region, Cultural Diffusion and Assimilation, Cultural ecology, Cultural Interaction, Cultural Landscape

Unit IV: Components of Cultural Geography

Types and Pattern of World Cultural regions: Language, Religion, Ethnicity;

Cultures and cultural regions in North East India in particular reference to religion (Buddhism, Hinduism, Islam, Christianity and Animism) and;

Ethnicities (Indo-Burmese, Tibeto-Mongoloid and Indo-Caucasoid)

(Total 4 hours for theory /week)

Essential Readings:

1. Ahmad, A.: Social Geography, Rawat, Jaipur, 1999.
2. Eyles, John: An Introduction to Social Geography, Oxford, OUP, 1979.
3. Carl Sauer: "The Morphology of Landscape". *University of California Publications in Geography*, 2 (2):19-53, 1925.
4. Mitchell, D.: Cultural Geography: A Critical Introduction, Blackwell publishers, 2000.
5. Price, M., and M. Lewis: "The Reinvention of Cultural Geography". *Annals of the Association of American Geographers*, 83 (1):1-17, 1993.
5. Robertson, I. and Richards, P. (eds.): *Studying Cultural Landscapes*. Arnold, London, 2003.
6. Subbarao, Bendapudi: *The Personality of India*, Faculty of Arts, MS University, Baroda, 1958.