**PART I – FIRST YEAR**

**SEMESTER 1**

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<td>Environment and Ecology</td>
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<td>103</td>
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**PART II – SECOND YEAR**

**SEMESTER 3**

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<td>Rural Development Planning and Policy</td>
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**SEMESTER 4**

Course 401 – Project report on a theme related to the area of specialization is compulsory and will carry 100 marks (25 internal assessment and 75 for the Project Report/Viva-voce). The students have to opt three courses of which at least two will be from the specialization of their choice.

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**ENVIRONMENT AND RESOURCE**

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<td>415</td>
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SOCIAL DIMENSIONS IN GEOGRAPHY
421. Historical Geography
422. Geography of Landscape
423. Demography and Population Policy
424. Health, Environment and Society
425. Geography of Social Well-Being
426. Gender and Space with Special Reference to India

URBAN AND REGIONAL STUDIES
431. Techniques and Methods of Regional Analysis
432. Transport Network and Flows
433. Urban Development Management and Policy
434. Social Impact Assessment

PHYSICAL GEOGRAPHY
441. Analytical Physical Geography
442. Biogeography
443. Geography of Himalayas
444. Terrain Analysis and Evaluation

POLITICAL GEOGRAPHY AND AREA STUDIES
451. Political Geography of India
452. Geography of Federalism
453. Electoral Geography
454. Political Geography of Central Asia
456. Political Geography of Middle-East

RURAL AND AGRICULTURAL STUDIES
461. Agricultural Development and Environmental Degradation
462. Landuse and Planning
463. Dryland Farming
464. Food Security System
Course 101: Geographical Thought

Internal Assessment: 25

End Semester Examination: 75

Course Outline:
1. Evolution of Geographic Thought: Changing paradigms – Environmentalism, Possibilism, areal differentiation, spatial organisation
2. Theory in Geography: structure, nature, type and applications in geography; human-environment interactions and social theory.
3. Philosophical debates in Contemporary Geography: Critical understanding of positivism, behaviouralism, realism, Marxism, Structuralism, post-structuralism and postmodernism.
4. Methods in Geographical Analysis: Epistemology of geography, critical assessment and debates on quantitative, qualitative, field and cartographic methods in geography
5. Future of Geography: changing nature, concepts, approaches and methodologies of geography in a Globalising World
6. Progress and Contributions in Indian Geography

Recommended Readings:
4. Buttimer, A and D.Seamon (eds) (1980); The Human Experience of Space and Place, London, Croonhelm
8. Cloke, Philo and Sadler
12. Harvey, D (1973) Social Justice and the City, Baltimore, John Hopkins University, Baltimore
Course 102: Environment and Ecology

Internal Assessment: 25

End Semester Examination: 75

Course Outline:
1. Geography, Environment and Ecosystem: Population, Resources, Environment and Development; Concepts and Approaches; Sustainability and sustainable development; Global Environmental Problems.
3. Forest Ecosystem: Processes and Patterns; Problems and Management; Biodiversity.

Recommended Readings:
Course 103: Fundamentals of Remote Sensing and GIS

Internal Assessment: 25 
End Semester Examination: 75

Course Outline:
1. Remote Sensing: Historical development; components, types and various platforms; Global Positioning System.
4. Applications of remote sensing for landuse/landcover mapping and change detection, Environmental Studies, Urban, Hazard and Disaster, Water Resources, Agriculture etc.
5. GIS: Definition and Applications; Components and Elements of GIS; Development of GIS technology; Geographic objects: point, line and area; analog and digital maps; theoretical models and framework for GIS, representation of geographic data-base; coordinate systems and map projections.
6. Data Input, Storage and Editing: Nature of geographic data: Spatial and Attribute Data, Concept of vector and raster based models; data input devices: Digitization; external data bases; storage and manipulation of GIS data bases;
7. GIS and Spatial Analysis: Neighbourhood analysis; Proximity analysis and buffers; Overlays Analysis – raster and vector based overlay and their applications; Presentation of GIS output.

Recommended Readings:

Course: 104  Statistical Techniques in Spatial Analysis

Internal Assessment: 25  End Semester Examination: 75

Course Outline:
1. Statistics and Statistical Data: Spatial and non-spatial; centrographic measures in geography.
2. Probability theory, probability density functions with respect to Normal, Binomial and Poisson distributions and their geographical applications.
3. Sampling: Sampling plans for spatial and non-spatial data, sampling distributions; sampling estimates for large and small samples tests involving means and proportions.
4. “F” Distribution and Analysis of Variance –“one-way” and “two-way” analysis.
6. Correlation and Regression Analysis: Rank order correlation and product moment correlation; linear regression, residuals from regression, and simple curvilinear regression; Introduction to multi-variate analysis.

Recommended Readings:
Course 201: Advanced Physical Geography

Internal Assessment: 25  End Semester Examination: 75

Course Outline:
1. Earth System: Physical processes, the interaction and linkages.
2. Landscape ecology: mountains, deserts, and coasts.
3. The Climate System and Climate Change: Paleoclimate; Climate variability; EL Nino Southern Oscillation; Climate change and its impact on environment.
4. The Ocean System: Ocean topography; The Global Carbon Cycle; Sea surface temperature and sea-level fluctuation; Land – ocean interactions in the coastal zone.
5. Soils: Nature, colour, texture; parent material and composition, soil moisture, pH factor, soil structure and mineral content
6. Soil Development: Soil Horizon, soil profile, soil forming processes, temperature, soil classification and major soil types; the global scope of soils-soil order, desert and Tundra soil.
7. The Hydrological System: Components of hydrological system-ecohydrology, mountain hydrology, arid hydrology, urban hydrology and ground water system; Biospheric aspects of the Hydrological cycle.

Recommended Readings:
Master of Arts in Geography

“New” Scheme of Examination:
Course Outline and Selected Readings

Course 202: Contemporary Human Geography

Internal Assessment: 25
End Semester Examination: 75

Course Outline:
1. Human Geography: changing nature or perspectives, issues and debates.
2. Human Geography and Social Sciences: Critical understanding of social theory and human Geography
3. Conceptualizing space and place: Structure and dynamics of space; relational framework of space and place; social construction of space and time; ethics of space and place
4. Geography of difference and exclusion: Geographies of identity and difference related to class, religion, caste, gender and location; social justice and political geography of difference.
5. Geographical organisation of power: Spatial meaning and definitions of power; dynamics of spatio-social interactions and power; geopolitics of power-territoriality and globalization.
6. Geography of development: meaning, definitions and approaches; construction of development indicators; linking globalisation and new forms of development; local initiatives towards development.
7. Geography of social action and movements: reasons and approaches to social movements; aspects of social security; social-environmental movements in India.

Recommended Readings:
Course: 203  Computer Aided Mapping and Thematic Atlas

Thematic Atlas: 75

Course Outline:

Each candidate shall be required to prepare a Thematic Atlas using suitable cartographic techniques of designing and mapping. Thematic Atlas focusing on any specific theme of interest will cover any region or area for purpose of mapping. All plates of the Atlas will be prepared with computers. The Thematic Atlas (Project Report) complete in all respects and duly signed by the teacher-in-charge, as having been prepared by the candidate-himself/herself, shall be submitted in duplicate on or before a date to be fixed by the department each year.

Recommended Readings:

Course 204: Spatial Economic Systems

Internal Assessment: 25

End Semester Examination: 75

Course Outline:

1. Economic geographic space: Economic grouping and typology of countries, stages of development of productive forces, the post colonial states, international détente.
2. Socio-economic spatial relations: Territorial division of labour, location of productive forces, socio-economic complementarities, economico-geographic links, economic gravitations.
3. Geospatial paradigms: Historical materialism, dialectics of nature, instruments of productions, relations of productions, types of economic systems.
4. Geography of the world economy: World capitalist and socialist economy, scientific and technological revolution and the world economy.
7. System Growth and Spatial Dynamics: Types of growth and change, patterns of growth, development of spatial organizations, limits to growth.

Recommended Readings:

Course 301: Advanced Remote Sensing and Geographical Information System

Internal Assessment: 25  
End Semester Examination: 75

1. Digital Image Processing: Digital image, storage and supply of digital data, radiometric and geometric correction, image registration, enhancement, filtering, transformation, color enhancement, image fusion, perspective visualization

2. Digital Image Classification: Image segmentation, Supervised and unsupervised classification; advanced classification methods, accuracy assessment; Digital change detection

3. Principles of Thermal, Hyperspectral and Microwave remote sensing

4. Terrain Modeling: Spatial interpolation techniques - types, uses and problems. Digital elevation / terrain model; Triangulated Irregular Networks (TIN); Watershed analysis.

5. Attribute Data Management : DBMS – Hierarchical, Network and Relational

6. Network Analysis; Analytical Modeling in GIS: Binary, Index, Regression and Process Based Modeling; Web-GIS; Errors in GIS

7. Integration of Remote Sensing and GIS : applications to geosciences

Recommended Readings:

Course: 302  Natural Resource Management

Internal Assessment: 25  End Semester Examination: 75

Course Outline:
1. Concept, models and approaches to natural resource management.
2. Utilisation, Conservation and Management of Resources
3. Problems of Resource Utilization
4. Resource Appraisal: Ground, remote sensing and G.I.S.
5. Sustainable Resource Development: Concept, method and dimensions, creating sustainable systems.
6. Integrated Resource Development: Ecological, economic and social aspects; problems of river basin development.
8. Utilization, management problems and policies of natural resources in India.

Recommended Readings:
Course 303: Principles of Political Geography

Internal Assessment: 25

End Semester Examination: 75

Course Outline:

1. Ideas in Political Geography, Geography and its relationship with political economy and political sociology.
2. Theoretical contributions to political geography: Ratzel, Hartshorne, Taylor and Harvey.
5. Geo-strategic views: Mahan, Mackinder, Spikeman, conflict between states and conflict resolutions, supranational organisations and their geographical significance.
6. Political Geography of the world order: Theories of international systems, evolution of contemporary world order, alternate models of development for the future.
7. Administrative organisation of space: Methods of administrative organisation, territory, public administrations and landscape formation, polity as an agent of landscape change.

Recommended Readings:

Course 304: Systematic Agricultural Geography

Internal Assessment: 25
End Semester Examination: 75

Course Outline:
1. Agricultural Geography: Origin and dispersal of agriculture - major theories of origin of agriculture; genecentres of agriculture - New World and Old World.
2. Agricultural Regionalisation: Concept and criteria, Whittlesey's agricultural regions; agricultural typology-concept and criteria, hierarchy of world type of agriculture; agricultural regions of India.
4. Agricultural Productivity: Concept, determinants and methods of its measurement; regional imbalances in agricultural productivity in India.
5. Agricultural problems and strategies for agricultural developments; agricultural planning regions.

Recommended Readings:
Course 305: Social Geography of India

Internal assessment: 25

Course Outline:

1. Social Geography of India: Nature and Scope, Indian society - a study in unity and diversity: Centripetal and centrifugal forces, regional identities, modernization and role of media and new communication technology in shaping identities.
2. Historical Bases of Socio cultural regionalization of India: Elements in the development of socio cultural regions; continuity and change in the historically evolved regional structure; implications of emerging regional structure since independence.
3. Religion and Region in India: Religion and regional culture; Religious diversity and regional identity, Geographical factors explaining the distribution of the tribal religions, Hindus, Muslims, Christian, Buddhist, Jain and Sikh communities.
4. Geographic analysis of Caste and Tribe: varna and jati-pan Indian structure and regional specificity, Caste Regions, caste and settlement morphology, distribution of SC population, Tribes in India, dominance and dispersion of Tribal population, penetration of tribal regions.
5. Spatial Patterning of Language in India: linguistic diversity, Geographic patterning of languages, stability and fluidity of language returns; language loss, language retention and language shift.

Reading List

4. Dutt NK.,(1986), Origin and Growth of Caste in India, Firma Kin, Calcutta
11. Registrar General of India, (1972) , Economic and Socio cultural Dimensions of Regionalization of India, Census Centenary Monograph No 7, New Delhi
Course 306: Urban Settlement Systems

Internal Assessment: 25  End Semester Examination: 75

Course Outline:
2. The process and the patterns of the urbanisation in the developed and the developing countries; the process in India: colonial legacy, the post-independence characteristics.
3. Influence of Sites and Functions; Distribution and Spacing of Towns, Actual vs. Optimum Size, and Concept of Hierarchy, The concept of urban primacy and over urbanization, rank-size rule, urban-rural continuum.
4. The analysis of urban systems: structuralist perspectives, the systems approach
5. Classification of Towns – Criteria, Age and Function; Political and Regional Capitals; Inland Trading Centers; Ports; Mining and Industrial Towns; Towns with Miscellaneous Functions; Million Cities, Conurbations and Megalopolises.
6. Urban Systems and the Regional Economy: Illustrations from India

Recommended Readings:
External Assessment: 25

End Semester Examination: 75

Course Outline:

1. Regional Imbalance as a Policy Problem – General Spatial Equilibrium by Ohlin and Losch; Cumulative Causation by Myrdal; Spatial Equilibrium and Spatial Integration by Friedmann (1966)

2. Growth, Income Distribution and Spatial Inequality – Aggregate Efficiency vs. Interregional Equity; Large City Problem and Urban Bias; Spatial Reorganization

3. Urban-Industrial Growth Pole Strategies and the Diffusion of Modernization - Original Growth Pole Concept by Perroux; Transformation into Regional Theory; Two False Starts by Boudeville and Hirschman; USA as an Ideal Case Type: Williamson, North, Perloff, Schultz, Friedmann, and Berry; Dualistic Perspective and Geography of Modernization

4. Polarization and the Development of Underdevelopment: An Anti-Thesis – Failure of Growth Pole Strategies; Polarized Development by Friedmann (1973), World Capitalist System by Frank, Colonialism and Spatial Structure of underdevelopment by Slater; Shared Space by Santos


6. Space and Explanation in Regional Development Theory – Conceptions of Space by Perroux, and Friedmann & Alonso (1964); Spatial Analysis of Polarized Development: Spatial Centre-Periphery Model, Spatial Diffusion Analysis, Spatial Dependency Analysis; Functional Analysis by Hempel; Analysis of Locational Behaviour by Massey

7. Limits of Spatial Policy & Territorial Regional Planning and State, Development and Regional Planning Practice – Territorial Regional Planning as an Alternative; Territorial Interests; Organic Conception of Region; Development and Regional Planning; Policy Formation & Objectives and Planning Strategies & Practices in Developmentalist States

Recommended Readings:

308: Cultural Geography

Internal Assessment: 25  End-Semester Examination: 75

1. Nature of Cultural Geography: Environmental Determinism; Carl Sauer and the Cultural Theory; the Morphology of Landscape; Superorganicism, its critique and the birth of New Cultural Geography; Post Modernism and the Cultural Turn.
2. Reading Culture: Meaning, Sign, Reading, Textuality, Aesthetics, Ideology and Representation and the Production of Cultural Spaces.
5. Globalisation of Cultures: Deterritorialisation of Spaces and Cultures, Role of Global Capital and Media in Hybridization of the World.

Recommended Readings:
15. Massey, Doreen (1994) *Space, Place and Gender*, University of Minnesota Press, Minneapolis.
Course 309: Geomorphologic Analysis

Internal Assessment: 25
End Semester Examination: 75

Course Outline:
1. Approaches in Analysis of Geomorphological Forms and Processes: A state of art.
2. Major Erosion Surfaces: Peneplains, pediplains, periglacial and exhumed surfaces; their identities, forms and models of evolutions.
3. Mega-geomorphology: Plate tectonics and sea-floor spreading, modes of landform development and morphogenetic regions.
4. Analysis of Tectonic, Structural Landforms: Vertical movements and horizontal displacements rates of geomorphological subsidence, glacial eustasy and deltaic loading.
5. Depositional Landforms and their Processes: Alluvial channel - its hydraulic geometry; forms of drainage patterns and systems; typology of river deposition.
6. Microforms and Processes: Analysis of slopes, their classification and slope mapping; analysis of sediments in geomorphology, particle size classification; their distribution and analysis.

Recommended Readings
Course 310: Rural Development – Planning and Policy

Internal Assessment: 25
End Semester Examination: 75

Course Outline:
1. Concept of Rural Development: Development theories and rural development in underdeveloped countries; Macro processes and micro-level development issues.
2. Rural Development Processes in India: Major features of pre-colonial, colonial, and post-independence periods.
3. Rural-Urban Relations: Rural Urban disparities, regional dimensions of migration, occupational patterns, levels of living and poverty.
4. Area Approach to Rural Development: Services provision, settlement systems, growth centre approach, issues of spatial equity and efficiency in the provision of rural services.
6. Technology and Rural Development: Economic and ecological impact of green revolution, technology of dry land farming, rural industrialisation, rural energy, technology and resource recycling.

Recommended Readings:
Semester IV

Course 401 : Project Report

Internal Assessment: 25 End Semester Examination: 75

Course 402 : Regional Development in India

Internal Assessment: 25 End Semester Examination: 75

Course Outline:
5. Regionalisation for Sustainable Development: Agro-climatic regions, metropolitan regions, ecological regions.
6. Sustainability of selected regions – Industrially backward area, flood prone area, drought prone area, tribal area, hill area, desert area and border areas.
7. Sustainable development strategies: Centre-state relations, administrative restructuring, watershed approach, urban management, microlevel planning.

Recommended Readings:
Environment and Resource

Course 411: Hydrology and Water Resource Management

Internal Assessment: 25 End Semester Examination: 75

Course Outline:
1. Hydrological Cycle: Systems approach in hydrology, human impact on the hydrological cycle; Precipitation, interception, evaporation, evapo-transpiration, infiltration, ground-water, run off and over land flow; Hydrological input and output.
2. River Basin and Problems of Regional Hydrology: Characteristics of river basins, basin surface run-off, measurement of river discharge; floods and droughts.
6. Water Management: Water Management in disaster areas, water quality management and Pollution control, water management in urban areas, watershed management, integrated use of surface and ground water, Water Policy.

Recommended Readings:
Course 412 : Geography of Energy

Internal Assessment: 25  End Semester Examination: 75

Course Outline:
2. Energy resources of the World: Conventional and Non Conventional Sources, New Discoveries and Inventions; Production and Consumption, the World Patterns; Oil Prices and the International Economy, the Nuclear Debate.
3. Energy in Developing and Developed Countries: Characteristics and Consumption Patterns.

Recommended Readings:

Course 413: Environmental Impact Assessment

Internal Assessment: 25

End Semester Examination: 75

Course Outline:

3. Selected National Procedures of EIA: The USA model of EIA; EIA in Canada and other countries model.
5. Environmental Impact Assessment regulations and policies in India.

Recommended Readings:

Course 414: Natural Hazards and Disaster Management

Internal Assessment: 25  
End Semester Examination: 75

Course Outline:
1. Concept of Hazards, Risk, Vulnerability and Disaster.
2. Types of Hazards: Natural, man-made.
3. Regional Dimension of hazard: Occurrence and trends, methods of identifying hazard prone regions.
5. Response to Disasters: International, national, government, non government, community and individual, media and education.
6. Mitigation and Management: Plans and policies; engineering, economic, social, political and policy initiatives.

Recommended Readings:
Course : 415   Urban Impacts on Natural Resources and Environment

Internal Assessment: 25  End Semester Examination: 75

Course Outline:
1. Urban Dynamic and resource use: driving forces of urban growth and changing resource use.
2. Consumption of natural resources in city systems: water, energy, land, soil, biofuels, vegetation and other minerals.
4. Production of resource – waste in urban areas: Production system and generation of wastes, levels and trends in air pollution, water pollution, degeneration of land and soils and solid waste.
5. Issues related to disposal of wastes within peri-urban settings: Impact of air, water and solid waste disposal beyond city boundaries.
7. Climate change and impact on water resources in the cities.

Recommended readings


Social Dimensions in Geography

Course 421  Historical Geography

Internal Assessment: 25  End Semester Examination: 75

Course Outline:

8. Approaches and contribution to the study of historical geography: over view of European and American contributions to historical geography.
9. The study of historical geography in India – critical evaluation of methodologies and approaches.
10. Evolution of the cultural landscape of India from pre-historic times to the present
11. Resources, environment, settlements, territorial organization, economy and trade routes in early historic India.
12. Centres of pilgrimage and geography of sacred places
13. Economic activities, settlement patterns, forest and trade routes, territorial political divisions in the medieval period.
14. Role of coastal and interior centres, developments in resource use, settlements, and transportation and their effects in the colonial period.
15. Urbanisation, migrations, famines, diffusion of land grant settlements, deforestation in the post colonial India.

Recommended Readings:

16. Tamaskar, B.G., 1985 : Contributions to Historical Geography of India, Inter-India Publications, New Delhi.
COURSE 422: GEOGRAPHY OF LANDSCAPES

Internal Assessment 25  
End Semester Examination 75

1. Landscapes in Geography and beyond: Defining space and place, theoretical approaches in understanding landscapes.
2. Spatial thinking and spatial behaviour in Landscapes: Spatial boundaries and socio-spatial construction of landscapes, mental maps and landscape imagery, psycho-social geographies.
4. Representation of landscapes: Articulation and re-articulation of landscapes in literature, films, art, music and popular media with particular reference to India.
5. Built environment and landscapes: Cityscapes and houses, street scenes, multiplexes and malls.

Recommended Readings

2. Bender, B (ed) 1993 Landscape: Politics and Perspectives
17. Prazniak, R and A Dirlik (eds) 2001 Places and Politics in an Age of Globalisation. Lanham:
COURSE 423: Demography and Population Policy

Internal Assessment: 25

End Semester Examination: 75

2. Theories of Population: Malthus and his Critique; the Demographic Transition Theory.
4. Fertility and Mortality: Measurements, Theories, Regional Patterns.
5. Migration: Theories, Typologies, Patterns and Flows; Causes and Consequences

Recommended Readings.

COURSE 424: Health, Environment and Society

Internal Assessment: 25
End Semester Examination: 75

Course Outline:
1. Perspectives on Health: Definitions; linking environment, development and health; driving forces in health and environmental trends- population dynamics, urbanization, poverty and inequality, science and technology and lifestyle.
2. Pressure on Environmental Quality and Health: Human activities and environmental pressure- landuse and agricultural development; industrialization; transport and energy.
3. Exposure and Health Risks: Air pollution; household wastes; water; housing; workplace; global environment change; multiple challenges for health protection.
5. Climate Change and Human Health: Changes in climate system - heat, cold and air pollution; extreme weather events; sea level fluctuation; ozone depletion; effects on biological disease agents; food production and nutrition.
6. Linkage Methods for Environment, Development and Health Analysis: Approaches to linkage analysis; health and environmental analysis for decision making; development of environmental health indicators; assessment of health effects.
7. Promotion of environmentally sound healthy settings in India - Districts; cities, neighbourhoods, institutions, markets.

Recommended Readings:
COURSE 425: GEOGRAPHY OF SOCIAL WELL BEING

Internal assessment: 25
End Semester Examination: 75

Course Outline:

1. Welfare Geography and Social Well Being: Theoretical approaches and Development; Human needs and wants; State of Well being and Level of Living, Welfare as the focal theme in human geography.
2. Discrimination, Deprivation and Poverty: Concept of absolute and relative deprivation; Discrimination and Deprivation, place and people’s poverty, geographic patterns of rural and urban poverty.
3. Regional Inequalities in Social Well Being: Key indicators of well being, Assessing social well being- choice of indicators, Inter regional differences in levels of social well being; implications for human resource development.
4. Access, Empowerment and Political Participation: Common property resources and access, participation of marginalized groups in decision making, 73 and 74 amendments to constitution, caste succession and rise of regional aspirations.
5. Well Being in a globalizing world: India shining and India invisible, Privatization of welfare sectors, conspicuous consumerism and relative deprivation

Recommended Readings:

COURSE 426 : GENDER AND SPACE WITH SPECIAL REFERENCE TO INDIA

Internal assessment: 25  End Semester Examination :75

Course Outline:
1. Conceptualising Gender within Geography: Social construction of the feminine and masculine, Development of and theoretical approaches to the study of Gender in geography; Analysing gender and space in India.
2. 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.
3. Spatial Patterns and Bases of Gender inequalities: Patriarchy, son preference, social value; new reproductive technology, skewed sex ratios, gender disparities in social wellbeing, gendered patterns of crime and violence.
4. Gender and “other spaces”: Representations of gender in media space, the commodification of feminine and masculine- reassertion of indigenous gender identities.
5. Gender, Power and Policy: Concept of gender relations, strategic and practical needs; Gender and Development-issues and concerns, Policy analysis from a gendered perspective.

Reading List
8. Lund R,1993, Gender and Place : Towards a Geography Sensitive to Gender, Place and Social Change-Vols I and II, Department of Geography, University of Trondheim, Norway.
URBAN AND REGIONAL STUDIES

Course 431: Techniques and Methods of Regional Analysis
Internal Assessment: 25  End Semester Examination: 75

Course Outline:
1. Population Projection and Migration Estimation – Comparative Forecasting, Extrapolation, Ratio & Correlation Methods, and Growth Composition Analysis; Past Interregional, Rural-Urban and Future Migrations
2. Regional Income Estimation and Social Accounting – National Income Accounts, Regional Income Measurements, and Regional Social Accounting
3. Interregional Flow Analysis and Balance of Payment Statements – Location Quotient, Commodity Flow Analysis, Money Flow, and Balance of Payment Statements
4. Regional Cycle and Multiplier Analysis – Industrial Composition & Regional Cycles, Regional Multipliers, Interregional Trade Multiplier, Regional & National Cycles
5. Regional Industrial Location and Composition Analysis – Comparative Cost Approach, Labor Coefficients, Coefficient of Localization and Localization Curves & Ratios, and Coefficient of Specialization & Diversification Index; Modern Weberian Framework, Location Quotient and Shift-Share Analysis
6. Interregional and Regional Input-Output Techniques – Statistical Framework, Basic Problems, Projection, Final Demand Sectors, and Constant Coefficients; Interregional Linear Programming
7. Decision Analysis – Optimization Techniques, Value Tradeoffs and Risk Aversion; Project Evaluation – Aggregative (Benefit-Cost) & Disaggregate Approaches; Welfare and Inequality Analysis

Recommended Readings:
Course 432: Transport Network and Flows

Internal Assessment: 25 End Semester Examination: 75

Course Outline:

1. Transport for spatial interaction: Spatial interaction and time-space convergence, enlarging the catmint area of markets, dynamic relationship between transport and spatial readjustment—Role of transport as a lead sector.
2. Problem of accessibility: The transport network; Network shape and location; Regional variations in its density; Methods of measurement, transport and spatial processes; Traffic flow and regional interaction.
3. Graph theory and Network Geometry; Concept of topology, topological measurement of network efficiency
4. Urban Transport: Profile of urban transport facilities; Traffic in towns; Transport services and urban land use pattern, role of intermediary transport modes; modal split.
5. Regional Transport Planning: The framework of regional transport Planning traffic generation; methods of forecasting; zonal interchange of traffic; mode and route assignment methods.
6. Indian Transport: Transport development during colonial and plan periods; transport and regional structure of Indian Economy.

Recommended Readings

Course 433: Urban Development – Management and Policy

Internal Assessment: 25

Course Outline:

1. Urban Issues: Problems and challenges of urbanization; urbanization trends, patterns and impacts; urban economy; urban poverty; social & physical infrastructure; urban environment.

2. Components of Urban Management: Scope for urban management; decentralization and local autonomy; intersectoral linkages; public-private partnership; capacity building - resource mobilization and institutional strengthening; civic engagement; information base and governance.

3. Environmental Planning and Management: Environmental indicators and mapping; wastewater management; solid waste management; control of air pollution; planning for disaster mitigation.

4. Land Management: Importance of land in urban development; landuse and planning; land regulation and policies; land values and prices; land market assessment; land development strategies.

5. Slum Improvement and Upgradation: Evaluation of slum improvement programmes and schemes; resettlement and rehabilitation actions; slum development through participation of slum dwellers; security of land tenure; infrastructure development in slums.

6. Infrastructure Management: Traffic and transport management; healthcare services; water resources and supply management; power supply, financing urban services; integrated infrastructure development planning.

7. Urban Poverty Alleviation: City as an economic space; urban basic services for the poor; participation of poor in governance of poverty; access to urban land; expanded employment opportunities; environmentally sound shelter; supportive government policies.

8. Management Towards Sustainable and Safer Cities

End Semester Examination: 75

Recommended Readings:


Course 434: Social Impact Assessment

Internal Assessment: 25  
End Semester Examination: 75

Course Outline:
2. Development, process and Social Impacts: Process of socio-economic development; major development types, transport and communication, river valley projects; irrigation projects; industrial development, urban development; social risks in development projects.
3. Displacement and Resettlement Planning: Relocation, resettlement and involuntary migration; resettlement area development planning; project management; resettlement monitoring and evaluation; development of Management Information System (MIS) for resettlement.
6. Case Studies on SIA: Road construction, dams, irrigation projects, new town development; industrial relocation; urban development projects; hazards and disasters.
7. Social Impact Assessment and related policies and legislation in India

Recommended Readings:
PHYSICAL GEOGRAPHY

Course 441: Analytical Physical Geography

Internal Assessment: 25
End Semester Examination: 75

Course Outline:
2. Extreme value distribution for river discharges leading to flooding; Waybill's plotting position, Gumbel and Log Pearson Type III distributions.
4. Aerial Platforms and aerial photography, photoscales and stereoscopy; Aerial photo interpretation keys; identifying salient structures and landforms for given stereo-pair.
5. Rock and mineral identification.
6. Topographic Map Reading and Landform Mapping.
8. Quantitative Analysis of Morphometric data.

Recommended Readings:
Course 442: Biogeography

Internal Assessment: 25  
End Semester Examination: 75

Course Outline:
1. Biogeography: Concept, approaches and relevance.
2. Evolution of Plants and Animals: Theories, classification and characteristics.
5. Floristic and Zoogeographic Division with special reference to India: Migration and dispersal, barriers and disjunctions; latitudinal and altitudinal distribution, realms, regions and provinces.
6. Major Ecological Communities: Composition and Structure - forest, grassland, desert, island, mountain and aquatic.
7. Adaptations of Plants and Animals to the Environment: Classification and characteristics.
8. Biodiversity in India: Concept, distribution, legislation, conservation and institutions.

Recommended Readings:
Course 443: Geography of Himalayas

Internal Assessment: 25 \hspace{2cm} End Semester Examination: 75

Course Outline:
2. Development Process – Pre-colonial, colonial, independence and post war period and present trends
3. Sectoral Development – agriculture, horticulture, forestry, animal husbandry, mining, tourism.
4. Resilience and vulnerability – environmental and political.
5. Approaches to Development - hill area region development, highland – lowland development, watershed approach, integrated resource management.
7. Search for a Sustainable Himalayas – movements and identity, non – government organizations, decentralization and panchayati raj institution and laws.

Recommended Readings:
Course 444: Terrain Modelling and Evaluation

Internal Assessment 25
End Semester Examination 75

1. Principles of Photogrammetry: Stereoscope Parallax and height determination; Orthorectification; Global Positioning System based altitude determination; contouring.
2. Digital Terrain Model: Contour/point interpolation – IDW, Spline, Krigging etc.; SAR Interferometry; Laser Scanning; Quality assessment of DTM.
3. Terrain Analysis on grided DEM: slope, aspect, curvature, flow direction, watershed delineation etc.; Terrain classification; Secondary topography attributes-wetness indices, stream-power indices, radiation indices, temperature indices etc.
4. Geomorphological, Hydrological and Biological applications of Digital Terrain Model.
5. 3-D visualization of the terrain and identification of landform and land cover features.

Recommended Readings

POLITICAL GEOGRAPHY AND AREA STUDIES

Course: 451 POLITICAL GEOGRAPHY OF INDIA

Internal Assessment 25

End Semester Examination 75

2. Geographical Factors in India’s Political History: Centripetal and centrifugal forces; Role of terrain, Rivers and sea coasts in shaping political history;
3. Geography of internal conflicts and problems of Nation Building: Religious conflicts: Linguistic conflicts, separatist movements, terrorism; environmental movements, river water disputes.
4. Geography of Electoral support and Representation: Constituencies and their evolution, Redstricting: Issues and concerns; Patterns of electoral support and representation; politico electoral regions of India
5. Geography of International Relations: India’s bilateral relations with SAARC nations; India’s position in the Indian ocean region; Between two worlds India.’s position in world politics.

Recommended Readings:

1. Adhikari S, 1997, Political Geography, Rawat publications, Jaipur and Delhi
2. Bandhopadhya J, 1991’The Making of India's Foreign Policy, Allied Pub, Delhi
7. Brass P R 2003 The production of Hindu Muslim Violence in Contemporary India, Oxford University Press, Delhil
9. Pannikar KN, 1955, Geographical Factors in India’s History, Bharatiya Vidya Bhavan, Bombay
10. Rudolph and Rudolph 1987, In pursuit of Lakshmi
Course 452: Geography of Federalism

Internal Assessment: 25  
End Semester Examination: 75

Course Outline:
1. The State: Concept and evolution; Nation, and the nation-states, types of states, shape and location of state.
2. Definition of Federalism: Concept, approaches and types, geography and federalism.
3. A Spatio-temporal analysis of the classical federation of Switzerland.
4. Evolution of Indian Federation: Pre-colonial period, colonial period, post-colonial period and state reorganisation.
5. Centre-State Relations: Spatial nature of administrative, judiciary and financial relations.
7. Regionalism and its Manifestations: Types of movements, Inter-State river water disputes, Inter-State boundary disputes.

Recommended Readings:
Course 453: Electoral Geography

Internal Assessment: 25                                             End Semester Examination: 75

Course Outline:

2. Types of Electoral Systems
3. Source Material, techniques and approaches in electoral geography.
4. The Geography of Power through Elections.
5. Case Studies of Indian Elections.

Recommended Readings

Course 454: Political Geography of Central Asia

Internal Assessment: 25
End Semester Examination: 75

Course Outline:
1. Central Asia in Global Perspectives: Central Asia and the world, external links, political alignment and geopolitics.
2. Physical Environment: Relief, landscape, temperature, pressures and winds directions, water balance and environmental hazards.
5. Political Systems: Political parties, extremist politics, radical movements and foreign policy.
6. Transport and Communication: Railways, roads, airways and international tourism.

Recommended Readings:
Course 455: POLITICAL GEOGRAPHY OF MIDDLE EAST

Internal Assessment: 25  
End Semester Examination: 75

Course Outline

1. Middle East as a region: Territorial Evolution, space relationship and interdependencies.
2. Political history and administrative structure: Evolution of national boundaries and administrative structures.
3. Geographical bases of geo-ethnic regions: Relief, climate, language, migration, types of geo-ethnic regions.
4. Economic structure: Agriculture, mineral oil, industry, role of petroleum in regional economies.
5. Conflict resolution: Economic, social, political, centripetal and centrifugal forces.
6. Foreign Policy: Spatial Problems, linkages with developing and developed countries.
7. Middle East and the global economy.

Recommended Readings

AGRICULTURAL AND RURAL STUDIES

Course 461: Agricultural Development and Land Degradation

Internal Assessment: 25                                                                                       End Semester Examination: 75

Course Outline:
1. Agricultural Development: Concept, criteria and historical perspective of agricultural development
2. Determinants of agricultural development: Physical; techno-economic; cultural and socio-institutional
3. Agricultural Development in India: Pre-Independence period; Post-independence period; dynamics of agricultural land use; agricultural productivity; socio-economic and ecological consequences of agricultural development.
4. Land Degradation: Concept, process and approaches, Regional pattern and consequences of: ground water depletion and contamination; salinity and alkalinity; deteriorating soil fertility and soil erosion.
5. Land Degradation in India: Identification and delimitation based on NWDB; classification and their spatial distribution; regeneration of degraded land and its sustainability; Case Studies
6. Sustainable Agricultural Development: Concept and methods; issues and strategies of sustainable agricultural development.

Recommended Readings:
Course 462: Landuse Planning

Internal Assessment: 25  End Semester Examination: 75

Course Outline:
1. Approaches to Landuse Surveys: Census approach, Unit area approach; sampling approach; Remote sensing approach; review of landuse surveys in India.
4. Dynamics of Landuse and Land Cover: Past trends and emerging patterns; analysis of landuse change; monitoring rural landuse change.
5. Land Capability Classification: Concept and criteria; land capability classification in U.S.A., China, U.K. and India; land capability and landuse planning in India.

Recommended Readings:
Course 463: Dryland Farming

Internal Assessment: 25  
End Semester Examination: 75

Course Outline:

1. Dryland farming: Concept, nature and scope; methods of identification and delimitation
2. Dryland characteristics and degradation process: Physical, biological, social and institutional
3. Models of Dryland Development and management: Risk and uncertainty model
4. Land Capability Classification in Dryland: Concept, criteria and capability classes, patterns of general landuse
5. Dryland Farming Technology and Cultivation Practices: Absorption of rainwater in the soil, soil moisture conservation, and erosion control; availability and potential of irrigation; patterns of crop landuse and crop combination; agricultural productivity.

Recommended Readings:

Course 464: Food Security System

Internal Assessment: 25  End Semester Examination: 75

Course Outline:
1. Food Security: Concept, approaches, indicators and methods of measurement..
2. Distributional Patterns of Food Resources: Agriculture, animal husbandry, inland fisheries, forest, horticulture and marine.
3. Factors and Patterns of Food Resources Consumers: Population, density and distribution, age, sex and occupation.
4. Food Resources and Human Consumer Interface: Demand and availability of food resources in caloric and monetary value, poverty, hunger and vulnerability.
5. Regional Pattern of Food Security: Bases of measurements, comparison of relations with developed countries and developing countries on selected parameters of food security.
6. Regional Dimensions of Food Security in India: Distributional pattern of consumers - total population and agricultural population; food availability - caloric and monetary value, food security and insecurity regions, food consumption and nutritional status, problem of malnutrition.

Recommended Readings:
7. Mohammad, N., 2002: Regional Patterns Of Food Security In India, Annals, NAGI, Vol.21, Delhi