SYLLABUS

For

M.A./M.Sc. PROGRAMME INGEOGRAPHY

Choice Based Credit System (CBCS)

To be effective from the Academic Session2020-22

(Revised in the PGBS Meeting held on 12.5.22)

THE UNIVERSITY OF BURDWAN

RAJBATI, PURBA BARDHAMAN– 713104

WEST BENGAL, INDIA

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Preamble

The M.A./M.Sc. in Geography is a 2-year, 4-Semester programme under Choice Based Credit System (CBCS). Total 96 credits are equally distributed in 4 Semesters (24 credits in each Semester): 68 for 17 Core courses, 20 for 5 Discipline-centric Elective courses, 4 for Dissertation/Project, 2 for Generic Elective course and 2 for Community engagement activities respectively.

Objectives

- Impart teaching so that the students could develop critical thinking ability about the fundamental aspects of Geography.
- Train the students with Geographic knowledge and computational techniques.
- Make the students capable of pursuing research work in various emerging fields of Geography and its applications.
- Make the students aware of their responsibility to meet the societal needs.

Pre-requisite

The students should possess the knowledge on the courses taught in the B.A/B.Sc with Geography Honours.

PROGRAMME OUTCOMES

- Enrichment of the knowledge domain by adding to the existing knowledge through research and innovation.
- Importance of critical thinking, political consciousness, women empowerment and inclusive education.
- Recognize the need of interdisciplinary and action research.
- To contribute to the society and subject with the help of research and/or application and/or knowledge dissemination.
- Take hold of any employment opportunity related to the discipline and program.
- Aware of value of ethics and need for responsible citizenship.

PROGRAMME SPECIFIC OUTCOMES

- Expand their existing knowledge in different branches of Geography; compare and critique the theories, philosophies, and concepts in the discipline of Geography.

- To explore the unifying themes of spatial patterns and structures, the interrelationship between people, places and spaces; and the interactions between nature and human society and its responses.
- Demonstrate an advanced understanding of various methodologies used in geographical research and its limitations.
- Handle the advanced instruments and tools for acquisition, analyse, evaluation and interpretation of geographical data.
- Communicate mastery of geographic data, theories, philosophies, and concepts in oral, written, and visual forms, with ethical engagement and respect for diversity of individuals, groups, and cultures.
- Identify and assess how geographical knowledge along with its tools and technique apply to evaluate causes, consequences, and possible solutions to persistent, contemporary, and emerging global issues.
- Enhance social and environmental consciousness level and become socially and environmentally responsible citizen.
- Get job opportunity to work as Teacher, Researcher, Cartographer, Surveyor, Administrative Personal, Policy makers, GIS Technicians, Environmentalist and Social Activist; Become an Entrepreneur or employee of industries linked with Spatial Decision Support System.

COURSE OUTCOMES

Semester I

- Trace the evolution of Geography as a scientific discipline since its inception to the current millennium.
- Systematic understanding of the fundamental principles of Geomorphology and their relevance in the current era.
- Understanding of the relevance of Soil Geography and its sub-disciplines in the academic and research discourse.
- Trace the development of Biogeography as a discipline and emergence of the new sub-disciplines of Biogeography.
- Make a critical analysis of the different theories and principles of resource studies.
- Better address the issues of challenges, management, conservation and sustainable future of various resources in the world.
- Prepare for multivariate analysis with an understanding of the basic concepts of Matrix Algebra.
- Acquire the skill ascertaining the normalcy of the data/distribution by Q-Q Plots and Kolmogorov-Smirnov Tests.
- Have expertise on assessing the degree of interrelationships between two or more variables by learning correlation and regression.
- Gain expertise on Time Series Analysis so as to analyse the trends/characteristics of temporal datasets.
- Acquire expertise by hands on training of modern survey instruments such as Theodolite, Tacheometer and Total Station.

Semester II

- Get an idea about the philosophical trends in Geography post Second World War and their criticisms and relevance.
- Understand the relationship between basic weather phenomena of humidity, atmospheric stability and vortices and local climate.
- Expand the knowledge about climate change and its causes, consequences and mitigation measures.
- Explore the role of drainage basin as a hydrological and planning unit with respect to its morphological parameters.
- Understand the concepts of Regions, Regional Planning and Hierarchy along with the various approaches of regional planning.
- Critically analyse the different regional development theories alongwith recognized indicators of economic and regional development.
- Understand the problems of population growth and the issues of diaspora and identity crisis of the trans-national migrants.
- Comprehensively describe the landuse, especially its dynamic character in urban areas and in the light of different theories of urban landuse and morphology.
- Gain the skill of interpreting and extracting meaningful information on geological maps, both at the surface and sub-surface.
- Acquire the skill of analysing and mapping of the soil and water quality parameters by receiving hands-on training.
- Gain expertise on the analysis and processing of the satellite imageries by enhancing and classifying in a geospatial domain.
- Efficiently handling the spatial and attribute data in popular GIS software and extracting meaningful information from them.
- Be able to make thematic maps from satellite imageries and geospatial data as per user requirements.
- Receive hands on training on the powerful GIS and remote sensing software, improving the scope of employability in academics and industry along with freelancing.

Semester III

- Have a grip on the fundamental concepts of Social Geography such as social pathology, social system, social processes and social exclusion in a geographical context.
- Understand the role played by technology in the evolution of culture and cultural traits and processes.
- Visualize the scenario of groundwater contamination in West Bengal with respect to Arsenic and Fluoride.

- Portraying the picture of mining and agriculture in the district of PurbaBardhamanand Paschim Bardhamanin West Bengal.
- Understanding the concept of Probability and its geographical applications with respect to Normal, Binomial and Poisson distribution/datasets.
- Able to handle multivariate and multi-criteria data with the application of Factor Analysis and Principal Component Analysis (PCA) and subsequent mapping and representation.
- Gain expertise in the application of spatial statistical techniques viz. Trend Surface Analysis and Cluster Analysis.

Major Elective Coursesoffered:

A: Geomorphology;
B: Soil and Agricultural Geography;
C: Environmental Geography;
D: Urban Geography;
E: Regional Planning & Development;
F: Natural Hazards and Disaster Management;
G: Geography of Water Resources

A: Geomorphology:

- Quantitatively describe a landform with the knowledge of geomorphometry, DEM and Fractals.
- Understand the basic concepts of fluvial geomorphology, flow regimes, runoff and drainage basin.

B: Soil and Agricultural Geography:

- Gain basic concepts on soil nutrients, fertility, productivity, etc. which affect plant growth.
- Obtain the theoretical background and applications of integrated management of soil and agricultural resources.

C: Environmental Geography:

- Gain a proper understanding of the content, classification, principles and applications of ecology and its relationship to geography and environment.
- Broaden the existing knowledge of climate change, its consequences in the form of aridification, temperature increase and its impact on biodiversity.

D: Urban Geography:

- Understanding the problems of basic amenities, poverty, housing, water & solid waste in the cities of Global South.

- Make a comparative analysis of the Global North and South with respect to peri-urban development and crises of land and water.

E: Regional Planning & Development:

- Addressing the issues of regional development and inequality in India and West Bengal.
- Over viewing of the existing planning and management strategies in the environmentally-challenged areas of India.

F: Natural Hazards and Disaster Management:

- Studying the floods of Bengal and its associated impact and mitigation endeavours.
- Understanding the factors, vulnerability and mitigation measures of the coastal erosion prone areas of Eastern India.

G: Geography of Water Resources:

- Assessing the surface and groundwater resources of India on the contexts of occurrence, storage, quality, scarcity and sharing.
- Understanding the concept, pattern, distribution and impact of the hydrometeorological extremes in India.

Major Elective Courses-Practical

A: Geomorphology:

- Gain expertise on the quantitative extraction of drainage basin parameters and long profiles from SOI topographical maps and interpretation.
- Receive hands on training on the use of Current Meter for calculating flow discharge from the field.

B: Soil and Agricultural Geography:

- Learning the art and science of collecting, preservation, preparation and analysis of soil samples at the surface as well as profile.
- Knowing how to prepare the Soil Health Card at the Mouza level & its systematic interpretation.

C: Environmental Geography:

- Efficiently estimate the ecosystem diversity with the help of Simpson and Shannon-Wiener indices.
- Quantitatively measuring and mapping of the noise pollution in the field.

D: Urban Geography:

- Learn different techniques on the temporal and spatial analysis of urbanization.
- Efficiently calculate the degrees of connectivity and accessibility of an urban centre by various indices.

E: Regional Planning & Development:

- Understanding and application of the techniques of assessing regional disparity and diversity.
- Receiving hands on training on the use of remote sensing and GIS technology at the district level.

F: Natural Hazards and Disaster Management:

- Applying RS/GIS for identifying the areas prone to landslides.
- Efficiently using RS/GIS for coastal erosion and inundation zone mapping.

G: Geography of Water Resources:

- Receive hands on training on the testing and mapping of the parameters on water quality.
- Mapping of surface and groundwater resources & drainage basin analysis by geospatial technology.

Community Engagement Activities:

- Bring the knowledge gained in the laboratory/class/social media into the real word and for addressing the issues in the real world.
- Apprehend how geographical knowledge and expertise help addressing the issues and requirements of the local population of a place or region.

Semester IV

- Understanding the geographies of inequality and social well-being with respect to the indicators and gender.
- Elucidating Political Geography and its changing content and understanding the basic concepts of Political Geography.
- Enhance the skills of scientific writing and communication skills by learning how to write abstract, synopsis, literature and book review and referencing.
- Understand how the research and academic discourses in the selected sub-discipline of geography changed in the last years 100 years.

Major Elective Courses-Theory

A: Geomorphology:

- Understanding the concept, relevance and applications of Applied Geomorphology and Geoheritage.
- Analysing the surficial expressions of tectonics and associated landforms.

B: Soil and Agricultural Geography:

- Critically understand the contemporary issues in Indian agriculture such as food security, food production, GM Crops, etc.
- Understanding the problems and possible management strategies of Indian agriculture with reference to agricultural policies and planning.

C: Environmental Geography:

- Expanding the existing knowledge base on the burning issues of epidemic and pandemic and their environmental concerns at the local, national and global level.
- Understand the theoretical background Environmental Impact Assessment (EIA) and Leopold Matrix for environmental management.

D: Urban Geography:

- Comprehend the environmental problems in urban areas with reference to hill-towns, metro cities, etc.
- Comprehensive analysis of urban development and planning in India with reference to IDSMT, JNNURM, AMRUT and Smart Cities.

E: Regional Planning & Development:

- Understand the goals of urban planning and social construction of urban landscape with reference to urban policy, urban renewal, urban social movements and neighbourhood planning.
- Gain basic idea about urban governance and management with respect to Smart Cities, Liveable Cities, etc.

F: Natural Hazards and Disaster Management:

- Expanding knowledge on the hazards of cyclones, droughts, desertification and soil degradation.
- Critically analyse the disaster management initiatives undertaken by the Government of India.

G: Geography of Water Resources:

- Systematically study the conservation strategies of water resources of India in light of National Water Policy.
- Understanding the requirement, application and procedural information for the Regional Water Information System for planning and management.

Major Elective Courses-Practical

A: Geomorphology:

- Getting hands on training in the domain of DEM hydroprocessing in advanced geospatial software.
- Acquiring expertise in extracting catchment and drainage network from DEM and subsequent analysis in geospatial environment.

B: Soil and Agricultural Geography:

- Quantitative measurement of agricultural efficiency and fertility zonation mapping using advanced geospatial software.
- Mapping temporal trends in landuse and agricultural land using satellite imageries and advanced RS/GIS software.

C: Environmental Geography:

- Learning the art and science of statistical analysis of data related to catastrophes and attributing their causal mechanisms with respect to statistical testing.
- Temporal assessment and monitoring the changes in forest cover with the help of satellite imageries processed in advanced geospatial software.

D: Urban Geography:

- Acquire skill in the statistical analysis of bivariate and multivariate data in the domain of urban geography.
- Get hands on training on the mapping of urban environment with respect to air, water and noise.

E: Regional Planning & Development:

- Receive training on the process and technology of preparing village-wise digital database & layout of maps.
- Efficiently contribute to the decision-making process in a regional perspective with the help of globally popular Multi Criteria Decision Making (MCDM) models and techniques.

F: Natural Hazards and Disaster Management:

- Identifying and mapping of lineaments from DEM & popular geospatial softwares for determining earthquake susceptibility.
- Calculating and zonation of the vulnerability of natural hazards for identification of potential sites.

G: Geography of Water Resources:

- Efficiently use advanced geospatial softwares for the mapping of ELNINO & LANINA events of India.
- Understand the concept of extreme climatic events and delineation of vulnerable zones in coastal areas.

Dissertation:

- Hands on collection, representation and processing of space-specific geographic data for subsequent analysis and representation.
- Assimilating the findings of a research project for deducing significant observations with respect to the spatial unit under study.

DEPARTMENT OF GEOGRAPHY
M.A./M.Sc. PROGRAMME IN GEOGRAPHY
Division of Courses and Credits

SEMESTER I

Course				Lecture hour /week			Duration of Examination (in hrs)	Marks			Credit
Course code	**Type**	**T/P**	**Name**	L	T	P		**I.A.**	**E.A.**	**Total**	
MSGG 101	Core	T	Geographical Thought	4	-	-	2	10	40	50	4
MSGG 102	Core	T	Geotectonics and Geomorphology	4	-	-	2	10	40	50	4
MSGG 103	Core	T	Soil and Biogeography	4	-	-	2	10	40	50	4
MSGG 104	Core	T	Resources and Economic Activities	4	-	-	2	10	40	50	4
MSGG 105	Core	P	Quantitative Techniques in Geography	-	-	8	2	10	40	50	4
MSGG 106	Core	P	Instrumental Survey and Map Projection	-	-	8	2	10	40	50	4
										Total credit	**24**

Abbreviation used: T/P → Theory/Practical; L/T/P → Lecture/Tutorial/Practical; I.A. → Internal Assessment; E.A.→ End Term Assessment

SEMESTER II

Course				Lecture hour /week			Duration of Examination (in hrs)	Marks			Credit
Course code	**Type**	**T/P**	**Name**	L	T	P		**I.A.**	**E.A.**	**Total**	
MSGG 201	Core	T	Recent Trend in Geography	4	-	-	2	10	40	50	4
MSGG 202	Core	T	Climatology &Hydrology	4	-	-	2	10	40	50	4
MSGG 203	Core	T	Region & Regional Planning	4	-	-	2	10	40	50	4
MSGG 204	Core	T	Population and Settlement Geography	4	-	-	2	10	40	50	4
MSGG 205	Core	P	Thematic Mapping	-	-	8	2	10	40	50	4
MSGG 206	Core	P	Remote Sensing and Geographical Information System	-	-	8	2	10	40	50	4
										Total credit	**24**

Abbreviation used: T/P → Theory/Practical; L/T/P → Lecture/Tutorial/Practical; I.A. → Internal Assessment; E.A.→ End Term Assessment

SEMESTER III

Course				Lecture hour /week			Duration of Examination (in hrs.)	Marks			Credit
Course code	**Type**	**T/P**	**Name**	L	T	P		**I.A.**	**E.A.**	**Total**	
MSGG 301	Core	T	Social and Cultural Geography	4	-	-	2	10	40	50	4
MSGG 302	Core	T	Contemporary Geographical Issues in India	4	-	-	2	10	40	50	4
MSGG 303	Core	P	Statistical Techniques in Geographical Analysis	-	-	8	2	10	40	50	4
MSGG 304	GE	T	Geoinformatics/ Environmental Geography	2	-	-	1	5	20	25	2
MSGG 305	DE	T	Discipline centric Elective Theory	4	-	-	2	10	40	50	4
MSGG 306	DE	P	Discipline centric Elective Practical	-	-	8	2	10	40	50	4
MSGG 307	CE	P	Community Engagement Activities	-	-	4	1	5	20	25	2
										Total credit	**24**

Abbreviation used: T/P → Theory/Practical; L/T/P → Lecture/Tutorial/Practical; I.A. → Internal Assessment; E.A.→ End Term Assessment;GE → Generic elective; DE → Discipline-centric Elective;CE → Community Engagement Activities

SEMESTER IV

Course				Lecture hour /week			Duration of Examination (in hrs.)	Marks			Credit
Course code	**Type**	**T/P**	**Name**	L	T	P		**I.A.**	**E.T.**	**Total**	
MSGG 401	Core	T	Geography of Development & Political Geography	4	-	-	2	10	40	50	4
MSGG 402	Core	T	Research Methodology	4	-	-	2	10	40	50	4
MSGG 403	Review of Literature on a topic based on DE	P	Review of Literature based on Discipline Centric Elective Course	-	-	8	2	10	40	50	4
MSGG 404	DE	T	Discipline centric Elective Theory	4	-	-	2	10	40	50	4
MSGG 405	DE	P	Discipline centric Elective Practical	-	-	8	2	10	40	50	4
MSGG 406	Dissertation	P	Dissertation	-	-	8	2	10	40	50	4
										Total credit	**24**

Abbreviation used: T/P → Theory/Practical; L/T/P → Lecture/Tutorial/Practical; I.A. → Internal Assessment; E.A.→ End Term Assessment;DE → Discipline-centric Elective

Notes:

- **Core Course**: Every student will take only core courses in the Semester I and II. In the Semester III and IV students will take core courses along with the other courses.

- **Generic Elective Course (GE):** It is to be chosen from a pool of courses. Each Department is to offer at least one generic elective course. These courses should be designed to add generic proficiency to the students. Students are not allowed to choose a course offered by his/her own Department.

- **Community Engagement Activities:** Community Engagement Activities is compulsory. Department is to decide about its successful implementation and execution.

- **Discipline centric Elective Course (DE) (Optional)**: Student will opt one of the following seven (7) Discipline centric Elective course in Semester III and IV.

    A. Geomorphology
    B. Soil and Agricultural Geography
    C. Environmental Geography
    D. Urban Geography
    E. Regional Planning and Development
    F. Natural Hazards and Disaster Management
    G. Geography of Water Resources

- *Student may opt one Discipline-centric Elective course in Semester III from SWAYAM.*

- **Review of Literature on a topic based on DE:** This course is a Review of Literature of a topic of current research interests based on Discipline-centric Elective course.

- **Dissertation**: Students will submit one Dissertation work based on Discipline centric Elective Course in the Semester IV. They can start the work from the Semester III.

SEMESTERI

MSGG101

(Core Course)

GEOGRAPHICAL THOUGHT

Credit: 4 **Marks: 50**

Total lecture hours: 50
Method of Evaluation:
Continuous/ Internal Assessment: 10 (5+5) Marks. It shall be considered based on the % of attendance in the class (5 Marks); There shall be test(s) of knowledge and understanding through written test/ Presentation /Paper review/ Book review etc. (5 Marks).End-term test: 40 Marks. The end-term test shall be conducted based on written test. Candidates are required to answer any Four questions, selecting two from each unit. Four questions to be set from each unit. Each question should have at least two parts.

UNIT-I

1.Basic Concept: Spatial Praxis in Geography-Location; Areal Differentiation; Spatial Integration

2. Approaches to Geography: Idiographic and Nomothetic; Holistic and Reductionist; Critics of Dualism

3. Development of Paradigms in Sciences

4. Paradigm Shift in Geography: Hartshorne Schaefer Debate; Areal to Spatial; Regional and Systematic

UNIT-II

5. Place, Space and Locale in Geography

6. Space-Time Integration and Compression

7.Concept and Attributes of Physical and Social Space

8.Fundamental Idea of Social Space by Soja and Lefebvre

MSGG102

(Core Course)

GEOTECTONICS AND GEOMORPHOLOGY

Credit: 4 **Marks: 50**

Total lecture hours: 50

Method of Evaluation:

Continuous/ Internal Assessment: 10 (5+5) Marks. It shall be considered based on the % of attendance in the class (5 Marks);There shall be test(s) of knowledge and understanding through written test/ Presentation /Paper review/ Book review etc. (5 Marks). End-term test: 40 Marks. The end-term test shall be conducted based on written test. Candidates are required to answer any Four questions, selecting two from each unit. Four questions to be set from each unit. Each question should have at least two parts.

UNIT-I

1. Origin of Earth's Magnetic Field, Paleomagnetism: Evidences and Impact

2. Tectonic and Neo-Tectonic Processes and Consequences

3. Fundamental Principles in Geomorphology; System Concept

4. Approaches to Geomorphology: Static, Dynamic, Genetic, Environmental and Applied; Concepts of Scale in Geomorphology

UNIT-II

5. Models of Channel Initiation; Channel Network Forms

6. Theories of Landform Development: Cyclic and Non-Cyclic

7. Peri-Glacial and Coastal Processes and Associated Landforms

8. Morphogenetic Regions: Concept, Processes and Peltier's Model

MSGG103

(Core Course)

SOIL AND BIOGEOGRAPHY

Credit: 4 **Marks: 50**

Total lecture hours: 50

Method of Evaluation:

Continuous/ Internal Assessment: 10 (5+5) Marks. It shall be considered based on the % of attendance in the class (5 Marks);There shall be test(s) of knowledge and understanding through written test/ Presentation /Paper review/ Book review etc. (5 Marks). End-term test: 40 Marks. The end-term test shall be conducted based on written test. Candidates are required to answer any Four questions, selecting two from each unit. Four questions to be set from each unit. Each question should have at least two parts.

UNIT-I

1. Fundamentals of Pedology; Pedology and Soil Geography; Soil forming Minerals, Soil Nutrients, Soil $p^{H,}$ Base Exchange

2.Fundamentals of Edaphology; Bio-Functions of Soil, Soil Organic Matter, Soil Organisms and Micro Organisms, and their relation to Soil Fertility

3.Soil Forming Processes; Soil Profile Study of Laterite and Podzol

4.Classification of Soil: Environmental and USDA

UNIT-II

5.Biogeography: Phases of Development; Historical, Ecological and Conservation Biogeography; Systematic and Cladistic; Island and Panbiogeography

6.Biogeographic Distribution: Founder and Vicariance Effects; Reconstruction of Evolutionary History: Theories of Evolution; Centers of Origin and Dispersalist Model

7.Relationships of Biomes with Hydrological Cycle; Biodiversity: Types, Gradients, Restoration and Conservation in Equatorial and Humid Tropics; Germplasm and Biopiracy

8. Ecosystem Models: Deterministic, Stochastic and Multivariate; Human Ecology: Principles, Traditions and Recent Trends

MSGG104

(Core Course)

RESOURCES AND ECONOMIC ACTIVITIES

Credit: 4 **Marks: 50**

Total lecture hours: 50

Method of Evaluation:

Continuous/ Internal Assessment: 10 (5+5) Marks. It shall be considered based on the % of attendance in the class (5 Marks);There shall be test(s) of knowledge and understanding through written test/ Presentation /Paper review/ Book review etc. (5 Marks). End-term test: 40 Marks. The end-term test shall be conducted based on written test. Candidates are required to answer any Four questions, selecting two from each unit. Four questions to be set from each unit. Each question should have at least two parts.

UNIT-I

1.Theories of Resources: Dependency and Resource Curse Theory

2. Common Pool Resources: Challenges, Management and Future

3. Carrying Capacity and Resource Management: Land, Water and Energy

4. Issues and Challenges of Human Resource: Developed and Developing Countries

UNIT-II

5. Concept of Distance; Accessibility and Connectivity

6. Transport Costs; Comparative Cost Advantages

7. Liberalization, Globalization and Privatization: Indian Perspectives

8. World Trade Organisation (WTO) and Intellectual Property Rights (IPR)

MSGG105

(Core Course)

QUANTITATIVE TECHNIQUES IN GEOGRAPHY

Credit: 4 **Marks: 50**

Total lecture hours (Minimum): 60

Method of Evaluation:

Continuous/ Internal Assessment: 10 (5+5) Marks. It shall be considered based on the % of attendance in the class (5 Marks);There shall be test(s) of knowledge and understanding through written test/ Presentation /Paper review/ Book review etc. (5 Marks). End-term test 40Marks. Written Test:Three questions to be set.Candidates are required to answer all the questions (30 Marks). Practical Note Book and Viva Voce 10 (5+5) Marks

Topics

1. Measurement of Scales: Nominal, Ordinal, Ratio, Interval; Likert
2. Shape of the Distribution (Skewness, Kurtosis, Moments)
3. Basic Matrix Algebra for Multivariate Analysis
4. Data Normality: Q-Q Plot, Kolmogorov-Smirnov Test
5. Correlation: Partial and Multiple; Test of Significance
6. Regression: Logarithmic, Exponential, Power, Polynomial and Multiple
7. Interpolation and Extrapolation
8. Time Series Analysis: Regression, Seasonal Index

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MSGG106

(Core Course)

INSTRUMENTAL SURVEY AND MAP PROJECTION

Credit: 4 **Marks: 50**

Total lecture hours (Minimum): 60

Method of Evaluation:

Continuous/ Internal Assessment: 10 (5+5) Marks. It shall be considered based on the % of attendance in the class (5 Marks);There shall be test(s) of knowledge and understanding through written test/ Presentation /Paper review/ Book review etc. (5 Marks). End-term test 40 Marks. Written Test: Three questions to be set.Candidates are required to answer all the questions (30 Marks). Practical Note Book and Viva Voce 10 (5+5) Marks

Topics

1.Theodolite Survey: Height Measurement (Oblique Method)

2. Triangulation, Traversingand Area Calculation using Theodolite

3. Land use and Land cover Mapping using Tacheometer and Total Station

4. Methods of Geodetic Survey; Location Mapping using GPS

5. Perspective of suitable Projections; Numerical Problems of Projections: Co-ordinate, Distance, Azimuth and Scale Variation

6. Gnomonic, Stereographic and Orthographic Projection: (Equatorial Cases)

7. Mercator's and Mollweide's Projections

8. UTM Projection and Conversion of Latitude and Longitude to UTM

SEMESTERII

MSGG201

(Core Course)

RECENT TRENDS IN GEOGRAPHY

Credit: 4 **Marks: 50**

Total lecture hours: 50

Method of Evaluation:

Continuous/ Internal Assessment: 10 (5+5) Marks. It shall be considered based on the % of attendance in the class (5 Marks);There shall be test(s) of knowledge and understanding through written test/ Presentation /Paper review/ Book review etc. (5 Marks). End-term test: 40 Marks. The end-term test shall be conducted based on written test. Candidates are required to answer any Four questions, selecting two from each unit. Four questions to be set from each unit. Each question should have at least two parts.

UNIT-I

1. Major philosophical paradigms: Encyclopaedism, Positivism and Post-Positivism
2. Critiques of Positivism: Behaviouralism and Radicalism
3. Geographyof post 1960s. Humanistic, Welfare and Gender
4. Critical Social Theory; Development of Critical Geography; Discourse and Deconstruction

UNIT-II

5. Critical Discourses: Structuralism to Post-Structuralism
6. Post Modernism: Essential considerations and characteristics; Post Modernism-Idea, Epoch and Style
7. Post Modern perspectives in Space: Homogenization, Plurality and Complexity; Marginality to Diasporic identity
8. Geography in 21st Century: Hybrid Geography

MSGG202

(Core Course)

CLIMATOLOGY AND HYDROLOGY

Credit: 4 **Marks: 50**

Total lecture hours: 50

Method of Evaluation:

Continuous/ Internal Assessment: 10 (5+5) Marks. It shall be considered based on the % of attendance in the class (5 Marks);There shall be test(s) of knowledge and understanding through written test/ Presentation /Paper review/ Book review etc. (5 Marks). End-term test: 40 Marks. The end-term test shall be conducted based on written test. Candidates are required to answer any Four questions, selecting two from each unit. Four questions to be set from each unit. Each question should have at least two parts.

UNIT-I

1. Humidity, Atmospheric Stability, Instability; Vortices
2. Atmospheric Circulation: Tricellular Model, Jet Stream, ENSO, Cyclones
3. Monsoon: Recent Theories of its Origin; Classical, Flohn, Jet Stream and Koteswaram, Recent Trends of Monsoon in Indian Subcontinent

4. Climate Change and its Global Impact: Physical, Economic and Social; Adaptation and Mitigation Measures of Climate Change

UNIT-II

5. Drainage Basin Hydrology: Relief, Surficial, Linear and Shape Aspects, Basin Hydrological Cycle, Measures of Estimating Runoff: Rational Method and Soil Conservation Service Curve Number Method

6. Channel Geometry and Related Parameters, Open Channel Flow: Laminar, Turbulent, Super-critical Sub-critical, Flow Continuity & Bernoulli's Principle

7. Occurrence & Movement of Groundwater, Velocity, Viscosity, Hydraulic Conductivity and Darcy's Law

8. Management of Water Resources: Watershed Management, Rainwater Harvesting

MSGG203

(Core Course)

REGION AND REGIONAL PLANNING

Credit: 4 **Marks: 50**

Total lecture hours: 50

Method of Evaluation:

Continuous/ Internal Assessment: 10 (5+5) Marks. It shall be considered based on the % of attendance in the class (5 Marks);There shall be test(s) of knowledge and understanding through written test/ Presentation /Paper review/ Book review etc. (5 Marks). End-term test: 40 Marks. The end-term test shall be conducted based on written test. Candidates are required to answer any Four questions, selecting two from each unit. Four questions to be set from each unit. Each question should have at least two parts.

UNIT-I

1. Concept of Region and Regional Planning; Approaches to Regional Planning – Technocentric, Ecocentric and Social; Regional Hierarchy

2. Techniques for Delineation of Regions: Formal, Functional and Planning Region

3. Indicators of Economic Development in Regional Planning

4. Theories of Regional Development: F. Perroux, G. Myrdal, A. R. Hirschman, J. Friedman, R. P. Mishra's Growth Foci

UNIT-II

5. New Economic Policy and Regional Development in India

6. Regional Inequality, Disparity and Diversity in India

7. Special Economic Zones in India: Perspectives of Development

8. Problems and Strategies for Development of Darjiling and Sundarban Region

MSGG204

(Core Course)

POPULATION AND SETTLEMENT GEOGRAPHY

Credit: 4 **Marks: 50**

Total lecture hours: 50

Method of Evaluation:

Continuous/ Internal Assessment: 10 (5+5) Marks. It shall be considered based on the % of attendance in the class (5 Marks);There shall be test(s) of knowledge and understanding through written test/ Presentation /Paper review/ Book review etc. (5 Marks). End-term test: 40 Marks. The end-term test shall be conducted based on written test. Candidates are required to answer any Four questions, selecting two from each unit. Four questions to be set from each unit. Each question should have at least two parts.

UNIT-I

1. Theories of Population Growth: Malthusian, Marxian, Neo-Malthusian and Biological

2. Transnational Migration: Diaspora and Identity Crisis

3. Problems of Population Growth: Social and Ecological Impact

4. Population Policy Response to Demographic Transition: Developed and Developing Countries - Scandinavian and South East Asian Nations

UNIT-II

5. Contemporary Problems of Rural Settlements: Rural-Urban Migration; Land Use Changes; Land Acquisition and Transactions

6. Theories of Origin of Towns: Gordon Childe & Lewis Mumford; Characteristics and Processes of Urbanization in Developed and Developing Countries

7. Urban Systems: The Law of the Primate City and Rank-Size Rule; Central Place Theories: Christaller and Losch

8. Models of Urban Land Use: Burgess, Harris and Ullman, and Hoyt; Concepts of Megacities, Global Cities and Edge Cities;Peri-Urban Areas, Rural-Urban Fringe

MSGG205

(Core Course)

THEMATIC MAPPING

Credit: 4 **Marks: 50**

Total lecture hours (Minimum): 60

Method of Evaluation:

Continuous/ Internal Assessment: 10 (5+5) Marks. It shall be considered based on the % of attendance in the class (5 Marks);There shall be test(s) of knowledge and understanding through written test/ Presentation /Paper review/ Book review etc. (5 Marks). End-term test 40 Marks. Written Test: Three questions to be set.Candidates are required to answer all the questions (30 Marks). Practical Note Book and Viva Voce 10 (5+5) Marks

Topics

1. Analysis of Geological Map: Subsurface

2. Basin Hydrology, Hydrograph

3. Analysis of Soil and its Mapping – NPK, pH & Organic Matter

4. Analysis of Water and its Mapping – pH, Salinity, DO

5. Crop Combination and Crop Diversification

6. Location Quotient and Co-efficient of Localization

7. Population Potential

8. Social Disparity Index: D. Sopher and A. Kundu

MSGG206

(Core Course)

REMOTE SENSING & GEOGRAPHICAL INFORMATION SYSTEM

Credit: 4 **Marks: 50**

Total lecture hours (Minimum): 60

Method of Evaluation:

Continuous/ Internal Assessment: 10 (5+5) Marks. It shall be considered based on the % of attendance in the class (5 Marks);There shall be test(s) of knowledge and understanding through written test/ Presentation /Paper review/ Book review etc. (5 Marks). End-term test: 40 Marks. Written Test: Three questions to be set.Candidates are required to answer all the questions (30 Marks). Practical Note Book and Viva Voce 10 (5+5) Marks

Topics

1. Downloading of Satellite Data: IRS LISS-III, LANDSAT-7 & 8 and CARTOSAT of Hill, Plain and Coastal Areas

2. Image Classification: Supervised and Unsupervised; Accuracy Assessment

3. Visual Interpretation of Air Photo and Height Measurement

4. Image Enhancement: Contrast Enhancement, Band Rationing, Spatial Filtering, Vegetation Indices – TVI and NDVI

5.Conversion of Analogue to Digital: Geo-Referencing of Maps with Images

6. Generation, Representation and Mapping of Geo-Spatial Data: Physiographic and Administrative Areas

7. Working with Buffer and Queries; Spatial Interpolation: Kriging, Natural Neighbor and IDW

8. GIS Data Modeling and Application: Multifactor and Overlay

SEMESTERIII

MSGG301

(Core Course)

SOCIAL AND CULTURAL GEOGRAPHY

Credit: 4 **Marks: 50**

Total lecture hours: 50
Method of Evaluation:
Continuous/ Internal Assessment: 10 (5+5) Marks. It shall be considered based on the % of attendance in the class (5 Marks);There shall be test(s) of knowledge and understanding through written test/ Presentation /Paper review/ Book review etc. (5 Marks). End-term test: 40 Marks. The end-term test shall be conducted based on written test. Candidates are required to answer any Four questions, selecting two from each unit. Four questions to be set from each unit. Each question should have at least two parts.

UNIT-I

1. Social Geography in the Realm of Social Sciences: Distinction among Anthropology, Sociology and Social Geography

2. Concepts of Social Ecology, Social Pathology and Social Exclusion

3. Theories of Social Formation and Transformation: Functional Theory (T. Parsons); Conflict Theory (K. Marx); and Critical Theory (T. Adorno)

4. Social Systems and Social Processes, Social Structure and Behavior

UNIT-II

5. Concept of Culture in Geography; Development of Cultural Geography; Concept of Cultural Landscape

6. Role of Technology in the Evolution of Culture, Cultural Take off, Cultural Diffusion and Socio-Cultural Transformation

7. Cultural Innovation, Acculturation and Regeneration with Emphasis on Folk Culture

8. Cultural Globalization and Cultural Segregation: Significance of Class, Caste and Power

MSGG302

(Core Course)

CONTEMPORARY GEOGRAPHICAL ISSUES IN INDIA

Credit: 4 **Marks: 50**

Total lecture hours: 50
Method of Evaluation:
Continuous/ Internal Assessment: 10 (5+5) Marks. It shall be considered based on the % of attendance in the class (5 Marks);There shall be test(s) of knowledge and understanding through written test/ Presentation /Paper review/ Book review etc. (5 Marks). End-term test: 40 Marks. The end-term test shall be conducted based on written test. Candidates are required to answer any Four questions, selecting two from each unit. Four questions to be set from each unit. Each question should have at least two parts.

UNIT-I

1. Large Scale Development Projects and Impact: (Big Dams and Mining)

2. Forest Policies and Forest People; Success and Failure of Forest Management

3. Green Revolution: Social and Ecological Consequences

4. Disparities in Human Development

UNIT-II

5. Contamination of Ground Water in West Bengal: Arsenic and Fluoride

6. Tribal Livelihood and Development in Western Plateau and its Fringe Areas of West Bengal

7. Conflicting Issues in Sundarban Region: Human Ecosystem *vs.* Natural Ecosystem

8. Agriculture in PurbaBarddhamanand Mining in Paschim BardhamanDistrict

MSGG303

(Core Course)

STATISTICAL TECHNIQUES IN GEOGRAPHICAL ANALYSIS

Credit: 4 **Marks: 50**

Total lecture hours(Minimum): 60
Method of Evaluation:
Continuous/ Internal Assessment: 10 (5+5) Marks. It shall be considered based on the % of attendance in the class (5 Marks); There shall be test(s) of knowledge and understanding through written test/ Presentation /Paper review/ Book review etc. (5 Marks). End-term test 40 Marks: Written Test: Three questions to be set. Candidates are required to answer all the questions (30 Marks). Practical Note Book and Viva Voce 10 (5+5) Marks

Topics

1. Sampling: Techniques and Estimation – Point and Interval Estimate, Standard Error of Mean

2. Probability: Concept and Distribution – Normal, Binomial and Poisson

3. Hypothesis Testing: t – Test and z – Test, ANOVA

4. Non-Parametric Test: χ^2 Test; Mann-Whitney U test; Kruskal-Wallis H Test

5. Shortest Path Analysis: Transport and Allocation Problems (Graphical and Simplex)

6. Factor Analysis (CFA &PCA)

7. Mapping and Clustering through PCA

8. Spatial Statistics: Trend Surface Analysis (1^{st} Order)

MSGG304 A

(Generic Elective)

GEOINFORMATICS

Credit: 2 **Marks: 25**

Total lecture hours: 25

Method of Evaluation:

Continuous/ Internal Assessment: 5 Marks. It shall be considered based on the % of attendance in the class; There shall be test(s) of knowledge and understanding through written test/ Presentation /Paper review/ Book review etc. End-term written test 20Marks. Four questions to be set.Candidates are required to answer any Two questions (10 Marks each), and each question should have at least two parts.

Topics

1. Concept and Types of Remote Sensing, EMR

2. Advantages of Remote Sensing and GIS on Conventional Surveying and Mapping

3. Types of Bands, Resolution, Sensor, FCC, Case of IRS and LANDSAT

4. Application of RS and GIS in Bio-Geospatial Sciences

5. Procurement and Downloading of Open Source Satellite Data and Software for Remote Sensing and GIS

MSGG304 B

(Generic Elective)

ENVIRONMENTAL GEOGRAPHY

Credit: 2 **Marks: 25**

Total lecture hours: 25
Method of Evaluation:
Continuous/ Internal Assessment: 5 Marks. It shall be considered based on the % of attendance in the class; There shall be test(s) of knowledge and understanding through written test/ Presentation /Paper review/ Book review etc. End-term written test 20Marks. Four questions to be set. Candidates are required to answer any Two questions (10 Marks each), and each question should have at least two parts

Topics

1. Environmental Geography: Concepts, Scope and Contents

2. Principles of Ecology: Plant, Animal and Human

3. Environmental Pollution of Air, Water and Land

4. Environmental Degradation of Forest and Biosphere

5. Biological Hazards: Issues and Concerns; Covid-19 Pandemic

MSGG305A

(Discipline-Centric Elective)

GEOMORPHOLOGY

Credit: 4 **Marks: 50**

Total lecture hours: 50
Method of Evaluation:
Continuous/ Internal Assessment: 10 (5+5) Marks. It shall be considered based on the % of attendance in the class (5 Marks);There shall be test(s) of knowledge and understanding through written test/ Presentation /Paper review/ Book review etc. (5 Marks). End-term test: 40 Marks. The end-term test shall be conducted based on written test. Candidates are required to answer any Four questions, selecting two from each unit. Four questions to be set from each unit. Each question should have at least two parts.

UNIT-I

1. Evolution of Geomorphological Thought and Changing Paradigms in Geomorphic Studies
2. Geological Time Scale and related Topographic, Climatic and Biologic Changes
3. System Analysis and Thresholds in Geomorphology: Conceptand Applications
4. Quantitative Geomorphology: Geomorphometry, DEM and Concept of Fractals

UNIT-II

5. Fluvial Geomorphology: Evolution of Drainage System; Properties of Drainage Basins
6. River Hydraulics: Flow, Energy and Hydraulic Geometry, Sediment Yield
7. Runoff Estimation: SCS Curve Number Method, Flow Duration and Flow Mass Curves
8. Flood Plain: Evolution and Morphology; Major Geomorphic Hazards- Flood Susceptibility and Vulnerability; Bank Erosion: Left Bank of the Ganga River in W.B.

MSGG305B

(Discipline-Centric Elective)

SOIL AND AGRICULTURAL GEOGRAPHY

Credit: 4 **Marks: 50**

Total lecture hours: 50
Method of Evaluation:
Continuous/ Internal Assessment: 10 (5+5) Marks. It shall be considered based on the % of attendance in the class (5 Marks);There shall be test(s) of knowledge and understanding through written test/ Presentation /Paper review/ Book review etc. (5 Marks). End-term test: 40 Marks. The end-term test shall be conducted based on written test. Candidates are required to answer any Four questions, selecting two from each unit. Four questions to be set from each unit. Each question should have at least two parts.

UNIT-I

1. Soil as a System: Functional and Process Approaches
2. Processes of Soil Formation: Podsolisation, Laterisation and Calcification
3. Methods of Soil Classification: German, Russian, American and ICAR
4. Physical Properties of Soil and Their Effects on Plant Growth

UNIT-II

5. Chemical Properties of Soil and Their Effects on Crop Production
6. Soil Nutrients, Fertility and Productivity; Base Exchange: Nutrient Transformation and Fixation
7. Amelioration and Conservation of Soils in India: Acidic, Saline and Alkaline; Hill-Slope Soils and Coastal Soils
8. Integrated Soil and Agricultural Management

MSGG305C

(Discipline-Centric Elective)

ENVIRONMENTAL GEOGRAPHY

Credit: 4 **Marks: 50**

Total lecture hours: 50

Method of Evaluation:

Continuous/ Internal Assessment: 10 (5+5) Marks. It shall be considered based on the % of attendance in the class (5 Marks);There shall be test(s) of knowledge and understanding through written test/ Presentation /Paper review/ Book review etc. (5 Marks). End-term test: 40 Marks. The end-term test shall be conducted based on written test. Candidates are required to answer any Four questions, selecting two from each unit. Four questions to be set from each unit. Each question should have at least two parts.

UNIT-I

1.Development of Environmental Geography; Ecology, Environmental Studies and Environmental Geography; EnvironmentalHistory; Emergence of Environmentalism in Geography

2.Ecosystem: Structure, Organization, Functions and Types;Energy flow and Food web; Forces of Ecosystem Vulnerability and Conservation

3.Ecology: Classification and Principles; Population Ecology: Problems of Abundance and Extinction; Inter-specific Relations

4.Critical Natural Capital, Carrying Capacity of Environment, Ecosystem Vulnerability and Conservation

UNIT-II

5. Production Technology and Environmental Change: Changes in Physical and Social Environment

6. Impact of Development on Environment with special reference to Water and Soil Pollution-Causes, Consequences and Measures

7. Carrying Capacity of Environment; Tragedy of the Commons; Concept of Anti Commons

8. Climate Change with special reference to Temperature increase and Aridification; Impact of Climate Change on Biodiversity; Conservation of Biodiversity

MSGG305D

(Discipline-Centric Elective)

URBAN GEOGRAPHY

Credit: 4 **Marks: 50**

Total lecture hours: 50
Method of Evaluation:
Continuous/ Internal Assessment: 10 (5+5) Marks. It shall be considered based on the % of attendance in the class (5 Marks);There shall be test(s) of knowledge and understanding through written test/ Presentation /Paper review/ Book review etc. (5 Marks). End-term test: 40 Marks. The end-term test shall be conducted based on written test. Candidates are required to answer any Four questions, selecting two from each unit. Four questions to be set from each unit. Each question should have at least two parts.

UNIT-I

1. Origin and Evolution of Urban Geography: The Four Traditions (Physical, Human-Environment, Regional and Spatial)

2. Critiques of Spatial Analysis in Urban Geography: Behavioural; Marxist; Humanistic; Social theory; Postmodernism

3. Cities: Global Cities; Post-Colonial Cities; Edge Cities; and Sustainable Cities

4. The Role of Urban in Economy: The Role of Cities; The Role of Global Cities; The role of City Region. Economic Base Theory; Formal and Informal Economy in Cities

UNIT-II

5. Types of Urban Regions: City Region; Conurbation, Suburban; Metropolis and Megalopolis

6. Urban spaces: CBD; Neighbourhood and Communities; Informal Settlements

7. Global South: Poverty; Housing; Water and Solid Waste

8. Peri-Urban development and emerging crisis with special reference to land and water: A comparative Assessment of Global North and Global South

MSGG305E

(Discipline-Centric Elective)

REGIONAL PLANNING AND DEVELOPMENT

Credit: 4 **Marks: 50**

Total lecture hours: 50

Method of Evaluation:

Continuous/ Internal Assessment: 10 (5+5) Marks. It shall be considered based on the % of attendance in the class (5 Marks). There shall be test(s) of knowledge and understanding through written test/Presentation /Paper review/ Book review etc. (5 Marks). End-term test: 40 Marks. The end-term test shall be conducted based on written test. Candidates are required to answer any Four questions, selecting two from each unit. Four questions to be set from each unit. Each question should have at least two parts.

UNIT-I

1. Concept and Approaches of Regional Planning; Methods and Purpose of Regionalisation

2. Regional Growth Theories and Models: Keynesian economics, Rostow, Myrdal; Hirchman; Kuznets Growth Curve

3. Multi-Level Planning; District Planning; Block Level Planning and Village Level Planning; PURA Initiative

4. Indicators of Economic Development in Regional Planning

UNIT-II

5. Regional Inequalityin India: Challenges and Opportunities

6. Regional Development of West Bengal with special reference to Duars and Sundarban

7. Development of North-Eastern Region of India with special reference to Sikkim and Tripura

8. Planning and Management Strategies of Landslide Prone, Flood Prone and Drought Prone Areas of India

MSGG305F

(Discipline-Centric Elective)

NATURAL HAZARDS AND DISASTER MANAGEMENT

Credit: 4 **Marks: 50**

Total lecture hours: 50

Method of Evaluation:

Continuous/ Internal Assessment: 10 (5+5) Marks.It shall be considered based on the % of attendance in the class (5 Marks);There shall be test(s) of knowledge and understanding through written test/ Presentation /Paper review/ Book review etc. (5 Marks);End-term test: 40 Marks. The end-term test shall be conducted based on written test. Candidates are required to answer any Four questions, selecting two from each unit. Four questions to be set from each unit. Each question should have at least two parts.

UNIT-I

1. Natural Hazards and Disaster: Concept and classification; Risk and Vulnerability, Hazard Reduction and Disaster Management
2. Hazards in Mountainous Areas: Landslides and Avalanches
3. Riverine Hazards: River Bank Erosion and Floods
4. Coastal Hazards: Coastal Erosion, Dune Encroachment and Saltwater Incursion

UNIT-II

5. Landslides: Causes, Consequences and Management measures with special reference to Sikkim and Darjeeling Himalayas
6. Floods: Causes, Consequences and Management Measures with special reference to South Bengal
7. River Shifting: Causes, Consequences, and Management Strategies with special reference to Bengal Delta of India
8. Coastal Erosion: Factors, Vulnerability and Management measures with special reference to East Coast of India

MSGG305G

(Discipline-Centric Elective)

Geography of Water Resources

Credit: 4 **Marks: 50**

Total lecture hours: 50
Method of Evaluation:
Continuous/ Internal Assessment: 10 (5+5) Marks.It shall be considered based on the % of attendance in the class (5 Marks). There shall be test(s) of knowledge and understanding through written test/ Presentation /Paper review/ Book review etc. (5 Marks);End-term test: 40 Marks. The end-term test shall be conducted based on written test. Candidates are required to answer any Four questions, selecting two from each unit. Four questions to be set from each unit. Each question should have at least two parts.

UNIT-I

1. Water Resource – Availability, Accessibility, Scarcity, Stress and Demand; Water for All

2. Hydro-meteorological and Hydro-Geological Conditions for Water Resource availability

3. Hydrological Cycle: Importance and Interruptions

4. Rivers, River Basins and Cryosphere of India: Impact on Environment

UNIT-II

5. Surface Water of India: Major Issues of Storage, Quantity, Quality and Sharing

6. Groundwater Resources of India: Occurrence, Estimation and Exploitable Groundwater Resources

7. Ground Water Quality: BIS and WHO; Ground Water Use: Consumptive and non-Consumptive

8. Hydro-meteorological Extremes in India

MSGG306 A

(Discipline-Centric Elective)

GEOMORPHOLOGY

Credit: 4 **Marks: 50**

Total lecture hours (Minimum): 60

Method of Evaluation:

Continuous/ Internal Assessment: 10 Marks**.** It shall be considered based on the % of attendance in the class; andThere shall be test(s) of knowledge and understanding through written test/ Presentation /Paper review/ Book review etc. End-term test 40 Marks.Written Test: Two questions to be set.Candidates are required to answer all the questions 20 Marks**.** Practical Note Book and Viva Voce:5 (3+2) Marks**;**Field Report:15(Written Report: 10, Viva-voce: 5) Marks

UNIT-ICredit-3

1. Measurement and Quantitative Analysis of Linear, Areal and Relief Properties of Drainage Basin using Topographical Sheets
2. Slope and Long Profile extraction using Topographical Sheets; Computation of Stream Gradient Index
3. Precipitation Data: Test for consistency (Double Mass Curve Method), Mean Precipitation over an area (Thiessen Polygon)
4. Measurement of Discharge by Current Meter (to be carried out in the field)
5. Analysis of Flood Frequency and Recurrence Interval
6. Field Determination of River Bed and Valley Form and Determination of Hydraulic Geometry (after Leopold and Maddock)
7. Classification and Mapping of Alluvial Channel: Straight, Sinuous, Meandering and Braided from Topographical Maps and Satellite Data
8. Measurement of Shapes of Pebbles and Sediment texture Analysis

UNIT-IICredit-1

9. Field Report

MSGG 306 B

(Discipline-Centric Elective)

SOIL AND AGRICULTURAL GEOGRAPHY

Credit: 4 **Marks: 50**

Total lecture hours (Minimum): 60
Method of Evaluation:
Continuous/ Internal Assessment: 10 Marks**.** It shall be considered based on the % of attendance in the class; and there shall be test(s) of knowledge and understanding through written test/ Presentation /Paper review/ Book review etc. End-term test 40 Marks.Written Test: Two questions to be set.Candidates are required to answer all the questions 20 Marks**.** Practical Note Book and Viva Voce: 5 (3+2) Marks**.** Field Report = 15 (Written Report: 10, Viva-voce: 5) Marks

UNIT-ICredit-3

1. Soil Sampling Techniques: Surface and Profile; Preparation and Preservation of Soil Samples

2. Analysis of Soil Texture (Sieving Method)

3. Detection of Soil pH and Salinity

4. Estimation of Hygroscopic Moisture Content

5. Determination of Soil Organic Matter Content

6. Soil Profile Recognition and Identification of Horizons; Pedon and Polypedon

7. Estimation of Nitrogen (N), Phosphorus (P) and Potassium (K) from soil samples

8.Preparation of Soil Health Card at Mouza Level and Interpretation

UNIT-IICredit-1

9. Field Report

MSGG 306 C

(Discipline-Centric Elective)

ENVIRONMENTAL GEOGRAPHY

Credit: 4 **Marks: 50**

Total lecture hours (Minimum): 60

Method of Evaluation:

Continuous/ Internal Assessment: 10 Marks**.** It shall be considered based on the % of attendance in the class; and there shall be test(s) of knowledge and understanding through written test/ Presentation /Paper review/ Book review etc. End-term test 40 Marks.Written Test: Two questions to be set.Candidates are required to answer all the questions 20 Marks**.** Practical Note Book and Viva Voce: 5 (3+2) Marks**;**Field Report: 15 (Written Report: 10, Viva-voce: 5) Marks

UNIT-ICredit-3

1. Computation of Organisms in Ecosystems: Growth and Growth Rate
2. Bivariate and Multivariate Analysis of Environment
3. Measuring Diversity of Ecosystem: Simpson and Shannon-Wiener Index
4. Estimation of Salinity and DO; Water Quality Index
5. Flood Frequency Distribution; Recurrence Interval of Cyclone
6. Estimation of Soil p^H
7. Estimation of Organic Matter in Soil
8. Noise Pollution Measurement and Mapping

UNIT-IICredit-1

9. **Field Report**

MSGG306 D

(Discipline-Centric Elective)

URBAN GEOGRAPHY

Credit: 4 **Marks: 50**

Total lecture hours (Minimum): 60

Method of Evaluation:

Continuous/ Internal Assessment: 10 Marks**.** It shall be considered based on the % of attendance in the class; and there shall be test(s) of knowledge and understanding through written test/ Presentation /Paper review/ Book review etc. End-term test 40 Marks.Written Test: Two questions to be set.Candidates are required to answer all the questions 20 Marks**.** Practical Note Book and Viva Voce: 5 (3+2) Marks**.** Field Report = 15 (Written Report: 10, Viva-voce: 5) Marks

UNIT-I **Credit-3**

1. Temporal and Spatial Analysis of Urbanization
2. Growth Index of Urban Population and Index of Urbanization
3. Occupational Diversification and Specialization
4. Rank and Size Distribution of Urban Centres
5. Degree of Connectivity: Alpha, Beta and Gamma Indices
6. Accessibility: Detour Index and Shortest Path Analysis
7. Index of Dissimilarity and Similarity
8. Preparation of Questionnaire for Empirical Research in Urban Studies

UNIT-II **Credit-1**

9**. Field Report**

MSGG306E

(Discipline-Centric Elective)

REGIONAL PLANNING AND DEVELOPMENT

Credit: 4 **Marks: 50**

Total lecture hours (Minimum): 60

Method of Evaluation:

Continuous/ Internal Assessment: 10 Marks**.** It shall be considered based on the % of attendance in the class; and there shall be test(s) of knowledge and understanding through written test/ Presentation /Paper review/ Book review etc. End-term test 40 Marks.Written Test: Two questions to be set.Candidates are required to answer all the questions 20 Marks**.** Practical Note Book and Viva Voce: 5 (3+2) Marks**.** Field Report = 15 (Written Report: 10, Viva-voce: 5) Marks

UNIT-ICreidt-3

1. Mean Centre Analysis
2. Break-Point Analysis
3. Nearest Neighbour Analysis
4. Gravity Potential Analysis
5. Transport Network Analysis
6. Regional Accessibility and Centrality Analysis
7. Regional Disparity Analysis
8. Mapping of Natural Resources at District Level: LULC, NDVI and NDWI

UNIT-IICredit-1

9. **Field Report**

MSGG306 F

(Discipline-Centric Elective)

NATURAL HAZARDS AND DISASTER MANAGEMENT

Credit: 4 **Marks: 50**

Total lecture hours (Minimum): 60

Method of Evaluation:

Continuous/ Internal Assessment: 10 Marks**.** It shall be considered based on the % of attendance in the class; and there shall be test(s) of knowledge and understanding through written test/ Presentation /Paper review/ Book review etc. End-term test 40 Marks.Written Test: Two questions to be set.Candidates are required to answer all the questions 20 Marks**.** Practical Note Book and Viva Voce: 5 (3+2) Marks**.** Field Report = 15 (Written Report: 10, Viva-voce: 5) Marks

UNIT-ICredit-3

1. Rating Curves, Hydrographs and Unit Hydrographs
2. Multivariate Analysis of Disaster related Data on India
3. Flood frequency Analysis: Weibull Plotting Position, Gumbell Extreme Value Distribution
4. Detection of Flood Prone areas from multi-band Remote Sensing Data
5. Identification of Channel Shifting with the aid of Topographical sheets and Satellite Images
6. Preparation of River bank erosion map and vulnerable zones by BEHI Model.
7. Identification and Mapping of Landslide prone areas using RS and GIS
8. Coastal erosion and inundation risk zoning from maps and images

UNIT-IICredit-1

9. **Field Report**

MSGG306 G

(Discipline-Centric Elective)

Geography of Water Resources

Credit: 4 **Marks: 50**

Total lecture hours (Minimum): 60
Method of Evaluation:
Continuous/ Internal Assessment: 10 Marks**.** It shall be considered based on the % of attendance in the class; and there shall be test(s) of knowledge and understanding through written test/ Presentation /Paper review/ Book review etc. End-term test 40 Marks.Written Test: Two questions to be set.Candidates are required to answer all the questions 20 Marks**.** Practical Note Book and Viva Voce: 5 (3+2) Marks**;**Field Report: 15 (Written Report: 10, Viva-voce: 5) Marks

UNIT-ICredit-3

1. Hydro-Meteorological Data Analysis; Water Budgeting
2. Water Quality Index and Mapping: pH; EC, TDS, Hardness, Fe, Cl, Fl, As
3. Drainage Basin Analysis using Geospatial Technologies
4. Identification and Mapping of Surface/River/Ground Water and Changes
5. Mapping Flood Hazard and Calculation of Return Period
6. Preparation of River Basin Atlas
7. Identification and Mapping of Hydrological Drought
8. Mapping Indian Cryosphere and Changes

UNIT-IICredit-1

9. **Field Report**

GUIDELINES FOR DISCIPLINE-CENTRIC ELECTIVE(S)FIELD REPORT

(UNIT – 2 OF COURSE MSGG -306A, 306B, 306C, 306D, 306E, 306F & 306G)

- The work is to be based mainly on processing of primary data collected from field with the help of appropriate schedules, stressing on any local problem or any contemporary issue.
- The area and supervisor (s) of the Report are to be determined by the Departmental Committee.
- Interrelations between different aspects of the study should be the focus of the Report.
- Text of the Report should not exceed 6,000 words and should ideally be divided into the following sections: Introduction, Statement of Problem(s) and Objectives, Materials and Methods, Results and Discussions,Conclusion, References / Bibliography and Appendices (if any).
- Maps, diagrams and sketches, excluding photographs, should not exceed 15 pages of A4 size paper.
- Report duly endorsed by the Supervisor(s) is to be produced individually by the students.

MSGG 307

COMMUNITY ENGAGEMENT ACTIVITY

Credit: 2 **Marks: 25**

Total lecture hours: 30

Method of Evaluation:

Continuous/ Internal Assessment: 5 Marks. It shall be considered based on the % of attendance in the class (5 Marks); End-term test: 20 Marks.

- The studentwill actively participate in Community Engagement Activities and prepare a report based on Discipline-Centric Elective Courses.
- Students will interact in the field with the local community and provide them help, which needs to be documented for its evaluation during the main examination (End-Term).

SEMESTERIV

MSGG401

(Core Course)

GEOGRAPHY OF DEVELOPMENT AND POLITICAL GEOGRAPHY

Credit: 4 **Marks: 50**

Total lecture hours: 50
Method of Evaluation:
Continuous/ Internal Assessment: 10. It shall be considered based on the % of attendance in the class; and there shall be test(s) of knowledge and understanding through written test/ Presentation /Paper review/ Book review etc. End-term test: 40 Marks. The end-term test shall be conducted based on written test. Candidates are required to answer any Four questions, selecting two from each unit. Four questions to be set from each unit. Each question should have at least two parts.

UNIT-I

1. Changing Concepts of Development; Theories of Development (W. Rostow, A. Frank and A. Sen); Millennium Development Goals and Sustainable Development-2030

2. Geography of Inequality and Social Wellbeing: Causes and Indicators; Equality vs Equity; Development and Gender; Gender Based Inequalities; Women's Empowerment and Empowerment Policies in India

3. Land Reforms, Agrarian Economy and Rural Development; Programs of Rural Development in India: National Rural Health Mission and MGNREGA

4. Urban Development Trends in Independent India; Urban Planning in India with special reference to Master plan; Urban Policies in India (JNNURM and AMRUT)

UNIT-II

5. Political Geography: Trends and Development; Concept of Geopolitics; Geography of Federalism

6.Concept of State, Nation and Nation State; Frontiers and Boundaries; Geopolitical Theories - Heartland and Rimland; Electoral Reforms in India; Determinants of Electoral Behaviour

7. Geopolitics of Indian Ocean; Neopolitics of World Natural Resources with special reference to Energy Resources

8. Economic and Strategic Alliances: SAARC, BRICS and EU

MSGG 402

(Core Course)

RESEARCH METHODOLOGY IN GEOGRAPHY

Credit: 4 **Marks: 50**

Total lecture hours: 50

Method of Evaluation:
Continuous/ Internal Assessment: 10 Marks. It shall be considered based on the % of attendance in the class; and There shall be test(s) of knowledge and understanding through written test/ Presentation /Paper review/ Book review etc. End-term test: 40 Marks. The end-term test shall be conducted based on written test. Candidates are required to answer any Four questions, selecting two from each unit. Four questions to be set from each unit. Each question should have at least two parts.

UNIT-I

1. Generic Concept and Principles in Geography; Organization of Knowledge in Geography
2. Concepts and Significance of Research in Geography; Objectives and Types of Research
3. Approaches to Research in Geography: Philosophy-Empiricist, Positivist and Post-Positivist; Methods- Inductive and Deductive; Analysis- Descriptive and Analytical
4. Identification of a Research Problem, Research Questions and Hypothesis Building

UNIT-II

5. Research Design: Need for Research Design, Important Concepts, Different Research Design
6. Research Methods and Methodology: Qualitative and Quantitative Methods, Scaling Techniques, Sampling Design
7. Data Management: Collection, Reliability and Authenticity; Treatment of Data anomaly; Processing and Analysis of Data; Acquisition of data and information using soft skills (FOSS)
8. Writing and Presentation: Abstract, Synopsis, Literature Review, Book Review, Referencing Style, Writing a Research Paper / Report

MSGG 403

Review of Literaturebased on Discipline Centric Elective Course

Credit: 4 **Marks: 50**

Total lecture hours (Minimum): 60

Method of Evaluation:

Continuous/ Internal Assessment: 10 (5+5) Marks. It shall be considered based on the % of attendance in the class (5 Marks); and there shall be test(s) of knowledge and understanding through written test/ Presentation /Paper review/ Book review etc. (5 Marks). End-term test: 40 Marks (Written Report: 20; Power Point Presentation: 20).

The End-term test shall be conducted based on the following:

- The student will prepare a report on **Review of Literature and Research Methods**of an individual research topic related to his/her Discipline centric Elective Course. The written Report shall be submitted by each individual student with a signature of authentication by the Supervisor. The Report will be evaluated in the Examination Centre.
- The student will present that on a Power Point Presentation (**PPT**) mode in the End-TermExamination.

MSGG404A

(Discipline-Centric Elective)

GEOMORPHOLOGY

Credit: 4 **Marks: 50**

Total lecture hours: 50

Method of Evaluation:

Continuous/ Internal Assessment: 10 Marks. It shall be considered based on the % of attendance in the class; there shall be test(s) of knowledge and understanding through written test/ Presentation /Paper review/ Book review etc.End-term test: 40 Marks. The end-term test shall be conducted based on written test. Candidates are required to answer any Four questions, selecting two from each unit. Four questions to be set from each unit. Each question should have at least two parts.

UNIT-I

1. Applied Geomorphology: Concept, Relevance and Identification of Major Application Areas; Concepts of Geomorphosites and Geoheritage

2. Geomorphic Response to Tectonics: Tectonic Indices and Geomorphic Markers

3. Urban Geomorphology: Scope and Applications

UNIT-II

4. Coastal System: Input, Processes and Output; Concept of Bioturbation

5. Slope: Classification, Instability, Failure

6. Bengal Basin and Transient Islands: Evolution and Dynamic Characteristics

MSGG404B

(Discipline-Centric Elective)

SOIL AND AGRICULTURAL GEOGRAPHY

Credit: 4 **Marks: 50**

Total lecture hours: 50

Method of Evaluation:

Continuous/ Internal Assessment: 10 Marks. It shall be considered based on the % of attendance in the class; there shall be test(s) of knowledge and understanding through written test/ Presentation /Paper review/ Book review etc. End-term test: 40 Marks. The end-term test shall be conducted based on written test. Candidates are required to answer any Four questions, selecting two from each unit. Four questions to be set from each unit. Each question should have at least two parts.

UNIT-I

1. Approaches toAgricultural Geographyand Changing Perspective of Agriculture in India

2. Land Use Models: Von Thunen, Whittlesey, Sinclair; Agro-ecological Regions of India

3. Agricultural Credit, Storage and Marketing; Crop Insurance

UNIT-II

4. Contemporary Issues in Agriculture: Food Production and Carrying Capacity; Food Security; GM Crops

5. Modern Agricultural Practices, Environmental Degradation, Organic Farming

6. Problems in Indian Agriculture and Management Measures; Agricultural Policies and Planning in India

MSGG404C

(Discipline-Centric Elective)

ENVIRONMENTAL GEOGRAPHY

Credit: 4 **Marks: 50**

Total lecture hours: 50

Method of Evaluation:

Continuous/ Internal Assessment: 10 Marks. It shall be considered based on the % of attendance in the class; there shall be test(s) of knowledge and understanding through written test/ Presentation /Paper review/ Book review etc. End-term test: 40 Marks. The end-term test shall be conducted based on written test. Candidates are required to answer any Four questions, selecting two from each unit. Four questions to be set from each unit. Each question should have at least two parts.

UNIT-I

1. Approaches to Environmental Studies: Organismic, Reductionist, Holistic, Ecofeminist

2. Approaches to Development and Environment – Ecocentric and Technocentric; Economic and Ecological Sustainability of Ecocentrism and Technocentrism

3. Environmental Philosophy, Spaceship Earth, Gaia Hypothesis; Shallow and Deep Ecology

UNIT-II

4.Ecology of Disease: Endemic, Epidemic and Pandemic; Environmental Concerns of pandemic: Global, Regional and Local

5. Environmental Ethics, Laws with special reference to Air, Policies with special reference to Forest and Disaster Management, Environmental Movement-Silent Valley, Project- Clean Ganga

6. Environmental Impact Assessment (EIA), Leopold Matrix; Environmental Management Plan

MSGG404D

(Discipline-Centric Elective)

URBAN GEOGRAPHY

Credit: 4 **Marks: 50**

Total lecture hours: 50

Method of Evaluation:

Continuous/ Internal Assessment: 10 Marks. It shall be considered based on the % of attendance in the class; there shall be test(s) of knowledge and understanding through written test/ Presentation /Paper review/ Book review etc. End-term test: 40 Marks. The end-term test shall be conducted based on written test. Candidates are required to answer any Four questions, selecting two from each unit. Four questions to be set from each unit. Each question should have at least two parts.

UNIT-I

1. Definitions and Characteristics: Municipal Corporation; Municipalities; Urban Local Bodies; Development Authority; Statutory Towns; Census Towns. Classification of Towns and Cities in India on the basis of Size and Function

2. The Patterns and Processes of Urbanization in India: Mughal period; British Period and Independent India

3. Urban Governance and its reforms in India; Political Economy and Municipal Financing

UNIT-II

4. Urban Transport in India: Public and Private; Motorized and Non-Motorized; Problems andPolicies

5. Urban Environmental Problems; Specific environmental problems with special reference to Hill Towns, Coastal Towns and Metro Cities

6. Urban Development and Planning in India: IDSMT, JNNURM, AMRUT and Smart City

MSGG404E

(Discipline-Centric Elective)

REGIONAL PLANNING AND DEVELOPMENT

Credit: 4 **Marks: 50**

Total lecture hours: 50

Method of Evaluation:

Continuous/ Internal Assessment: 10 Marks. It shall be considered based on the % of attendance in the class; there shall be test(s) of knowledge and understanding through written test/ Presentation /Paper review/ Book review etc. End-term test: 40 Marks. The end-term test shall be conducted based on written test. Candidates are required to answer any Four questions, selecting two from each unit. Four questions to be set from each unit. Each question should have at least two parts.

UNIT-I

1. Concept, Scope and Approaches of Rural Development and Planning

2.Economy of Rural Area-Issues and Challenges; Rural Industrialisation; Importance of Rural Infrastructure

3. Rural Development Schemes: NRLM, MGNREGS, NRHM, SAGY; Management of Rural Areas: Local self-Governance, NGOs and Corporate Sectors, Smart Village in India

UNIT-II

4. Contributions of Ebenezer Howard, Patrick Geddes, Tony Garnier, Lewis Mumford, Le-Corbusier in Planning

5. Goals of Urban Planning; Nature of Urban Policy; Urban Renewal; Urban Social Movements; Urban Architecture; Social Construction of Urban Landscape; Neighbourhood Planning

6. Urban Management and Governance; Smart Cities; Livable Cities and Urban Governance

MSGG404F

(Discipline-Centric Elective)

NATURAL HAZARDS AND DISASTER MANAGEMENT

Credit: 4 **Marks: 50**

Total lecture hours: 50

Method of Evaluation:

Continuous/ Internal Assessment: 10 Marks. It shall be considered based on the % of attendance in the class; there shall be test(s) of knowledge and understanding through written test/ Presentation /Paper review/ Book review etc. End-term test: 40 Marks. The end-term test shall be conducted based on written test. Candidates are required to answer any Four questions, selecting two from each unit. Four questions to be set from each unit. Each question should have at least two parts.

UNIT-I

1. Earthquakes and Vulcanicity: Concepts and Typology

2. Cyclones, Droughts, Desertification and Soil Degradation

3. Government Initiative for Disaster Management in India and role of International Agencies

UNIT-II

4. Earthquakes and Vulcanicity: Causes, Consequences and Management Measures in India

5. Droughts: Causes, Consequences, and Management Strategies in India with special reference to West Bengal

6. Desertification and Degradation of Soil: Causes, Consequences and Control Measures with special reference to Rajasthan

MSGG404G

(Discipline-Centric Elective)

Geography of Water Resources

Credit: 4 **Marks: 50**

Total lecture hours: 50

Method of Evaluation:

Continuous/ Internal Assessment: 10 Marks. It shall be considered based on the % of attendance in the class; there shall be test(s) of knowledge and understanding through written test/ Presentation /Paper review/ Book review etc. End-term test: 40 Marks. The end-term test shall be conducted based on written test. Candidates are required to answer any Four questions, selecting two from each unit. Four questions to be set from each unit. Each question should have at least two parts.

Unit – I

1. Planning and Management Strategies of Hydro-meteorology Extremes in India
2. Water Resource Conservation and Management Strategies; National Water Policy
3. Global Climate Change and Water Resource: Adaptation and Resilience Building

Unit – II

4. State-wise Water Information:Availability and Accessibility
5. Inter-state Water Dispute; River Linking – Merits and Demerits
6. Regional Water Information System for Planning and Management

MSGG 405 A

(Discipline-Centric Elective)

GEOMORPHOLOGY

Credit: 4 **Marks: 50**

Total lecture hours (Minimum): 60

Method of Evaluation:

Continuous/ Internal Assessment: 10 Marks. It shall be considered based on the % of attendance in the class; and there shall be test(s) of knowledge and understanding through written test/ Presentation /Paper review/ Book review etc. End-term test:40 Marks. Written Test: Three questions to be set. Candidates are required to answer all the questions: 30 Marks.Practical Note Book and Viva Voce: 10 (5+5) Marks

Topic

1. Preparation of Hydrograph, Unit Hydrograph and Rating Curve

2. Estimation of Surface Runoff

3. Flow Duration Curve and Sequent Peak Algorithm

4. Generation of DEM using Contours and Spot Height of a Drainage Basin; Downloading SRTM Data and Sub setting DEM of a given Drainage Basin

5. Hydro-processing;Flow Determination (Fill Sink, Flow Direction, Flow Accumulation); Flow Modification (Optimization, Topographical Optimization) through Digital Elevation Models (DEMs)

6. Mapping and analysis of drainage Network and Catchment: Drainage Network, Drainage Network Ordering; Catchment Extraction, Catchment Merge and Preparation of Maps

MSGG405 B

(Discipline-Centric Elective)

SOIL AND AGRICULTURAL GEOGRAPHY

Credit: 4 **Marks: 50**

Total lecture hours (Minimum): 60

Method of Evaluation:

Continuous/ Internal Assessment: 10 Marks. It shall be considered based on the % of attendance in the class; and there shall be test(s) of knowledge and understanding through written test/ Presentation /Paper review/ Book review etc. End-term test:40 Marks. Written Test: Three questions to be set. Candidates are required to answer all the questions: 30 Marks. Practical Note Book and Viva Voce: 10 (5+5) Marks.

Topic

1. Multivariate Estimation of Soil Properties and Crop Production

2. Multivariate Analysis of Determinants of Agriculture

3. Time series Analysis of Crop Production and Productivity

4. Mapping of Crop Combination, Specialization and Diversification

5. Measurement of Agricultural Efficiency: Fertility Zoning

6. Change Detection of Arable Land and Transformation of Land Use

MSGG 405 C

(Discipline-Centric Elective)

ENVIRONMENTAL GEOGRAPHY

Credit: 4 **Marks: 50**

Total lecture hours (Minimum): 60

Method of Evaluation:

Continuous/ Internal Assessment: 10 Marks. It shall be considered based on the % of attendance in the class; and there shall be test(s) of knowledge and understanding through written test/ Presentation /Paper review/ Book review etc. End-term test:40 Marks. Written Test: Three questions to be set. Candidates are required to answer all the questions: 30 Marks. Practical Note Book and Viva Voce: 10 (5+5) Marks.

Topics

1.Probability Estimation of Catastrophe, t-Test, Chi-Square Test

2.Time Series Analysis with Climatic Data; Vulnerability Index for Hazard Assessment

3. System Component Growth Perspective of Population

4. Mapping and Interpretation of Social Environment: Residual Mapping

5. Estimation of Soil Nutrients: Potassium and Nitrogen

6. Mapping of Ambient Air Quality; Preparation and Interpretation of Environmental Maps from Cadastral Map/ Ward Map; Change detection of Forest covers from Satellite Images

MSGG 405 D

(Discipline-Centric Elective)

URBAN GEOGRAPHY

Credit: 4 **Marks: 50**

Total lecture hours (Minimum): 60

Method of Evaluation:

Continuous/ Internal Assessment: 10 Marks. It shall be considered based on the % of attendance in the class; and there shall be test(s) of knowledge and understanding through written test/ Presentation /Paper review/ Book review etc. End-term test:40 Marks. Written Test: Three questions to be set. Candidates are required to answer all the questions: 30 Marks. Practical Note Book and Viva Voce: 10 (5+5) Marks.

Topics

1. Bivariate and Multivariate Analysis

2. Delineating Sphere of Influence of Urban Areas

3. Measurement of Inequality: Location Quotient, Lorenz Curve and Gini's Coefficient

4. Gravity Potential Model

5. Space Potential Model

6. Mapping of Urban Environment: Air, Water and Noise

MSGG405E

(Discipline-Centric Elective)

REGIONAL PLANNING AND DEVELOPMENT

Credit: 4 **Marks: 50**

Total lecture hours (Minimum): 60
Method of Evaluation:
Continuous/ Internal Assessment: 10 Marks. It shall be considered based on the % of attendance in the class; and there shall be test(s) of knowledge and understanding through written test/ Presentation /Paper review/ Book review etc. End-term test:40 Marks. Written Test: Three questions to be set. Candidates are required to answer all the questions: 30 Marks. Practical Note Book and Viva Voce: 10 (5+5) Marks.

Topics

1. Rank-Size Distribution of Cities
2. Distance Decay Analysis
3. Population Potential and Space Potential
4. Preparation of Village Database and Map Layout Creation
5. Delineation of Zone of Influence using Buffer Analysis
6. Multi-Criteria Decision Making Model in Regional Development Analysis

MSGG 405 F

(Discipline-Centric Elective)

NATURAL HAZARDS AND DISASTER MANAGEMENT

Credit: 4 **Marks: 50**

Total lecture hours (Minimum): 60

Method of Evaluation:

Continuous/ Internal Assessment: 10 Marks. It shall be considered based on the % of attendance in the class; and there shall be test(s) of knowledge and understanding through written test/ Presentation /Paper review/ Book review etc. End-term test:30 Marks. Written Test: Three questions to be set. Candidates are required to answer all the questions: 30 Marks. Practical Note Book and Viva Voce: 10 (5+5) Marks.

Topic

1. Identification and mapping of lineaments from DEM for determining Earthquake susceptibility
2. Identification and Zoning of Natural Hazards, Vulnerability Index
3. Drought prone area identification from satellite data
4. Preparation of soil erosion map on the basis of secondary data
5. Analysis of Hazards using Meteorological Data
6. Preparation of questionnaire/survey schedule for field study

MSGG 405 G

(Discipline-Centric Elective)

Geography of Water Resources

Credit: 4 **Marks: 50**

Total lecture hours (Minimum): 60

Method of Evaluation:

Continuous/ Internal Assessment: 10 Marks. It shall be considered based on the % of attendance in the class; and there shall be test(s) of knowledge and understanding through written test/ Presentation /Paper review/ Book review etc.
End-term test:30 Marks. Written Test: Three questions to be set. Candidates are required to answer all the questions: 30 Marks. Practical Note Book and Viva Voce: 10 (5+5) Marks.

Topics

1. Hydro-morphometric Information System of Rivers
2. Generating Water Quality Information: River/lake/Pond/Village/City
3. Ground Water Potential Zoning; Groundwater Table and Trend Analysis
4. Flood Zonation Mapping
5. EL NINO, LA NINA and Water Mapping of India
6. Extreme Climate and Coastal Vulnerable Zone Delineation

MSGG 406

DISSERTATION

Credit: 4 **Marks: 50**

Total lecture hours (Minimum): 60

Method of Evaluation:

Continuous/ Internal Assessment: 10 Marks. It shall be considered based on the % of attendance in the class; and there shall be test(s) of knowledge and understanding through written test/ Presentation /Paper review/ Book review etc. End-term test: 40 (30+10) Marks. Evaluation of written Report: 30Marks;Viva Voce: 10 Marks.

Dissertation:

The Dissertation on respective Discipline-Centric Elective Courses will be a comprehensive work based on conceptual aspects, fieldwork analysis of primary and secondary data. It should mention the objectives, sources of information, methods and approaches. Interrelations between different aspects of the study should be the focus of the work.

Text of the work should not exceed 10,000 words and should ideally be divided into the following sections:

• Introduction, • Literature Review, • Statement of the Problem (s) and Objectives • Results and Discussions • Conclusions • References and • Appendices (if any).

Maps, diagrams and sketches, excluding photographs, should not exceed 30 pages of A4 size paper.

Each of the study work is to be produced individually by the students and this must be stated clearly in a certificate from the supervisor(s). Photocopying and/or bulk computer typing are not to be allowed in any form.

SUGGESTED READINGS

MSGG – 101: GEOGRAPHICAL THOUGHT and

MSGG - 201: RECENT TRENDS IN GEOGRAPHY

Adhikari, S. (1992). *Geographical Thought*. Allahabad: Chaitanya Pub. House.

Blis, H. J. (1971). Geography, Regions and Concepts. New York: John Wiley of Sons INC.

Board, C., Chorley, R., & Stoddart, D. (1974). Progress in Geography. International Reviews of Current Research Vol - 6.

Bunge, W. (1962). Theoritical Geography. London: Glenerp.

Chorley, R., & Haggett, P. (1965). Frontiers in Geographical Teaching. Oxford: OUP.

Coffey, W. (1981). Geography - Towards a General Spatial System Approach. USA: British Library Cataloguing in Pub.Data.

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Freeman, T. (1971). A Hundred Years of Geography. London: Gerald Duckworth & Co.Ltd.

Gregory, D., & Walford, R. (1988). Horizons in Human Geography. London: Macmillan.

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Harvey, D. (1979). Social Justice and the City. Great Britain: The Pitman Press,Bath.

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Husain, M. (2007). Models in Geography. New Delhi: Rawat Pub. Co.

Hussain, M. (1995). Evolution of Geographical Thought,3rd edition. New Delhi: Rawat Pub.co.

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Lahiri-Dutt, K. (2002). Bhogal Chintar Vikash. World Press.

Legg, S. (2007). Spaces of Colonialism. UK: Blackwell Publishing.

Massey, D. (1994). Space,Pace and Gender. Minnesota: University of Minnesota Press.

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Murdoch, J. (2006). Post-Structuralist Geography. New Delhi: Sage Publications Limited.

Pandey, P. (1983). Modern Geographical Trends. New Delhi: Todays and Tommorow Printers and Publishers.

Peet, R. (2003). Radical Geography. New Delhi: Rawat Pub.Co.

Peet, R., & Thrift, N. (1989). New Models in Geography. Boston,Sydney,Wellington: Unwin Hyman.

Raju, S., & Lahiri-Dutt, K. (2011). Doing Gender Doing Geography Emerging Research in India. UK: Routledge.

Rana, L. (2008). Geographical Thought - A Systematic Record of Evolution. New Delhi: Concept Publishing Company.

Smith, D. (1994). Geography and Social Justice. Oxford,UK & Cambridge,USA: Blackwell.

Soja, E. (2003). Postmodern Geographies. UK: British Library Cataloguing in Publication Data.

Stoddart, D. (1986). On Geography and Its History. Oxford: Basil Blackwell.

Tuan, Y.-F. (1990). Topophillia:A Study of nEnvironmental Perception,Attitudes and Values, New York: Columbia University Press.

MSGG 102: GEOTECHTONICS AND GEOMORPHOLOGY

MSGG 202: CLIMATOLOGY AND HYDROLOGY

Anthes, R. 1997: Meteorology, 7th edition, Prentice-Hall Inc., Upper Saddle River
Ahmed, E., 1985, Geomorphology, Kalyani Publishers, New Delhi
Ahmed, E., 1972, Coastal Geomorphology of India,Orient Longman
Barry, R.G. and Chorley, R.T. 1992: Atmosphere, Weather and Climate, 6th edition, Routledge, London
Brigg, G.R. 1996 : The Ocean and Climate, Cambridge University Press, Cambridge
Chorley, R., Schumm, S. and Sugden, D.E. 1994. Geomorphology, Methuen, London
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Ollier, C.D. 1981: Tectonic Geomorphology, Longman Scientific & Technical, London
Pant, G.B. and Kumar, R.K. 1997: Climates of South Asia, John Wiley and Sons Ltd., Chichester
Petts, G. and Foster, I. 1985. Rivers and Landscapes, Edward Arnold, London
Petts, G.E. and Amoros, C. (editors) 1996. Fluvial Hydrosystems, Chapman and Hall, London
Pimente, J. D. (editor) 1993 : World Soil Erosion and Conservation, Cambridge University Press, Cambridge
Rice, R.J. 1988. Fundamentals of Geomorphology, 2nd edition, Longman Scientific and Technical, London
Selby, M.J. 1985. An Introduction to Geomorphology, Clarendon, Oxford
Sharma, H.S. 1987. Tropical Geomorphology: A Morphogenetic Study of Rajashan, South Asia Books, Jaipur
Sing S., 2000, Geomorphology, PrayagPustak Bhavan
Smith, K. 1996 : Environmental Hazards: Assessing Risk and Reducing Disaster, 2nd edition, Routledge, LondonTaylor, J.A. (editor) 1974 : Climatic Resources and Economic Activity, David & Charles, London
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Valdiya, K.S. 1998. Dynamic Himalaya, University Press (India) Ltd., Hyderabad.
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MSGG 103: BIOGEOGRAPHY AND SOIL GEOGRAPHY

BIOGEOGRAPHY:

Beeby, A. and Brennan, A.M. 1997: First Ecology, Chapman and Hall, London.
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