Department of Geography

Faculty of Natural Sciences

JAMIA MILLIA ISLAMIA NEW DELHI – 110 025

(A Central University by an Act of Parliament)

B.Sc. (Pass) Geography

Syllabus (w.e.f. 2012-2013)
# Course Structure of B.Sc. (Pass) Geography

## Semester-I

<table>
<thead>
<tr>
<th>Paper</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEB-101</td>
<td>Geomorphology</td>
<td>4</td>
</tr>
<tr>
<td>GEB-102</td>
<td>Climatology</td>
<td>4</td>
</tr>
</tbody>
</table>

### Practical

<table>
<thead>
<tr>
<th>Paper</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEB-104</td>
<td>Introduction to Cartography</td>
<td>2</td>
</tr>
</tbody>
</table>

## Semester-II

<table>
<thead>
<tr>
<th>Paper</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEB-201</td>
<td>Principles of Ecology</td>
<td>4</td>
</tr>
<tr>
<td>GEB-203</td>
<td>Hydrology and Water Resources</td>
<td>4</td>
</tr>
</tbody>
</table>

### Practical

<table>
<thead>
<tr>
<th>Paper</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEB-204</td>
<td>Representation of Physical Data</td>
<td>2</td>
</tr>
</tbody>
</table>

## Semester-III

<table>
<thead>
<tr>
<th>Paper</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEB-301</td>
<td>Man and Environment</td>
<td>4</td>
</tr>
<tr>
<td>GEB-303</td>
<td>Regional Geography of India</td>
<td>4</td>
</tr>
</tbody>
</table>

### Practical

<table>
<thead>
<tr>
<th>Paper</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEB-304</td>
<td>Statistical Techniques in Geography</td>
<td>2</td>
</tr>
</tbody>
</table>
Semester-IV

Theory Papers
GEB-402 Evolution of Geographical Thought 4
GEB-403 Fundamentals of RS/GIS/GPS 4

Practical
GEB-404 Representation of Socio-Economic Data 2

Semester-V

Theory Papers
GEB-501 Economic Geography 4
GEB-504 Geography of Population 4

Practical
GEB-505 Photo and Image Interpretation 2

Semester-VI

Theory Papers
GEB-602 Urban Geography 4
GEB-605 Disaster Management 4

Practical
GEB-608 Socio-Economic Survey 2
Unit-I: Fundamentals/Basics of Geomorphology
The nature and scope of Geomorphology; Constitution of earth’s interior; Geological
Time Scale; Continental Drift, Plate Tectonics.

Unit-II: Geomorphic Structure and Processes
Forces of earth crust and earth movements; Folds and Faults; Rocks: Formation and Types; Volcanoes
and Earthquakes; Weathering: Normal cycle of Erosion by Davis & Penck.

Unit-III: Evolution of Landscape
Fluvial, Glacial, Aeolian, Karst and Coastal.

Unit-IV: Applied Geomorphology
Relevance of Geomorphological studies in Environment Management, Settlement and
Industries.

Books Recommended:
   Learning.
   Fundamentals of Geology, V. Obrochey, Taraqqi Urdu Board, New Delhi
Unit-I: The Atmosphere
Nature and scope of climatology, Composition and structure of the atmosphere; Insolation and its factor; heat Budget; Horizontal and vertical Distribution of temperature.

Unit-II: Atmospheric Moisture
Atmospheric Evaporation; Humidity; Condensation, Precipitation, types of rainfall, Hydrological Cycle.

Unit-III: Atmospheric Disturbances
Atmospheric pressure and winds, Air Masses and Fronts; Cyclones and anti cyclones, Tropical and Temperate cyclones; Thunderstorms: Type and Distributions.

Unit-IV: Regional and Applied Climatology
Koppen’s Classification of Climates, Global Warming; Air Pollution, Climatic Change and its impact on the earth.

Books Recommended:
2. Critchfield, J.H.: General Climatology
3. Das, P.K.: Monsoon
4. Fein, J.S. and Stephens, P.N.: Monsoon
5. India Met. Deptt: Climatological Tables of observation in India
7. Lydolph, P.E.: The Climate of the Earth
9. Robinson, P.J. and Henderson S.: Contemporary Climatology
INTRODUCTION TO CARTOGRAPHY

Credit: 2

UNIT-I: MAP INTRODUCTION

Map: Definition, Significance, Classification and Usefulness

UNIT-II: SCALES

Definition of scale; Methods of scale representation on a map; drawing of plane, comparative and diagonal scales; Calculation of radii of small circles on the globe, calculation of R.F. from arcs of meridians and parallels.

UNIT-III: ELEMENTS OF GLOBE

Globe V/s Map: Concept of small and great circle; Parallels of latitude and meridian of
Longitude, graticule of parallels and meridians, locating points on the globe.

UNIT-IV: MAP PROJECTIONS

Definition, general Principles and Classification of map projection; Graphical Construction of Cylindrical Projections: Mercator’s, and equal area; Conical projections; Polyconic, Bonnes, One standard two standard parallels. Zenithal: Gnomonic, Stereographic and Orthographic projections.

Books Recommended:

1. M.Ishtyaq, (1994) Practical Geography, Manak Publisher
   Ansari Road, New Delhi-2.
PRINCIPLES OF ECOLOGY

Unit-I: Introduction
Definition, Scope, Evolution and development; Difference between Ecology and Human Ecology; Environmentalism; Conservation Ethics.

Unit-II: Human and Environment Interaction
Human Adaptation and Modification: Environmental Adaptation Types, Aquatic, Desert and Soil adaptations; Resources and Technologies.

Unit-III: Bio-Geochemical and Nutrient cycles

Unit-IV: Ecosystem
Ecosystem: Kinds of Ecosystem, Types, physical, Chemical structure and functions; Genetic Energy flow within the Ecosystem, Y- Shaped Model of Energy Flow, Food- Chain and Tropic Levels and Ecological.

Books Recommended:
9. Odum, E.P. (1968), The strategy of ecosystem development, Science,
HYDROLOGY AND WATER RESOURCES

Unit-I: Introduction

Definition and Scope of Hydrology, Hydrological cycle, Structure and properties of water, Earth’s water resources and water as a cyclic resource.

Unit-II: Surface water

Surface water: sources and factors affecting quality and quantity: Precipitation: forms and estimation; Runoff: sources, and factors affecting runoff; Evaporation: factors and measurement; Transpiration: significance and factors; Evapotranspiration.

Unit-III: Ground Water

Ground water: Characteristics of stream flow, porosity and permeability, infiltration, Ground water: storage, aquifers, movement and discharge.

Unit-IV: Water Management

Interface between surface and Ground Water; Environmental influences on water resources; urban water supply; water management; water harvesting; water pollution and measures to control.

Books Recommended:

Unit-I: Representation of Relief-I

a) Methods of depicting relief feature: contour; Hachures, hill shading and layer tinting.

b) Drawing of Profiles: Composite, serial and Projected

Unit-II: Representation of Relief-II

a): Representation of waterfall, spur, saddle, escarpment, valley with their contours. b): Determination of slope, Gradient

c): Interpretation of topographical maps and Geological Maps.

Unit-III: Representation of Climatic Data

a): Representation of climatic data through Bar graph, linegraphs,

b): Representation of climatic data through isotherms, isobars, & Isohytes. c): drawing of climographs, Hythergraphs and wind roses.

Unit-IV: Study of Weather Charts/Maps

a): Study of weather symbols given on a weather map of India. b): Interpretation of a weather chart of India.

c): Pertaining to different season.

Books Recommended:


Unit-I: Man and Environment

Man-environment relationship and its social relevance; Elements of physical and cultural environment; Approaches: Environmental determinism, possiblism and Modern environmentalism.

Unit-II: Population and Human Settlements

World population growth; population distribution and its determinants; Type and patterns of human settlements: Urban and Rural; Trends and Patterns of World urbanization and Migration.

Unit-III: Human Adaptation to Environment

Man in eco-system; Ecological adaptation; Biom-Climatic regions of the World; Human adaptation in equatorial, monsoon, hot desert and tundra regions.

Unit-IV: Environmental Crisis and Management

Environment as a resource system; Technology and resources; environmental crisis-nature and management of deforestation, flood and droughts, Land degradation/deforestation and their management.

Books Recommended:

1. Ahmad, Q.S. (1963) Major Natural Regions, S.Chand Publisher, Delhi.
Paper-(GEB-303)

REGIONAL GEOGRAPHY OF INDIA

Credit: 4

Unit-I: Physical and Human Landscape
Physiography, Climate, Drainage, Vegetation, Soil, Population and Regionalization Schemes.

Unit-II: Upper Ganga Plain/Rajasthan Desert
Physiography, Climate, Drainage, Vegetation, Agriculture, Industries, Population.

Unit-III: Chotanagpur Plateau/Deccan Plateau
Physiography, Climate, Drainage, Vegetation, Agriculture, Industries, Population.

Unit-IV: Regionalization
Regionalization and Major Regions Of India Based On Factors Of Regionalization.

Books Recommended:
2. Govt.of India-Reference Annual, 2001 Pub.div; New Delhi.
6. Mitra, A. 1967. Levels of Regional Development of India, Census of India, Vol.I, Part I-A (i) and (ii) New Delhi,
8. Shafi, M. 2000, Geography of South Asia, McMillan & Co; Calcutta,
Practical-(GEB-304)

STATISTICAL TECHNIQUES IN GEOGRAPHY

Credit: 2

Unit-I: Introduction to Statistics

Population and Sample; Nature of Statistical data: discrete, Continuous, Measures of

Data: Quantitative and Qualitative Data.

Unit-II: Frequency Distribution

Histogram, Frequency polygon, Ogive Curve, Normal and Skewed.

Unit-III: Measures of Central Tendency

Mean, Median, Mode; Measures of Dispersion: Mean deviation, Quartile Deviation, Standard Deviation;

Coefficient of variation.

Unit-IV: Measures of Association

Spearman’s Rank Correlation; Simple Linear Regression.

Books Recommended:


5. Peter A. Rogerson; 2006, statistical methods for Geography, Sage Publication, Asia Pacific Ltd.

Singapore.

USA.
EVOLUTION OF GEOGRAPHICAL THOUGHT

Unit-I

Geography in classical age: Contributions of Greek and Roman scholars with special references to the works of Herodotus, Eratosthenes, Hecateus, Strabo and Ptolemy.

Unit-II


Unit-III


Unit-IV

Contributions of Ratzel, Vidal de la blache, Richthofen and HartShrone; The Quantitative Revolution in Geography; Post Quantitative Revolution trends: Welfare, Radical, Post Modernization, etc.)

Books Recommend

Paper-(GEB-403)

FUNDAMENTALS OF REMOTE SENSING/GIS/GPS

Credit: 4

Unit –I: Basics of Remote Sensing

Energy Sources and Radiation Principles; Energy Interaction In Atmosphere and with Earth Surface Features; Remote Sensing Platforms and Sensors.

Unit-II: Basics of Photogrammetry and Image Interpretation

Basic Geometric Characteristics of Aerial Photographs; Classification of Aerial Photographs, Ground Coverage of Aerial Photographs; Elements of Image Interpretation.

Unit-III: Concepts of Geographic Information System

Scope and Components of GIS; Data Models-Raster and Vector; Spatial Analysis-Overlay, Proximity and Buffer; 3-D GIS, GIS Application in Geographical Studies.

Unit-IV: Global Positioning System

Basic Concepts And Segments of GPS Positioning; Sources of Errors In GPS Observation; GPS Applications.

Books Recommended:


Practical-(GEB-404)

REPRESENTATION OF SOCIO-ECONOMIC DATA

Credit: 2

Unit I: Elementary Statistical Methods

Measures of Central Tendency: mean, median and mode; Measures of dispersion; quartile deviation and standard deviation.

Unit II: Measures of Relationship

Measure of Association: Karl Pearson’s and Rank correlation method, Product-moment correlate coefficient; Measure of functional relationship: Simple regression.

Unit III: Representation of Population and Social Data

Population distribution: Rural (dots) Urban (spheres); population growth (line graph); Age and sex pyramid; literacy (Choropleth- Standard deviation method); Distribution of tribal population (polybar diagram).

Unit IV: Representation Of Economic and Transport Data

Land utilization (proportional divided circles); Distribution of crops (simple bar, compound bar and polybar diagram) and Distribution of major industries (geometric symbols).

Books Recommended:


Paper-(GEB-501)

ECONOMIC GEOGRAPHY

Credit: 4

Unit-I: Introduction

Subject matter and Scope of Economic geography; Classification of Economic activities; Economic Resources: Concept and classification of Economic Resources

Unit-II: Primary Activities

Major Primary activities: Classification and distribution of major crops; Rice, Wheat and Tea; Land use and Agricultural location models: L.D stamp and J.H. Von Thunen.

Unit-III: Secondary Activities

Distribution and Production of Iron ore, coal, petroleum; Factors of Industrial location; Distribution and potential growth of Iron and Steel industry, Cotton Textiles Industry; Weber’s theory of industrial location.

Unit-IV: Tertiary Activities

Trade: Determinants and strategies; International trade with references to GATT and WTO; Transport: Concept Of distance, accessibility and connectivity.

Books Recommended:

Unit-I: Introduction to Population Geography
Subject matter and scope of Population geography, Demography and population Geography; Sources of Population Data: Census, Vital Statistics and National Sample Survey; Approaches in population Geography.

Unit-II: Population Distribution and Growth
Population Growth and change: Trends of Population Growth in the World; World Pattern of population distribution; factors affecting population distribution; Population Dynamics: Fertility, Mortality and Migration, Theories of Population growth: Malthusian theory, Theory of Demographic Transition;

Unit-III: Population Composition
Age and Sex Composition; Rural and Urban Composition; Economic Composition Literacy and Education; Religion/Caste/ Race etc.

Unit-IV: Population Problems and Policies-India
Declining Sex Ratio, Gender issues: Ageing, crime against Women, Human Trafficking, Child Abuse; HIV/AIDS; Population Policy of India.

Books Recommended:
Practical-(GEB-505)

PHOTO AND IMAGE INTERPRETATION

Credit: 2

Unit-I: Basics of Remote Sensing

Electromagnetic radiation; Stages of remote sensing; Resolutions; Aerial photographs: types, border information and geometry; Difference between maps and aerial photographs; visual image interpretation: elements, instruments.

Unit-II: Photogrammetry

Numerical problems on aerial Photogrammetry; Types and determination of photoscale; Determination of height of objects using single vertical aerial photograph; Zeiss test; Construction of instrument base, photo base and stereomodel.

Unit-III: Interpretation of Aerial Photographs

Detection of defined objects; Preparation of image interpretations keys; Interpretation of stereograms: fluvial and industrial; Interpretation of stereopairs.

Unit-IV: Interpretation of Satellite Imageries

Satellite Imageries: referencing, types, border information; Feature identification from multi-band imageries; Interpretation of Fcc for land cover/landuse mapping: salt affected areas, ravenous lands, Chandigarh and Delhi.

Books Recommended:

Unit-I: Basic Concepts

Urban Geography: Definition, Nature and Scope; Evolution of Towns: Ancient, Medieval and Modern Period; Nature of Urbanization: Developed and developing countries.

Unit-II: City System

Morphology and Internal Structure of Cities: Concentric Zone Model, Sector Model, Multiple Nuclei Model; Hierarchy of Cities: Rank Size rule.

UNIT-III: Classification of Cities


Unit-IV: Contemporary Issues


Books Recommended

Unit-I: Introduction

Disaster: Definition and significance; Difference between Hazard and Disaster; Disasters: Nature, Types and Magnitude; Earthquakes, Cyclones, Tsunamis, Floods, Droughts, Landslides, Wars and Industrial Disasters.

Unit-II: Risk and Preparedness

Concept of Risk and Vulnerability, Reduction of Risk, Techniques of Risk Assessment, People’s Participation in Risk Assessment, National And Global cooperation in Risk Assessment; Disaster Preparedness; Concept and Nature; Community Based Planning, Role of Various Agencies and Government Organizations.

Unit-III: Planning and Management

Integral Development Planning for Disaster Management, Pre-Disaster Planning and management; Early Warning and Prediction System; Post- Disaster Management: Rescue, Relief, Rehabilitation; Public Awareness, Stress Management, Role of National and International Agencies in Disaster Management.

Unit-IV: National Perspective

Disaster Prone Areas of India; Seismic Zones, Areas prone to Floods and Droughts, Landslides and Avalanches, Areas prone to Cyclones and Coastal Hazards, Industrial Disaster Areas, National Disaster Policy of India.

Books Recommended

UNIT I:
Study And Interpretation of Topographical Sheets Of Selected Regions on Different Scales.

UNIT II:
Collect the social and economic data of its village/ town from various sources.

UNIT III:
Conduct a socio-economic survey of the households of the selected village.

UNIT IV:
Based on socio-economic data of the households, prepare a critical field-survey report. Photographs and sketches, in addition to maps and diagrams, may supplement the report.

Books Recommended:
Guilford Press, New York.

The students have to visit a village/town to conduct socio-Economic survey. Each student will be required to submit a survey report to be evaluated by external and internal examiner.