M.A./M.Sc. Geography

Syllabus (w.e.f. 2015-2016)
## SEMESTER - I

<table>
<thead>
<tr>
<th>Paper</th>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paper - I</td>
<td>GGM-101</td>
<td>Advanced Geomorphology</td>
<td>4</td>
<td>CC</td>
</tr>
<tr>
<td>Paper - II</td>
<td>GGM-102</td>
<td>Resource and Economic Geography</td>
<td>4</td>
<td>CC</td>
</tr>
<tr>
<td>Paper - III</td>
<td>GGM-103</td>
<td>Regional Geography of India</td>
<td>4</td>
<td>CC</td>
</tr>
<tr>
<td>Practical – I</td>
<td>GGM-104</td>
<td>Cartographic Methods</td>
<td>2</td>
<td>CC</td>
</tr>
<tr>
<td>Practical - II</td>
<td>GGM-105</td>
<td>Quantitative Methods in Geography</td>
<td>2</td>
<td>CC</td>
</tr>
<tr>
<td>Theory Paper - I</td>
<td>GGM-106</td>
<td>Hydrology and Water Resources</td>
<td>4</td>
<td>CB</td>
</tr>
</tbody>
</table>

## SEMESTER – II

<table>
<thead>
<tr>
<th>Paper</th>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paper - IV</td>
<td>GGM-201</td>
<td>Remote Sensing, GIS and GPS</td>
<td>4</td>
<td>CC</td>
</tr>
<tr>
<td>Paper - V</td>
<td>GGM-202</td>
<td>Climatology and Oceanography</td>
<td>4</td>
<td>CC</td>
</tr>
<tr>
<td>Paper - VI</td>
<td>GGM-203</td>
<td>Evolution of Modern Geographical Thought</td>
<td>4</td>
<td>CC</td>
</tr>
<tr>
<td>Practical - III</td>
<td>GGM-204</td>
<td>Remote Sensing and Image Processing</td>
<td>2</td>
<td>CC</td>
</tr>
<tr>
<td>Practical - IV</td>
<td>GGM-205</td>
<td>Socio-Economic Survey</td>
<td>2</td>
<td>CC</td>
</tr>
<tr>
<td>Paper</td>
<td>GGM-206</td>
<td>Land Surveying and GPS</td>
<td>4</td>
<td>SEC</td>
</tr>
<tr>
<td>Theory Paper - II</td>
<td>GGM-207</td>
<td>Human Ecology</td>
<td>4</td>
<td>CB</td>
</tr>
</tbody>
</table>

## SEMESTER - III

<table>
<thead>
<tr>
<th>Paper</th>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paper - VII</td>
<td>GGM-301</td>
<td>Social Geography</td>
<td>4</td>
<td>CC</td>
</tr>
<tr>
<td>Paper - VIII</td>
<td>GGM-302</td>
<td>Urban Geography</td>
<td>4</td>
<td>CC</td>
</tr>
<tr>
<td>Paper - IX</td>
<td>GGM-303</td>
<td>Agriculture Geography</td>
<td>4</td>
<td>CC</td>
</tr>
<tr>
<td>Practical V</td>
<td>GGM-304</td>
<td>Geographical Information Systems</td>
<td>2</td>
<td>CC</td>
</tr>
<tr>
<td>Practical VI</td>
<td>GGM-305</td>
<td>DIP Training</td>
<td>2</td>
<td>CC</td>
</tr>
<tr>
<td>Theory Paper - III</td>
<td>GGM-306</td>
<td>Political Geography</td>
<td>4</td>
<td>CB</td>
</tr>
<tr>
<td>Practical</td>
<td>GGM-307</td>
<td>Advance Statistical Methods</td>
<td>2</td>
<td>AECC</td>
</tr>
<tr>
<td>Practical</td>
<td>GGM-308</td>
<td>Digital Cartography</td>
<td>2</td>
<td>AECC</td>
</tr>
</tbody>
</table>
### SEMESTER - IV

<table>
<thead>
<tr>
<th>Paper</th>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paper - X</td>
<td>GGM-401</td>
<td>Regional Development and Planning</td>
<td>4 CC</td>
</tr>
<tr>
<td>Paper - XI</td>
<td>GGM-402</td>
<td>Population Geography</td>
<td>4 CC</td>
</tr>
</tbody>
</table>

Any One of the following:

| Paper - XII            | GGM-403(A) | Geography of Urban Environment              | 4 CC    |
|                       | GGM-403(B) | Geography of Health and Well-Being          | 4 CC    |
|                       | GGM-403(C) | Geography of Rural Development              | 4 CC    |
|                       | GGM-403(D) | Land Evaluation                             | 4 CC    |
|                       | GGM-403(E) | Gender Geography                            | 4 CC    |
|                       | GGM-403(F) | Geography of Crimes                         | 4 CC    |

| Practical VIII         | GGM-404   | Project                                     | 4 CC    |
| Theory Paper - IV      | GGM-405   | Watershed Management                        | 4 CB    |

### GRAND TOTAL

<table>
<thead>
<tr>
<th>Semester</th>
<th>Core Course (CC)</th>
<th>Choice Based (CB)</th>
<th>Skill Enhancement (SEC)</th>
<th>Ability Enhancement (AECC)</th>
<th>Total Papers</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Theory</td>
<td>Practical</td>
<td>Total</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I</td>
<td>03</td>
<td>02</td>
<td>05</td>
<td>01</td>
<td>-</td>
<td>06</td>
</tr>
<tr>
<td>II</td>
<td>03</td>
<td>02</td>
<td>05</td>
<td>01</td>
<td>01</td>
<td>07</td>
</tr>
<tr>
<td>III</td>
<td>03</td>
<td>02</td>
<td>05</td>
<td>01</td>
<td>-</td>
<td>07</td>
</tr>
<tr>
<td>IV</td>
<td>03</td>
<td>01</td>
<td>04</td>
<td>01</td>
<td>-</td>
<td>05</td>
</tr>
<tr>
<td>Total Papers</td>
<td>12</td>
<td>07</td>
<td>19</td>
<td>04</td>
<td>01</td>
<td>25</td>
</tr>
<tr>
<td>Total Credits</td>
<td>48</td>
<td>16</td>
<td>64</td>
<td>16</td>
<td>04</td>
<td>-</td>
</tr>
</tbody>
</table>
SEMESTER- I
ADVANCED GEOMORPHOLOGY
Paper - I (GGM-101)

Credits: 4

UNIT I: FUNDAMENTAL CONCEPTS

Fundamental concepts in Geomorphology: Concept of time and space; Concept of morphogenetic regions; Concept of dynamic equilibrium; Models in Geomorphology; Recent trends in Geomorphology.

UNIT II: EVOLUTION OF LANDFORMS

Significance of geological structures, climatic factors and the geomorphic processes in the evolution of landforms; Interruption in the evolution of landforms: Tectonic, climatic and base level changes; Slope Form, Processes and Evolution.

UNIT III: GEOMORPHIC PROCESSES AND LANDFORMS

Drainage basin as geomorphic unit; Morphometric Laws; Morphometric analysis; Denudation and Morpho chronology; Soil erosion and its measurement.
Fluvial : Evolution of river valley; Glacial : Glaciations & Forms.
Aeolian : Evolution of arid landscapes ; Coastal Geomorphology : Recession of shorelines and evolution of coastal landforms

UNIT IV: APPLIED GEOMORPHOLOGY

Geomorphologic hazards and mitigation; Geomorphology and Soils; Geomorphology in mineral and Groundwater prospecting; watershed management.

Books Recommended:
UNIT I: FUNDAMENTAL CONCEPTS

Definitions and Scope of Economic Geography: its place in Human Geography, Development of the discipline after Second World War with special reference to New Economic Geography (NEG)

UNIT II: THEORIES AND MODELS

A) Agricultural Land Use – Ricardian Rent theory, Von Thunen’s rent theory with modern interpretations.
B) Basic concepts in location problems; Demand, Scale, Agglomeration and Time dimension in Economic location; Locational Models of Weber and Isard
C) Christaller’s Central Place Theory and modifications by Losch

UNIT III: RESOURCE BASE OF THE ECONOMY

Resource base of the Economy; Concept of Resources, Classification of Resources; Factors of Resource Creation; Resources and Environment – scarcity and sustainability, conversation of resources; Sectors of the Economy: agriculture, manufacturing and tertiary activities.

UNIT IV: TRADE AND EXCHANGE

Concepts of trade and exchange – opportunity costs, absolute, comparative and competitive advantage; Movements of capital and labour; Core-periphery concept in trade; Commodities in world trade; Trade Blocs; The Information Economy – Spatial and transportation implications of e-commerce.

Books Recommended
UNIT I: REGION AND REGIONALIZATION

India as a Geographical Unit; Concept of Region: Scheme of Regionalization: O.H.K. Spate and R.L. Singh, Agro-climatic Regions, Watershed as a Planning Region.

UNIT II: GEOGRAPHY OF INDO-GANGETIC PLAIN

Introduction to Indo-Gangetic Plain; Upper Ganga, Middle Ganga and Lower Ganga Plains: Physiography, Drainage, Climate, Soil; Population and Economy

UNIT III: GEOGRAPHY OF HIMALAYAS

Introduction to Himalayas; A Regional Study of Himalayas: Physiography, Drainage, Climate, Soil, Natural Vegetation, Population and Economy

UNIT IV: GEOGRAPHY OF PENINSULAR INDIA

Introduction to Peninsular India; A Geographical account of Chotanagpur and Deccan plateau: Physiography, Drainage, Climate, Soil; Population and Economy

Books Recommended

UNIT I: FUNDAMENTALS OF CARTOGRAPHY

Maps and their significance; Classification of maps; Theory of communication; Elements of maps: Generalization, Symbolization and Classification; Techniques of mapping: dot, choropleth, isopleths and diagrammatic; Principles of map designing.

UNIT II: RELIEF MAPPING

Relative relief: GH Smith and Robinsons methods; Morphometric Analysis: Drainage Density, Stream order, Elongation ratio, Circularity ratio, Bifurcation ratio.

UNIT III: MAPPING OF SOCIO-ECONOMIC DATA

Population Density; Rural – Urban population; Patterns of irrigation, Location of Industries; Cartograms

UNIT IV: APPLIED CARTOGRAPHY

Any one of following:

1. Topographic mapping
2. Tourist mapping
3. Service and utility mapping

Note: Students will have to prepare a set of ten maps on selected theme

Books Recommended:

QUANTITATIVE METHODS IN GEOGRAPHY
Practical -II (GGM -105)

Credits: 2

UNIT I: MEASURES OF GEOGRAPHICAL PATTERNS

Nearest Neighbour Analysis; Gini’s Co-efficient; Lorenz curves; Location quotient; Rank size rule.

UNIT II: NETWORK ANALYSIS

Indices of transport network efficiency; Compositing the indices of transport network efficiency; Indices of nodal accessibility; Local degree – Road Local degree – Rail. Weighed road capacity and tortousrity ratio; Compositing the indices of nodal accessibility.

UNIT III: METHODS OF PREDICTIONS AND LEVELS OF MEASUREMENT

Levels of measurement; Methods of sampling; Simple linear regression analysis; Plotting of regression line; Plotting of absolute and relative residuals; Explanation of residuals plotted on the maps.

UNIT IV: MEASURES OF DISPARITIES AND POTENTIAL MODELS

Gravity and potential models; Delimitation of hinterlands; Combinational analysis of Weaver,S.M.Rafiulla’s method, Measures of Disparities: Kendall’s ranking method.

Books Recommended:
UNIT I: INTRODUCTION

Definition and scope of Hydrology, Hydrological cycle, Structure and properties of water, inventory of earth’s water resources, quality and quantity of available water, Water as a cyclic resource.

UNIT II: SURFACE WATER DYNAMICS

Surface water: sources and factors affecting quality and quantity; Precipitation: forms and factors; Interception: factors; Runoff: sources and factors affecting runoff; Evaporation: measurement and factors; Evapotranspiration: control and factors.

UNIT III: GROUND WATER DYNAMICS

Ground water: Characteristics of stream flow, Darcy’s Law, permeability, Infiltration, Ground water storage, Ground water aquifers in different rock systems, movement and discharge.

UNIT IV: WATER RESOURCE PROBLEMS

Environmental influences on water resources; sectoral demands for water; urban water supply; water management; water harvesting; water pollution and control.

SUGGESTED READINGS:


SEMESTER II

REMOTE SENSING, GIS AND GPS

Paper – IV (GGM-201)

Credits: 4

UNIT I: BASICS OF REMOTE SENSING

Stages in Remote Sensing data acquisition; Physics of Remote Sensing; Electro Magnetic Spectrum (EMS); EMR and its interaction with atmosphere and earth surface features.

UNIT II: REMOTE SENSING PLATFORMS, SENSORS, AND SATELLITE SERIES

Platforms: Types and their orbital characteristics; Sensors types: active and passive; Sensors systems: whiskbroom and push broom; Satellite series: IRS, SPOT, IKONOS and Quick bird.

UNIT III: DIGITAL IMAGE PROCESSING


UNIT IV: GEOGRAPHIC INFORMATION SYSTEM AND GLOBAL POSITIONING SYSTEM

Components of GIS; Data Structures; Data Base Management System (DBMS); Data Models; spatial data analysis and applications; Fundamentals of GPS; Segments of GPS; GPS Applications.

Books Recommended:

UNIT 1: GENERAL CLIMATOLOGY


UNIT 2: APPLIED CLIMATOLOGY


UNIT 3: GENERAL OCEANOGRAPHY


UNIT 4: APPLIED OCEANOGRAPHY


Books Recommended:

EVOLUTION OF MODERN GEOGRAPHICAL THOUGHT

PAPER: VI (GGM-203)

Credits: 4

UNIT: I GENESIS OF GEOGRAPHICAL THOUGHT
Ancient Geography Contributions of Greek, Roman and Arab Geographers. Impact of voyages; Discoveries and Renaissance on Geographical Thought. Foundation of Scientific Geography (Contributions of Varenius and Kant).

UNIT: II EVOLUTION OF MODERN GEOGRAPHICAL THOUGHT – I
Classical period of modern geography contributions (Humboldt and Ritter) and Darwin’s impact on Geography; Contributions of Ratzel and Blache; Shifting viewpoints in Geography during the latter half of Nineteenth Century.

UNIT: III EVOLUTION OF MODERN GEOGRAPHICAL THOUGHT-II
The debate between Determinist and Possiblists; Geography as science of relationships and as science of distributions. Geography as Chorological science and as Morphology of Landscape.

UNIT: IV CONTEMPORARY GEOGRAPHY POST SECOND WORLD WAR
Exceptionalism and the Schaefer-Hartshorne debate, Positivism and its reactions (behavioral and radical approaches). Post modernism and feminist Geography.

Books Recommended:

10. Martin G.J. 2005. All Possible World. OUP, USA.
UNIT I : REMOTE SENSING AND IMAGE INTERPRETATION

Referencing layout and indent of Landsat TM and IRS imageries; Identification of objects / features on multiband imageries; Detection of defined objects/features; Preparation of Image interpretation keys; Interpretation, classification using aerial photographs

UNIT II : DIGITAL IMAGE PROCESSING

Digital Images: User Interface with Image Processing Software: Image Registration: Image to map and Image to Image; Selection of training sets; Image Classification: Supervised and Unsupervised classification

UNIT III : MAPPING GEOMOGRAPHIC FEATURES

Geomographic mapping using aerial photographs and satellite imageries; Morphometric analysis: Drainage density, Stream order; Channel change.

UNIT IV : URBAN LAND USE / LAND COVER MAPPING

Urban Land use/Land cover classification of Chandigarh / Delhi/ Bangalore / Mumbai / Hyderabad / Kolkata/ Varanasi using IRS data

Books Recommended:

SOCIO- ECONOMIC SURVEY
Practical- IV (GGM -205)

Credits: 2

UNIT- I

Procurement of a topographic map of 1:50,000 to 1:25,000 scale to study the settlements selected in its regional setting.

UNIT- II

Collection of demographic, social & economic data of the village/town from Census Reports to study the temporal changes in the profile of such characteristics. Procurement of a cadastral map of the village/town for field mapping of the features of land-use and land quality. Procurement/preparation of the settlement-site map through rapid survey to map the residential, commercial, recreational (Parks, Playgrounds), educational, religious and other prominent features.

UNIT -III

Selection of sampling site, defining sampling size, and conducting socio-economic survey at households level with a self-structured questionnaire and supplementing the information by personal observations and perceptions.

UNIT- IV

Based on results of the land-use and socio-economic survey of the households, preparation of a critical field-survey report. Photographs and sketches, in addition to maps and diagrams, may supplement the report.

Books Recommended:
Skill Enhancement Course (SEC)
LAND SURVEYING AND GPS
(GGM-206)

Credits: 4

Unit-I: Theory and Principles
Surveying: Definition, classification, objectives, principles; Plane and geodetic surveys; Triangulation: Principles, base line measurement, extension of the base.

Unit-II: Field Work
Levelling by Dumpy level; Resection: (Two point and Three point problem) by Plane Table; Horizontal and Inclined Range Determination by Telescopic alidade; Triangulation by Theodolite

Unit-III: GPS Theory
Overview of Global Positioning System; GPS: Receivers, Satellite Constellations, Segments, Antennas, Signal Codes and errors; Accuracy of GPS measurements; Application of GPS

Unit-IV: Field Work
GPS Surveying and Mapping: Field Exercises using Hand Held GPS

Books Recommended:

UNIT I: INTRODUCTION

Human Ecology: Evolution & Development; Key Concepts: Anthropocentrism, cultural lag; Environmental ethics and institutions.

UNIT II: HUMANS AND ENVIRONMENT

Humans and the Biosphere: Co-evolution and co-adaptation of human system and ecosystems; Resources and technologies; Environment and consumerism: Problems and consequences; Geographies of hunger and health.

UNIT III: HUMANS AND BIOPHYSICAL SYSTEM

Humans as persons and agents of larger social system; Human population: size, growth and biophysical carrying capacity of Earth; Ecosystem: components and functions; Energy Flow: Food chain, Food Web and Trophic Levels; Material Cycles: Nitrogen and Carbon.

UNIT IV: GLOBAL CHANGE ADAPTATION

Environmental Adaptations and behavioral changes; Environmental crises and Management: Eco regional and watershed management strategies; Landscapes restoration and conservation of biodiversity.

Books Recommended: