Syllabus & Regulations
Choice Based Credit System (CBCS) for the Two Years (Four Semesters) Master of Science (M.Sc.) Geography Programme in the Faculty of Science

Effective from 2016-17 onwards

Dr. Ashok Hanjagi
Chairman, BOS
Syllabus & Regulations Governing the Choice Based Credit System (CBCS) for the Two Years (Four Semesters) Master of Science (M.Sc.) Geography Programme in the Faculty of Science

Eligibility for Admission:
Candidates who have passed any bachelor Degree Examinations of Bangalore University or any other Universities are eligible for admission to the course, provided they have secured 50% marks in the optional subjects (45% for SC / ST / Category-I Candidates).

Further, 50% of the seats are reserved for the candidates who have studied Geography as one of the optional subjects. The remaining 50% of seats are reserved for the candidates who have studied any other optional subjects. If vacancies arise in either of the cases inter-case filling up of seats can be considered.

Scheme and Duration of the Course:
M.Sc Geography course consists of 4 semesters in two academic years. First and second semesters will have five theory papers four hard core and one paper is soft core and four practical. Four practical and one theory paper as soft-core. Third semester will have four theory papers (core) of which, three papers are elective and one is open elective and four practical. Fourth semester will have four theory papers (hard core), of which three papers are elective; four practical including project work / Field Work and Field Study Tour.

Students are required to undertake project work and field study tour for 50 marks each as part of practical at the fourth semester. There shall be University examination at the end of each semester. The course pattern and the scheme of examinations are as follows:
Proforma for the Scheme of Study & Examination of Choice Based Credit System, Master of Science in Geography

Semester - I

<table>
<thead>
<tr>
<th>Paper Code</th>
<th>Title of the Paper</th>
<th>Type</th>
<th>Instruction Hour per Week</th>
<th>Total No. of Hours</th>
<th>Duration of Exam</th>
<th>IA Marks</th>
<th>Exam Marks</th>
<th>Total Marks</th>
<th>Credits</th>
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<tr>
<td>HC 1.1</td>
<td>Development of Geographic Thought</td>
<td>Theory</td>
<td>4</td>
<td>52</td>
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<tr>
<td>HC 1.2</td>
<td>Fundamentals of Geographical Information Systems</td>
<td>Theory</td>
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<td>Geography of India/Geography of Trade &amp; Transport</td>
<td>Theory</td>
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<td>Techniques in Physical Geography</td>
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<td>Interpretation of Indian Weather and Topomaps</td>
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<td>HC 1.8</td>
<td>Techniques of Mapping &amp; Mapping Analysis</td>
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<th>IA Marks</th>
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Semester - III

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<th>Exam Marks</th>
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<td>Geography of Resources /World Geography</td>
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<td>Urban Geography / Political Geography</td>
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<td>Population Geography /Industrial Geography</td>
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<td>Interpretation of Aerial Photographs and Satellite Images</td>
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<td>Practical</td>
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<td>Regional Planning &amp; Development</td>
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<td>HC 4.2</td>
<td>Agriculture and Food Security / Economic Geography</td>
<td>Theory</td>
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<td>100</td>
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<tr>
<td>HC 4.3</td>
<td>Geography of Tourism / Environment Geography</td>
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<td>HC 4.4</td>
<td>Cultural Geography / Natural Disaster Management</td>
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<td>HC 4.6</td>
<td>Analysis of Socio- Economic Data</td>
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<td>HC 4.7</td>
<td>Field Study Tour &amp; Viva-voce</td>
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<td>Practical</td>
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**Grand Total Marks of all the four semesters:** 2600

**Duration of the Course:** The duration of the M.Sc. Geography Course shall extend over 4 semesters (two academic years) of 16 weeks or more each with a maximum of 90 actual working days of instruction in each semester.

**Course pattern:** In the faculty of Science, the number of credits per semester may vary from 24 to 26, an average of 25 credits per semester and a total of around 100 credits for the programme. The credits shall be based on the number of instructional hours per week, generally 1 credit per hour of instruction in theory and 1 credit for 2 hours of practical or project work or internship per week.

The courses offered in a programme may be the core, elective and soft courses. There shall be soft core courses of 3 hours of instruction per week in the first and second semesters, open electives in the third semester, electives in the fourth semester, and project work in lieu of one or two theory / practical in the second / third and / or fourth semesters.

**Medium of instruction:** The medium of instruction shall be English only.

**Attendance:** The course (Theory, practical etc.) shall be treated as an independent unit for the purpose of attendance. A student shall attend a minimum of 75% of the total instruction hours in a course including assignments and seminars in each semester. There shall be no provision for condonation of shortage of attendance and a student who fails to secure 75% attendance in a course shall be required to repeat that semester.

**Internal Assessment:** Marks for internal assessment shall be awarded on the basis of Attendance, Test and Assignments/Seminars. The internal assessment marks shall be notified on the department/ college notice board for the information of the students and it shall be communicated to the Registrar (Evaluation) within 10 days before
the commencement of the University examinations, and the Registrar (Evaluation) shall have access to the records of such internal assessment evaluations.

**Board of Examiners (BOE):** Board of examiners constituted by the University shall consist of a Chairman, internal and external members out of which at least one shall be from the Department/College offering the course and at least two external members from other universities. The board shall scrutinize the question papers and shall forward for the approval of university.

**Results:** A candidate should obtain a minimum of 40% marks in each of the papers in the University examination and 50% marks including internal assessment marks. A candidate should obtain a minimum of 50% marks in all Semesters). The candidates who have passed in all the semester examinations are eligible for the M.Sc. Degree in Geography.

**Carry Over:** A candidate who fails in a lower semester examination may go to the higher semester, however, the result of the candidates who have passed the IV semester examination but not passed the lower semester examinations shall be declared as NCL (not completed lower semester examinations). Such candidates shall be eligible for the degree only after completion of all the lower semester examinations.

**Question Paper Pattern:** The Theory exam will be conducting for 70 Marks and it consists of 3 Parts namely Short, Medium and Long answer questions.

- **Part – A** Each questions carries 4 marks and students as to answer 4 questions.
- **Part – B** Each questions carries 8 marks and students as to answer 3 questions.
- **Part – C** Each questions carries 15 marks and students as to answer 2 questions.

Dr. Ashok Hanjagi
Chairman
BOS.PG. in Geography.
I SEMESTER
Paper 1.1: Development of Geographic Thought
Teaching Hour: 52

Unit 1
The Field of Geography: Definition, meaning nature and scope of Geography. Geography as a Social and Natural Science. Evaluation of Geographic Thought. Limits in Geography. Traditions in Geography: Area Differentiation, Landscape Theme, Environment Theme, Spatial Distribution and Geometric theme. Inter-disciplinary and Intra-disciplinary approaches in Geography.

Unit 2

Unit 3

Unit 4

References:
I SEMESTER
Paper 1.2: Fundamentals of Geographical Information Systems
Teaching Hour: 52

Unit 1
Basic Spatial Perspective and GIS Concepts: GIS definitions, concept of spaces, approaches and components, history and development of GIS. Spatial & Non-spatial Data: Data information, data type, data sources, characteristics of spatial and non-spatial data, raster and vector data models, geographical matrix, data stream.

Unit 2

Unit 3
Manipulation and Analysis of Data: Measurement of lengths, perimeter and areas, queries, buffer analysis, topology, neighborhood operations, network operations, overlay analysis, location-allocation analysis problems, & surface analysis. Interpolation and its methods.

Unit 4

References:
I SEMESTER  
Paper 1.3 Advanced Geomorphology  
Teaching Hour: 52 

Unit 1 

Unit 2 

Unit 3 
Process of Weathering and Mass Wasting, Landforms Produced by – Drainage system and drainage patterns. Glaciers, Wind, Underground water and Sea Waves: process of these and land forms produced. - 13

Unit 4 
Slope development; Factors controlling landforms development; Critical Study of the Concept of Cycle of Erosion–W.M.Davis and W. Penk– Recent Trends in Geomorphology. -13

References:
13. J.A. Steers: Unstable Erath
I SEMESTER

Paper: 1.4 (A) Geography of India

Teaching Hour: 52

Unit 1
Physical Setting: Space relationship of India with neighboring countries; Structure and relief; Drainage system and watersheds: Mechanism of Indian monsoons; Tropical cyclones and western disturbances; Floods and droughts; Climatic regions; Natural Vegetation; Soil types and their distributions. Resources: Land, surface and ground water, energy, minerals, biotic and marine resources; Forest and wildlife resources and their conservation; Energy crisis.

Unit 2
Agricultural infrastructure: Irrigation, seeds, fertilizers, power; Institutional factors: landholdings, land tenure and land reforms; Cropping pattern, agricultural productivity, agricultural intensity, crop combination, land capability; Agro and social forestry; Green Revolution and its socio-economic and ecological implications; Significance of dry farming; Livestock resources and white revolution; Aquaculture; Sericulture; Apiculture and poultry; Agricultural regionalization; Agro-climatic zones; Agro-ecological zones.

Unit 3
Industry: Evolution of industries; Locational factors of cotton, jute, textile, iron and steel, aluminum, fertilizer, paper, chemical and pharmaceutical, automobile, cottage and agro-based industries; Industrial houses and complexes including public sector undertakings; Industrial regionalization; Multi-nationals and liberalization, Special economic zones; Tourism including eco-tourism.

Unit 4
Transport, communication and trade: Road, railway, waterway, airway and pipeline networks and their complementary roles in regional development; Growing importance of ports on national and foreign trade; Trade balance; Trade policy; Export processing zones; development in communication and information technology and their impacts on economy and society; Indian space programme.

References:
2. AlkaGautam (2009) Geography of India, Sharadapustakbhawan, University Road, Allahabad – UP.
6. Ranganath (2007) Geography of India, VidhyaniidhiPrakashan, Station Road, Gadag-01.
9. Singh R.L. (1971); India A Regional Geography, Natinal Geographical Society of India, Varanasi, UP.
I SEMESTER

Paper: 1.4 (B) Geography of Trade and Transportation

Teaching Hour: 52

Unit 1
Nature, scope, significance and development of transport geography. Factors associated with the development of transport system; economic, social, cultural and institutional. Economic and regional development and transport development.

UNIT-2
Characteristics and relative significance of different modes of transport: railways, roads, railways, and waterways, pipelines, etc. Structure- accessibility and flow models; network structure, graph theoretic measures, measurement of accessibility, models of network change, linear programming and gravity models.

UNIT-3
Theories related to freight route structure. Bases of spatial interaction, complementarity, intervening opportunities and transferability. Patterns of movement: the type, patterns of movement and transport modes. Transport network; the function, pattern of movement, geometry and transport development.

UNIT-4
Transport policy and planning in India. Urban transport: growth and problem of urban transportation. Environmental degradation: vehicular pollution and congestion alternatives to the transport system in mega cities in India National highway development and planning in India.

Suggest Readings:
11. Mukherji
### I SEMESTER

**Practical: 1.5 Computer Applications in Geography**

**Teaching Hour: 52**

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<th>Exercise No</th>
<th>Title of the Exercise (Total 52 Hrs)</th>
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<td>Basic Operations in Computers</td>
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<td>2</td>
<td>Windows Explorer</td>
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<tr>
<td>3</td>
<td>Creating Geographic related documents in MS – Word</td>
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<tr>
<td>4</td>
<td>Documentation Alignment</td>
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<tr>
<td>5</td>
<td>Mail Merge</td>
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<tr>
<td>6</td>
<td>Maintaining Weather and Climatic data in MS – Excel</td>
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<tr>
<td>7</td>
<td>Demographic data processing using Basic Calculations and formulas</td>
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<tr>
<td>8</td>
<td>Socio-economical Data Interpretation</td>
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<tr>
<td>9</td>
<td>Cartographical maps using MS – PowerPoint</td>
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<tr>
<td>10</td>
<td>Preparing Geographical importance slide shows</td>
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<td>11</td>
<td>Basic P C Maintance for Geographers – Hardware and software</td>
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<tr>
<td>12</td>
<td>Understanding Networking – LAN, MAN and WAN –Wi-Fi</td>
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<td>Email – cc, bcc and other formats</td>
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<td>Web Browsing and Search Engines</td>
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<td>15</td>
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Practical: 1.6 Techniques in Physical Geography

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<th>Title of the Exercise (Total 52 Hrs)</th>
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<td>Profile – Definition, Importance and Uses</td>
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<td>2</td>
<td>Methods Drawing of Profile</td>
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<td>3</td>
<td>Types of Profiles – Serial, Superimposed Profile</td>
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<td>4</td>
<td>Types of Profiles – Projected, Composited and Longitudinal Profile</td>
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<tr>
<td>5</td>
<td>Construction of Land forms through Contour features – Hill, Plateau, George, Escarpment</td>
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<td>6</td>
<td>Construction of Land forms through Contour features – Waterfall, V and U Shaped Valley, Hanging Valley, Cliffs</td>
</tr>
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<td>7</td>
<td>Morphometric Analysis (linear features)</td>
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<td>Morphometric Stream Ordering,</td>
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<td>Bifurcation Ratio and Drainage Density</td>
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<td>Slope Analysis: Meaning, Definition</td>
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<td>Smith’s Method</td>
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<td>Block Diagrams – one point perspective</td>
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<td>14</td>
<td>Block Diagrams – two point perspective</td>
</tr>
<tr>
<td>15</td>
<td>Geological Map Drawing</td>
</tr>
</tbody>
</table>

**Reference:**

5. R.L. Singh (2010) Practical Geography, SharadaPustakBhavan, 11, University Road, Allahabad, UP - India
I SEMESTER

Practical: 1.7 Interpretation of Indian Weather and Topomaps

Teaching Hour: 52

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<td>Conventional Signs and Symbols</td>
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<td>Interpretation of SOI Topomaps: Marginal Information-</td>
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<td>Physiography – Contour, Bench Mark and Spot Height</td>
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<td>Water Bodies - Natural and Man Made Drainage</td>
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<td>Vegetation - Natural and Human Induced Vegetation</td>
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<td>7</td>
<td>Cultural Features - Transportation and Settlements</td>
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<td>8</td>
<td>Special Features Interpretation in Topographical Maps</td>
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<td>9</td>
<td>Components of Indian Daily Weather Maps</td>
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<td>Sources of Weather Data IMD</td>
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<td>Wind Rose</td>
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<td>Other Weather Phenomena.</td>
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References:

### I SEMESTER
#### Practical: 1.8 Techniques of Mapping and Mapping Analysis

**Teaching Hour: 52**

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<tr>
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<td>Representation of Data –Proportional symbols</td>
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**References:**

I SEMESTER
Paper: 1.9 Fundamentals of Cartography

Teaching Hour: 52

Unit 1:

-13

Unit 2

-13

Unit 3
Scope and objectives of map design, controls of map design and constrains in map design. Map Scale: Statement, Representative Fraction and Geographical Scales, Determining and scale. Ground Survey and Positioning: Measuring distance, and direction, Traditional Survey methods, Automated Survey System.

-13

Unit 4
Types of Maps – Perception and Designing, Color and Pattern Creation, Typography and Lettering the map, Map compilation and map layout, Future Cartography. Mapping organization and services in India: SOI, NATMO and NRSC.

-13

References:
Unit 1
Fundamental principles of Climatology; Earth-Sun relationship. Elements of Weather and Climate. Origin, Composition and Structure of Atmosphere. Temperature: Temperature belts of the World; Solar Radiation principles, Heat Budget of the World; Atmospheric circulation; Atmospheric stability and instability; Greenhouse effects, Horizontal and Vertical Distribution of temperature & Inversion of Temperature. Global warming and Global Cooling. – 13

Unit 2

Unit 3

Unit 4
Classification of World Climates: Koppen's & Thornthwaite & Trewarths Classification. Changes in World Climate: Global Warming, Depletion of Ozone layer & Green House Effect. Weather Forecasting, Problems and Prospects of Weather Forecasting in India. Global Climate change and role and response of man in climate changes; Applied climatology and urban climate. Climate changes; Natural and human induced factors. Paleoclimatology. – 13

References
1. Savindra Singh (2005): climatology, PrayagPustakBhawan, 20-A, University Road, Allahabad- 02. UP.
5. Lal D.S. (2005): climatology: SharaduPustakBhawan, 11, University Road, Allahabad - 02, UP.
Unit 1

Unit 2
Bottom relief of the Ocean: Relief of the Atlantic, the Pacific and the Indian Ocean. Physical and Chemical Properties of Ocean waters: Composition, Temperature, Density and Salinity of Ocean water, Ice in the Sea, effects of polar Ice on the Atmospheric circulations. -13

Unit 3

Unit 4

References:
II SEMESTER
Paper: 2.3 Basics of Remote Sensing

Teaching Hour: 52

Unit 1

Unit 2
Introduction to aerial photography; purpose of photography, scale of photography, types of aerial photography, time and season of photography. Basic geometric characteristics of aerial photographs; types of aerial photographs, scale, ground coverage and resolution of aerial photos, tilt and relief displacement. Components of the Camera, Film, Aerial Platforms Binocular observation of stereoscopic photographs, accommodation and convergence and stereoscopes. Elements of Aerial photo interpretation: Formats of Imageries: Digital and Analog data.

Unit 3

Unit 4

References:
II SEMESTER
Paper: 2.4 (A) Geography of Settlements
Teaching Hour: 52

Unit 1

Unit 2
Rural Settlements – Types & patterns of Rural Settlements, House Types, Morphology and Functions of Rural Settlements; Rural Service Centers and their Role in Urbanization Process. Indian Rural Settlements in Different Micro-Environmental Conditions: (a) Mountains (b) Desert Region (c) In the vicinity of Urban Centers.

Unit 3

Unit 4

References:
II SEMESTER
Paper: 2.4 (B) Geography of Karnataka
Teaching Hour: 52

Unit – I

Unit – II

Unit – III

Unit – IV

References:
2. Geography of Karnataka by S.S.Nanjannavar
3. Physical Geography: R. N. Tikka
4. Misra R.P Geography of Mysore State
5. NBK Reddy and Murthy G.S Regional Geography of Mysore State
6. Director, Census Reports Published by Govt. of Karnataka
7. Karnataka State Gazetteer Volume- I & II
## II SEMETER
### Practical: 2.5 Geo-Surveying

**Teaching Hour: 52**

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<th>Title of the Exercise(Total 52 Hrs)</th>
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<td>Surveying – Introduction, Importance and Types</td>
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<td>Chain Surveying</td>
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<td>Plane Table Survey</td>
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<td>Total Station – Surveying line patterns</td>
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<td>Total Station – Surveying Area patterns</td>
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<td>GPS – Introduction, Segments and Applications</td>
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<td>Handling GPS Instruments – Handle GPS</td>
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<td>Extracting Point, Line and Polygon Features</td>
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<td>DGPS – Base point extraction</td>
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<td>DGPS – High accuracy point extractions</td>
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<td>15</td>
<td>Plotting GPS points into graphs sheets</td>
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### Reference:
## II SEMESTER
### Practical: 2.6 Statistical Methods in Geography

**Teaching Hour: 52**

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<th>Exercise No</th>
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<td>Processing of Data: Data, Preparation of Frequency Table,</td>
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<td>Graphical Presentation of Frequency - Histograms,</td>
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<td>Frequency Polygon and O-give Curves.</td>
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<td>Measurement of Central Tendency – Meaning, Uses</td>
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<td>Mean, Median and Mode – ungrouped data</td>
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<td>Mean, Median and Mode – grouped data</td>
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<td>Measures of Dispersion: Mean Deviation – grouped and ungrouped</td>
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<td>8</td>
<td>Standard Deviation – grouped and ungrouped</td>
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<td>Quartile Deviation – grouped and ungrouped</td>
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<td>10</td>
<td>Coefficient Variation, Quartiles, Deciles and Percentiles – ungrouped data</td>
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<td>11</td>
<td>Coefficient Variation, Quartiles, Deciles and Percentiles – grouped data</td>
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<td>12</td>
<td>Measures of Association: Correlation- Meaning and Methods</td>
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<td>Rank Order Correlation</td>
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<td>Product Moment Correlation</td>
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<td>Regression Coefficients.</td>
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### References:

## II SEMESTER
### Practical: 2.7 Map Projections

**Teaching Hour:** 52

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<tr>
<th>Exercise No</th>
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<tr>
<td>1</td>
<td>Map Projection Meaning, Classification</td>
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<td>Calculation for Map Projection</td>
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<td>5</td>
<td>Simple Conical Projection with one and two Standard parallels</td>
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<td>Bonne’s Conical Projection</td>
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<td>Conical Equal Area Projection with Standard Parallel</td>
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<td>Zenithal Projection</td>
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<td>Gnomic Polar Zenithal Projections – equal area and equidistant</td>
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<td>Natural and Simple Cylindrical Projection</td>
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<td>Sinusoidal or Sanson – Flamsteed Projection</td>
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<td>Mollweide’s Projection</td>
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<td>14</td>
<td>Gall’s Projection and Globular Projection</td>
</tr>
<tr>
<td>15</td>
<td>International Map Projection</td>
</tr>
</tbody>
</table>

1. Elements of Practical Geography; R.L. Singh and P.K. Dutt; 1979; Student’s Friend Publication; Allahabad.
2. Practical Geography - A systematic Approach; AshisSarkar; 2012; Orient Blackswam Pvt Ltd; Kolkata.
3. Understanding Maps; J.S. Keats; 1982; Halsted Press; USA.
5. Advanced Practical Geography; PiyushkantiSaha, ParthaBasu; 2015; ArunabhaSen, Kolkata.
## II SEMESTER
Practical: 2.8 Mapping through Bhuvan

### Teaching Hour: 52

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<tr>
<th>Exercise No</th>
<th>Title of the Exercise (Total 52 Hrs)</th>
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<tbody>
<tr>
<td>1</td>
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<td>Bhuvan 2D and 3D</td>
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<td>Downloading free data from the server</td>
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<td>Creating GIS Maps</td>
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<td>Creating Point, Line and Polygon Layers</td>
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<td>Ocean Services</td>
</tr>
<tr>
<td>15</td>
<td>Bhuvan Panchayath Portal</td>
</tr>
</tbody>
</table>

6. bhuvan.nrsc.gov.in/disaster
8. bhuvan.nrsc.gov.in/data
II SEMESTER
Paper 2.9 Research Methodology

Teaching Hour: 52

Unit I
Research: Meaning, definitions, objectives, characteristics, types, steps involved in Research, Research ethics, approaches, significance, research and scientific methods, research process, criteria of good research, research problems faced by the researchers in India. Review of literature, need for review of literature. -13

Unit II
Forms of Research: what is research problem, selecting the research problem, necessity of defining the problem, Research paper, article, workshop, Seminars, Conference and Symposia. Research design: Meaning, need important concepts relating to research design, different research design, developing a research plan. -13

Unit III
Research methods versus methodology, research and scientific methods. Sampling methods: Need for sampling some fundamental definitions, sampling theory. Methods of data collection: Collection of Primary data, observation method, interview method, questionnaire methods, collection of secondary data, selection of appropriate method for collection of data, case study method. -13

Unit IV
Hypothesis, Basic concepts concerning testing of hypothesis, limitations of the tests of hypothesis. Interpretation and report writing: Meaning of interpretation, why interpretation, techniques of interpretation, precaution in interpretation, significance of report writing, different steps in report writing, layout of the research report, types of reports, oral presentation, conclusion, findings and suggestions. Bibliography and reference, field photographs. -13

References:

Text Books
4. Leedy, P. D. and J.E. Ormrod 2001: Practical Research: Planning and Design,

Web resources:
- http://www.intute.ac.uk/socialsciences/
III SEMESTER
Paper 3.1(A). Geography of Resources

Teaching Hour: 52

Unit 1
Consciousness and Definition of Resources: The Concept of Resource- Wealth- Resistance and Neutral Stuffs. Land as a resource, resource creating Factors, Classification of Resources. -13

Unit 2
**Soil:** Soil Formation, Factors Influencing Soil Formation, Soil Characteristics and Soil Profile, Classification of Soil (zonal types) Soil erosion, Soil Conservation. **Forest Resources:** Types & distribution, Forest Products-Timber and Paper, Forest Decay, Forest Conservation. -13

Unit 3
**Water and Forest Resources:** Water Resources and its Development in India, Ground and surface water, water cycle and water budget; Conservation of water. **Livestock:** Livestock Rearing in the World and Live Stock Regions, Livestock Products: Milk, Meat and Wool. Marine resources; Major fishing Grounds of the world. -13

Unit 4

References:
2. Zimmerwan- World resources and industries
Unit – 1
Eurasia - Physiography: Mountains, Plateaus, Plain, Coastal Areas, Deserts, Rivers. Issues and Challenges: Drinking Water and Water Sharing; Malnutrition; Outbreak of Viral Diseases; Antisocial Activities – Terrorism; Population Issues – Gender Discrimination, Age-related Population Pyramid.

Unit – 2:
America – Physiography: Mountains, Plateaus, Plain, Coastal Areas, Deserts, Rivers. Issues and Challenges: Drinking Water and Water Sharing; Malnutrition; Outbreak of Viral Diseases; Antisocial Activities – Terrorism; Population Issues – Gender Discrimination, Age-related Population Pyramid.

Unit – 3

Unit – 4
Oceania – Physiography: Mountains, Plateaus, Plain, Coastal Areas, Deserts, Rivers. Issues and Challenges: Drinking Water and Water Sharing; Malnutrition; Outbreak of Viral Diseases; Antisocial Activities – Terrorism; Population Issues – Gender Discrimination, Age-related Population Pyramid.

References:

III SEMESTER
Paper: 3.2(A) Urban Geography
Teaching Hour: 52

Unit 1
Nature of Urban Geography-Definition of Urban Settlements (Towns, Cities and Metropolitan); Census concept of urban areas, Urbanization through times; Current Factors, Trends of Urbanization in the World and India, Growth of the World and Indian lading cities. Problems of urbanization & remedies. National urbanization policy.

Unit 2

Unit 3
Urban Functions- Basic and Non-Basic; Hierarchical patterns of Indian cities; Rank-Size Rule; Central Place Theory; Functional Classification of Towns by C.D. Harris and H.J. Nelson. Urban Issues & Challenges: Water supply, traffic congestion, solid waste, smog, sewage and drainage system. Ecological process of urban growth.

Unit 4

References:
8. Mayer H.M. & Kohn CF (1967) Urban Geography, Central Depot, Allahabad, India
14. www.brixworth.demon.co.uk/leeds/
III SEMESTER
Paper: 3.2 (B) Political Geography

Teaching Hour: 52

Unit 1
Definition, scope and nature of Political Geography; Approaches to the study of Political Geography: Whittlesey’s law-landscape Approach, Hartshrone’s Functional Approach, Gottmann’s Political partitioning model, Jone’s Unified field theory: Idea-area chain; Political Systems Model: Contemporary relevance to these approaches, Soja’s Analysis of Political systems, Wallerstein’s World-Systems Approach; Recent trends in Political Geography; Concept of nation and state: geopolitics; politics of world resources.

Unit 2
Geography and Federalism; political regions of the world; nature and administrative area and geography of public policy and finance; resource development and international politics; Geographical basis of Indian federalism. Frontiers & Boundaries: Concept of Frontiers, Boundaries, Distinction between Boundaries & Frontiers. The International Boundary of India & related issues.

Unit 3
Global strategic views: Heartland Theory, Rimland theory & Mahan’s Sea Power concept. State reorganization; regional consciousness and national integration. The international boundary of India and related issues; India and geopolitics of the Indian Ocean.

Unit 4
India’s Political Aspects: State reorganization; Emergence of new states; Regional consciousness and interstate issues; Cross border terrorism; India’s role in world affairs; Geopolitics of South Asia and Indian Ocean Realm. Electoral Geography: Trends in Electoral Geography, Geography of Voter participation, Regional Stability, Regional Realignments, Contextual Effect, A Systems model for electoral geography, A revised model of electoral Geography.

References:
1. Adhikari; Political Geography; Rawat Publications
5. deBlij. H.J. 1972; Systematic Political Geography, NewYork, Wiley
III SEMESTER
Paper: 3.3 (A) Population Geography

Unit 1

Unit 2
Population Change: Concept of over, under & optimum population; Growth of Population in the World and India, Components of Population Change, Fertility, Mortality and Migration. Determinants of Fertility and Mortality, Demographic Transition Theory. -13

Unit 3
Migration- Meaning & Types, Causes & Consequences, Theories of Migration Ravenstein & Lee. Population composition of world with special reference to India, Age, Sex composition; Population dividend. -13

Unit 4

References:
Unit 1

Unit 2
Factors of localization, Location of Industries with special reference to Cost Structure of Land, Labour, Capital and Transportation; Resource based and footloose industries; Scale of External Economies and Historical Accidents. -13

Unit 3
Classification of Industries; Theories and Models of Industrial Location: Weber, Losch, Isard and Hoover. Methods of Delineating Manufacturing Regions: Industrial Regions of the World; Industrial policy. World industries and their patterns; industrial decentralization and industrial policy; industrial complexes and industrial regionalization of backward areas and rural industries. Information Technology industries and development. -13

Unit 4
Industry: Evolution of industries; Revolution of industries; Industrial houses and complexes including public sector undertakings; Industrial regionalization; Multi-nationals and liberalization, Special economic zones; Tourism including eco-tourism Industrial Hazards: Air, Water, Land and its Impact on Health & Occupation. Role of Globalization on Industrial Sector; Application of Remote Sensing in Industrial Geography. -13

References:
### III SEMESTER
Practical: 3.4 Interpretation of Aerial Photography and Satellite Images  
**Teaching Hour:** 52

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<td>Comparison of features in Toposheets and Aerial Photographs</td>
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<td>2</td>
<td>Comparison of features in Aerial Photographs and Satellite imageries.</td>
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<td>3</td>
<td>Comparison of features in Toposheets and Satellite imageries</td>
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<td>Determination of Aerial Photo scale</td>
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<td>5</td>
<td>Procedures of acquiring Aerial Photographs</td>
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<td>Types of Aerial Photographs</td>
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<td>Medium of Aerial Photographic Interpretation</td>
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<td>Elements of Aerial Photographs</td>
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<td>10</td>
<td>Stereographic Interpretation of Aerial Photographs</td>
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<td>Identification of features through signatures, color identifications</td>
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<td>14</td>
<td>Preparation of Thematic maps using the satellite imagery</td>
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<td>15</td>
<td>Interpretation Methods</td>
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#### References:
### III SEMESTER
#### Practical 3.5 GIS

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<td>GIS Interpretation Procedure</td>
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<td>Measurement of Scales Nominal, Ordinal and Ratio</td>
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<td>Extraction of Geographical features through toposheets</td>
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<td>Vector Data Model</td>
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<td>11</td>
<td>Rainfall Variability and Intensity Map</td>
</tr>
<tr>
<td>12</td>
<td>Tourism Interest Maps</td>
</tr>
<tr>
<td>13</td>
<td>Model Creation</td>
</tr>
<tr>
<td>14</td>
<td>Identification of Rocks</td>
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<tr>
<td>15</td>
<td>Identification of Minerals</td>
</tr>
</tbody>
</table>

### References:

### III SEMESTER
**Practical 3.6 Open Source GIS**

**Teaching Hour: 52**

<table>
<thead>
<tr>
<th>Exercise No</th>
<th>Title of the Exercise (Total 52 Hrs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Introduction to Spatial Analysis and Working with Software</td>
</tr>
<tr>
<td>2</td>
<td>Geo-referencing and Projecting Raster Data</td>
</tr>
<tr>
<td>3</td>
<td>Creating Vector Data Model and Projecting</td>
</tr>
<tr>
<td>4</td>
<td>Digitizing – Point, Line and Polygon</td>
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<tr>
<td>5</td>
<td>Special Digitizing features adjoining polygon, split and joining</td>
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<tr>
<td>6</td>
<td>Creating Attributes – Character, Numbers and Float</td>
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<td>7</td>
<td>Labeling Special features</td>
</tr>
<tr>
<td>8</td>
<td>Symbology and Typography</td>
</tr>
<tr>
<td>9</td>
<td>Map Layout and Exporting Map in Different Format</td>
</tr>
<tr>
<td>10</td>
<td>Unique Symbol Maps – Dot, Classified, Unique Value</td>
</tr>
<tr>
<td>11</td>
<td>Cartographic Maps – Choropleth, Bar, Pie and Stacked</td>
</tr>
<tr>
<td>12</td>
<td>Query Building and Executing</td>
</tr>
<tr>
<td>13</td>
<td>Buffer Analysis</td>
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<tr>
<td>14</td>
<td>Overlay Analysis</td>
</tr>
<tr>
<td>15</td>
<td>Interpreting Spatial Analysis Maps</td>
</tr>
</tbody>
</table>

**References:**

## III SEMESTER
Practical: 3.7 Techniques in Human Geography

**Teaching Hour: 52**

<table>
<thead>
<tr>
<th>Exercise No</th>
<th>Title of the Exercise (Total 52 Hrs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Network Analysis: Alfa, Beta and Gama indices</td>
</tr>
<tr>
<td>2</td>
<td>Accessibility Matrices: ‘C’ Matrix</td>
</tr>
<tr>
<td>3</td>
<td>Accessibility Matrices: Shortest Path Matrix.</td>
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<td>4</td>
<td>Nearest Neighbour Analysis</td>
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<td>5</td>
<td>Location Quotient</td>
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<td>6</td>
<td>Rank Size Relationship</td>
</tr>
<tr>
<td>7</td>
<td>Functional Classification of Towns</td>
</tr>
<tr>
<td>8</td>
<td>Analysis of Crop combination and Mapping – J.C. Weaver’s Method</td>
</tr>
<tr>
<td>9</td>
<td>Analysis of Crop combination and Mapping - Doi’s Method</td>
</tr>
<tr>
<td>10</td>
<td>Analysis of Crop combination and Mapping - Rafiuallah’s methods</td>
</tr>
<tr>
<td>11</td>
<td>Crop Diversification</td>
</tr>
<tr>
<td>12</td>
<td>Crop Intensity</td>
</tr>
<tr>
<td>13</td>
<td>Index of Diversification,</td>
</tr>
<tr>
<td>14</td>
<td>Population Potential</td>
</tr>
<tr>
<td>15</td>
<td>Centrographic Analysis</td>
</tr>
</tbody>
</table>

**References:**

III SEMESTER
Paper 3.8: Geography for All

Teaching Hour: 52

Unit 1

Unit 2

Unit 3

Unit 4

References:
2. AlkaGautam (2009) Geography of India, Sharadapustakbhawan, University Road, Allahabad – UP.
6. Ranganath (2007) Geography of India, VidhyanidhiPrakashan, Station Road, Gadag-01.
9. Singh R.L. (1971); India A Regional Geography, National Geographical Society of India, Varanasi, UP.
IV SEMESTER
Paper: 4.1 Regional Planning and Development
Teaching Hour: 52

Unit 1
Regional concept in Geography: Types, hierarchy and characteristics of regions, Delineation methods of regions – Formal, Functional and Nodal. Geography and regional planning. Concept and scope of Regional Planning. Regional Approaches. Principles, methods, techniques of regional planning, need for planning. -13

Unit 2

Unit 3
Concept of Development, Indicators of development. Regional imbalance. Regional development strategies. Problems and issues in regional planning. Planning for sustainable development. Regionalization of India: Based on natural, economic and administration (macro and meso levels only). Regional policies in Indian five-year plans, experience of regional planning in India; Evolution, nature and scope of town planning with special reference to India; fundamentals of town and country planning. -13

Unit 4

References:
IV SEMESTER
Paper: 4.2 (A) Agriculture & Food Security
Teaching Hour: 52

Unit 1
Origin & Evolution of Agriculture; Determinants of Agriculture: Physical, Socio-Economic, Cultural, Institutional, Technological and Political. Agriculture system of the world Bio-fuel cultivation and extraction; recent trends in organic farming and foam mechanization; farming systems and sustainability.

Unit 2
Land Holding and Land tenure Systems, Land Use Policy and Planning, Irrigation and Dry-farming; social forestry; agro-forestry; post-harvest technology and value addition; importance of horticulture and floriculture; high-tech horticulture (green / poly house cultivation).

Unit 3

Unit 4

References:
IV SEMESTER
Paper: 4.2 (B) Economic Geography

Teaching Hour: 52

Unit 1
Nature, Scope and importance of Economic Geography, Location of economic activities and spatial organization of economies; Sectors of economy: Primary, secondary, tertiary and quaternary. Economy and economic Geography. – 13

Unit 2

Unit 3
Knowledge-based Technologies: Electronic age, Spatial Information Technology, Telecommunication, High tech-transport, Effects of Liberalization, Privatization and Globalization (LPG) on Economic activities in the World and India. -13

Unit 4

References:
3. Zimmerwan- World resources and industries
Unit 1

Unit 2

Unit 3
Infrastructural Approach for the development of Tourism—Mode of transportation, Agencies, Guides, License, Hotels, Resorts, Youth Hostels, Home stays, Govt. TB., Role of Foreign Capital and Impact of Globalization on Tourism, Environmental Law and Tourism Government Policies for Planning and Promotion of Tourism in India. State level tourism planning in India with special reference to Karnataka.

Unit 4

References:
IV SEMESTER
Paper: 4.3 (B) Environmental Geography
Teaching Hour: 52

Unit 1

Unit 2

Unit 3

Unit 4

References:
IV SEMESTER  
Paper: 4.4 (A) Cultural Geography  
Teaching Hour:  52

Unit 1  
Nature and scope of Cultural Geography; Concept of Culture and cultural areas; Elements of Culture, Convergence and Divergence of Culture; Cultural Change. Cultural Diversity: emergence of man and races of mankind; cultural revolution of man.  

Unit 2  
Human Races; Caucasoid, Mongoloids and Negroids; World’s Major Regions; Major Languages of the World; India’s Cultural Regions. Major cultural realms of the world; Dwelling place as cultural expressions. Ethnic Groups. Case Study, Bushman, Pygmies and Eskimos; Theories of tribal groups; Tribal areas and their problems; Tribals of India; Economy and society of tribal groups.  

Unit 3  
Concept of Social Well-Being: Cultural Indicators; historical perspectives on unity and diversity; religion and secularization. Industrialization and its Impact on Culture and Modernization Broad Features and Impact on Culture.  

Unit 4  
India’s Cultural Setting: Historical perspective of of Indian Society; Racial, linguistic and ethnic diversities; religious minorities; Major tribes, tribal areas and their problems; Cultural Regions; Growth, distribution and density of population; Demographic attributes; Sex ratio, age structure, literacy rate, work-force, dependency ratio, longevity; Inter-regional, intra-regional and international migration and associated problems; Population problems and policy; Health indicators.  

References:  
5. www.fortunecity.com/victorian/updike/188.culture.html  
IV SEMESTER
Paper 4.4 (B) Natural Disaster Management
Teaching Hour: 52

Unit 1

Environment hazards & disasters: Meaning & approaches, Causes and consequences of disaster: Physical, economic and cultural, National and International organizations into disaster management. Types of environmental hazards and disaster: Natural disaster - Earthquake, tsunamis, landslides, volcanic eruption, cyclones, tornados, floods, droughts, heat waves and cold waves. Man induced hazards - Soil erosion, release of toxic chemicals, nuclear explosion, population explosion and resultant environmental disasters.

Unit 2

Emerging approaches to Disaster management: (1) Pre-disaster stage (Preparedness) - hazard zonation maps-predictability and forecasting warning, land use zoning, Information, Education & Communication (IEC) Disaster resistance house construction, Population reduction in vulnerable area and awareness. (2) Emergency Stage- Rescue training for search and operation at national and regional level, ground management plan preparation, immediate relief, Assessment surveys. (3) Post disaster stage rehabilitation – Political administrative aspects, social aspect, economic aspect, cultural aspect and environmental aspects.

Unit 3

Natural Disaster mitigation: Relief measure, role of GIS in Relief measures, role of GPS in search and rescue, role of Remote sensing in prediction of hazards and disasters, measures of adjustment of natural hazards.

Unit 4

Disaster in Indian context: A regional survey of Land Subsidence, Coastal Disaster, Cyclonic Disaster & Disaster in Hills, terror attacks, communal clashes, Remedial measures. National and international policies for disaster management.

References:
1. R.B.Singh (Ed) ,1990, Environmental Geography, Heritage Publishers New Delhi
5. H.K. Gupta (Ed), (2003),Disaster Management, Universiters Press, India.
6. R.B. Singh,(1994),Space Technology for Disaster Mitigation in India (INCED), University of Tokyo.
9. R.K. Bhandani An overview on Natural & Man made Disaster & their Reduction ,CSIR, New Delhi
10. M.C. Gupta, (2001),Manuals on Natural Disaster management in India, National Centre for Disaster Management,IIPA, New Delhi.
IV SEMESTER
Practical: 4.5 Analysis of Climatic Data
Teaching Hour: 52

<table>
<thead>
<tr>
<th>Exercise No</th>
<th>Title of the Exercise (Total 52 Hrs)</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Climate and Weather – Measurements units</td>
</tr>
<tr>
<td>2</td>
<td>Diagram of Weather and climate instruments</td>
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<tr>
<td>3</td>
<td>Climatic graphs: Introduction, Types</td>
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<tr>
<td>4</td>
<td>Hyther-graphs</td>
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<td>5</td>
<td>Climo-graphs</td>
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<td>6</td>
<td>Ergo-graph.</td>
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<td>7</td>
<td>Thermo-isopleths</td>
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<td>8</td>
<td>Rainfall distribution and Dispersion</td>
</tr>
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<td>9</td>
<td>Rainfall variability</td>
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<tr>
<td>10</td>
<td>Classification of climate :a) Application of Koppen’s method of climatic classification</td>
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<td>11</td>
<td>Classification of climate :b) Application of Thornthwaite’s scheme of classification of climates -- water budget, moisture index.</td>
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<tr>
<td>12</td>
<td>Construction of water budget diagram using Precipitation &amp; potential evapotranspiration data</td>
</tr>
<tr>
<td>13</td>
<td>Monsoon Map – Distribution of Rainfall</td>
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<td>14</td>
<td>World Climatic Zones</td>
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<td>15</td>
<td>Indian Climatic Zones</td>
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</table>

References:
IV SEMESTER
Practical: 4.6 Analysis of Socio - Economic Data
Teaching Hour: 52

<table>
<thead>
<tr>
<th>Exercise No</th>
<th>Title of the Exercise (Total 52 Hrs)</th>
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<tbody>
<tr>
<td>1</td>
<td>Graphs and Diagrams of socio-economic data</td>
</tr>
<tr>
<td>2</td>
<td>Types of Graphs and its importance</td>
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<td>3</td>
<td>Simple Line and Bar Graphs</td>
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<td>4</td>
<td>Compound Bar Graph</td>
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<td>5</td>
<td>Graphs-Triangular Graphs,</td>
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<td>6</td>
<td>Semi-log Graphs</td>
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<td>7</td>
<td>Log-log graphs</td>
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<td>8</td>
<td>Population Pyramid or Age sex Pyramid</td>
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<td>9</td>
<td>Rank Size Rule</td>
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<td>10</td>
<td>Industrial Diversification - Hierarchy of Industrial centers</td>
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<td>11</td>
<td>Gravity model</td>
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<td>12</td>
<td>Cumulative graph</td>
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<td>13</td>
<td>Deviational graph</td>
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<td>14</td>
<td>Scatter diagram</td>
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<tr>
<td>15</td>
<td>Logarithmic &amp; Semi-logarithmic graphs</td>
</tr>
</tbody>
</table>

References:
Field Study Tour is a part of curricula in M.Sc. IV Semester. Study tour is compulsory and to be conducted between end of the III Semester and in the beginning of the IV Semester for a duration of two weeks. Study tour report submission is compulsory. Students are required to go to the Field Study Tour which is an exploratory topic of geographical importance based on empirical evidences.

At least five places of geographical importance in India like Western Ghats, Aravali Range, Coastal Area, Northwestern Desert, Northern Plain and Himalayan Region and cities located in these regions have to be selected and visited. The detailed geographical, geological, environmental factors for these regions have to be explained. Students need to study environmental impacts of major cities located in these regions. The tour report has to be done with the consultation of the staff-in-charge and has to be submitted to the department at the time of 4th semester examination. Viva-Voice based on study tour report would be conducted at the end.

References:
IV SEMESTER
Practical: 4.8 Project & Viva-voce

Teaching Hour: 52

1. The students of M.Sc Geography 4th Semester may have to be selected a specific theme / topic for a Project Work. The students may select some of the following themes for their project.
   a. Land Evaluation
   b. Land-use / Land cover Analysis
   c. Water Sources
   d. Slope Studies
   e. Climatic Change
   f. Settlement Studies
   g. Agriculture Studies
   h. Health Studies
   i. Infrastructure Studies
   j. Vegetation Studies

2. GIS, GPS & RS methods have to be used with appropriate primary and secondary data.

3. The students should follow the research guidelines by reading Research Methodology before taking up the Project Work.

4. The Project should not cross 50 pages including photos, references and tables.

5. Project work must include quality maps, diagrams and flowcharts.

6. The project report should include followings:
   a) Title of the project
   b) Introduction
   c) Review of literature
   d) Study Area
   e) Data sources
   f) Main Objective
   g) Materials and Method
   h) Results & Discussion
   i) Conclusion
   j) Photos
   k) References

Above work has to be done with the consultation of the staff-in-charge. Viva-Voice would be conducted at the end.

References: