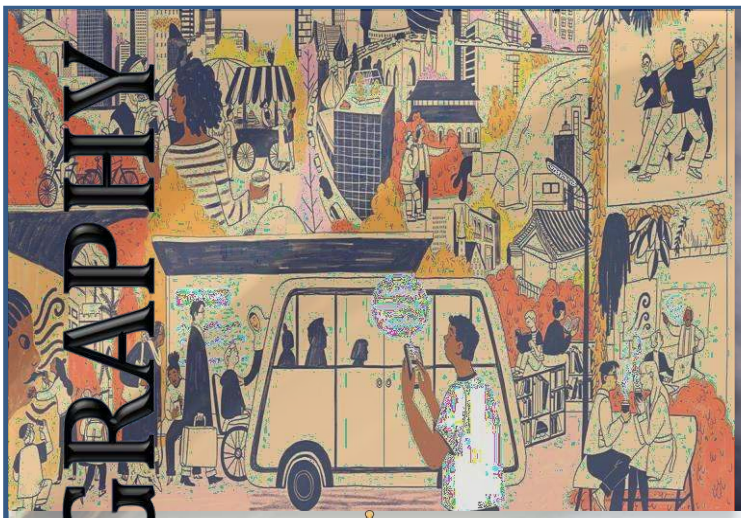


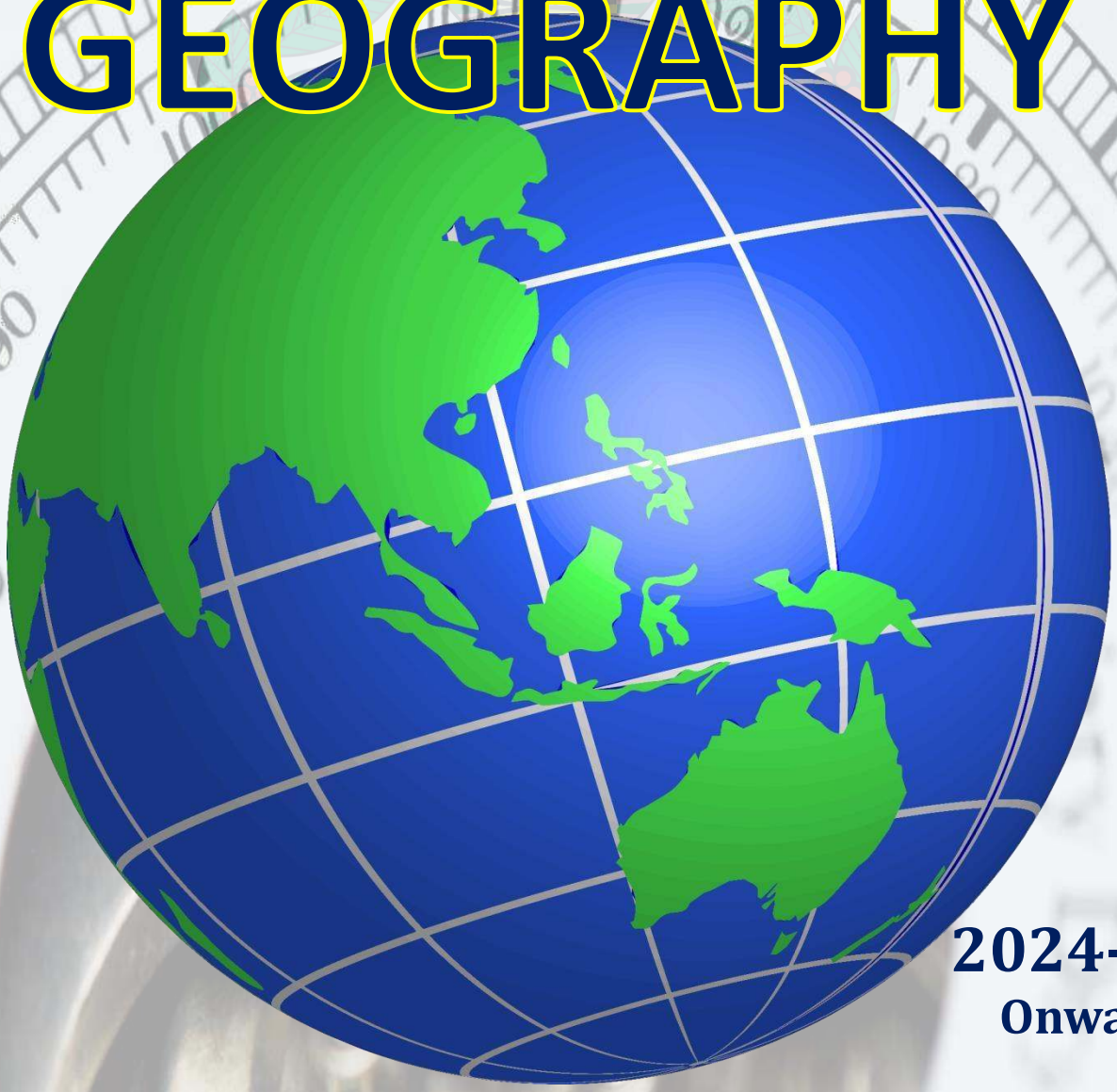
# SYLLABI OF M.Sc. IN GEOGRAPHY

(CHOICE BASED CREDIT SYSTEM- SEMESTER SCHEME)

## MANGALORE UNIVERSITY

## DEPARTMENT OF STUDIES AND RESEARCH IN

# GEOGRAPHY



**2024-25**

**Onwards**

**Annexure - I**

# MANGALORE UNIVERSITY

## MANGALAGANGOTHRI- 574 199

## Department of Studies and Research in Geography

(CHOICE BASED CREDIT SYSTEM- SEMESTER SCHEME)

# Syllabus for M.Sc. Programme in

# GEOGRAPHY

(Revised from the Academic Year 2024-25 onwards)

# Mangalore University
# M.Sc. Degree Programme in Geography

## CHOICE BASED CREDIT SYSTEM (CBCS) SEMESTER SCHEME, COURSE PATTERN AND SCHEME OF EXAMINATION

(Year 2024-25 onwards)

### PREAMBLE

Revision of syllabi for the two years Master Degree (Choice Based Credit System-Semester Scheme) Programme in Geography.

The PG. BOS in Geography has revised and prepared the syllabi (CBCS) for all semesters-M.Sc. Geography, in its meeting held on 16.07.2024, which syllabi will be implemented from the academic year 2024-25. (Ref: No: MU/REG/SYN/S4/17/2022-32978 Dated: 03-07-2024). The Hard Core, Soft Core and Open Elective Courses spread out across the four semestershave been revised, wherever necessary, with the total credits amounting to 91 for the entire programme.

Accordingly, the PG BOS in Geography has prepared the syllabi, consisting of 12 Hard Core (theory) courses and 7 Practical Courses spread across 1$^{st}$ 2$^{nd}$, 3$^{rd}$ and 4$^{th}$ semesters with the provision of offering project work in lieu of one of the Practical Courses in the 4$^{th}$ Semester. Elective Courses are offered in the 2$^{nd}$ and 3$^{rd}$ semesters for students of other departments, each Course having 3 credits. Project Work having 4 credits is offered in the 4$^{th}$ Semester. Total number of credits for Hard Core courses is 52. The BOS has also recommended that the Department offer Soft Core Courses with a total of 12 credits in the 2$^{nd}$, 3$^{rd}$ and 4$^{th}$ Semesters. The distribution of Soft-Core Courses across the semesters is as follows: 2$^{nd}$ semester- 1 Soft Core Course out of a choice of two Courses, 3$^{rd}$ Semester- 1 Soft Core Course out of a choice of two Courses, 4$^{th}$ Semester- 2 Soft Core Courses out of a choice of 4 Courses. All the Soft-Core Courses are of 3 credits. The Programme offers Practical Courses with a total of 21 credits. The distribution of these Practical Courses across the semesters is as follows: 2 Practical Courses each in 1$^{st}$ 2$^{nd}$ and 3$^{rd}$ semesters and 1 in the 4$^{th}$ semester. The BOS has proposed 3 open electives each in the 2$^{nd}$ & 3$^{rd}$ semesters of the programme, each of 3 credits (total-6 Credits). The total number of credits for the Programme is 91. Based on the above-mentioned letter from the Registrar and the suggestions and decisions of the BOS I have prepared a draft course pattern.

Detailed syllabi for 1$^{st}$, 2$^{nd}$, 3$^{rd}$, & 4$^{th}$ Semesters have been prepared and enclosed.

## Course/Credit Pattern:

| Semester Credits | Hard Core (H) (T) | Soft Core (S) (T) | Elective (E) (T) | Practical (P) | Tutorial | Total Credits |
|---|---|---|---|---|---|---|
| First | 16 | - | - | 06 | - | 22 |
| Second | 12 | 03 | 03 | 06 | - | 24 |
| Third | 12 | 03 | 03 | 06 | - | 24 |
| Fourth | 08 | 06 | - | 07 | - | 21 |
| **Total** | **48** | **12** | **06*** | **4 (H) + 21 (S)** | | **91** |

Total Credits from all the four Semesters (1st, 2nd, 3rd and 4th): 22+24+24+21=91
Total Hard Core Credits= 48 (T) +4 (P) =52=57.15%
Total Soft Core Credits = 12 (T) + 21 (P) = 33=36.26%
*Open elective Credits=6=6.59% (Not to considered for calculating the CGPA)
H= Hard Core, S= Soft Core, P= Practical/Project

## M.Sc. GEOGRAPHY
## Consolidated Courses and Title of the Programme: M.Sc. in Geography

**1st Semester** **2nd Semester**

| Course Code | Course Title | Credits | Course Code | Course Title | Credits |
|---|---|---|---|---|---|
| GYH-401 | Advanced Geomorphology | 4 | GYH-451 | Development of Geographic Thought | 4 |
| GYH-402 | Advanced Climatology | 4 | GYH-461 | Digital Cartography | 4 |
| GYH-403 | Advanced Oceanography | 4 | GYH-453 | Basics of Remote Sensing | 4 |
| GYH-404 | Geography of Sustainable Resources | 4 | GYS-454<br>GYS-455 | Geography of Settlements<br>OR<br>Geography of Tourism | 3 |
| GYP-405 | Techniques in Physical Geography | 3 | GYE-456<br>GYE-457<br>GYE-458 | Geography of India (With special reference to Karnataka)<br>OR<br>Resource Conservation and Management<br>OR<br>Environmental Geography | 3 |
| GYP-406 | Interpretation of Indian Weather and Topo maps | 3 | GYP-459 | Statistical Methods in Geography | 3 |
| | ------- | | GYP-460 | Techniques of Mapping and Mapping Analysis | 3 |

**3rd Semester** **4th Semester**

| Course Code | Course Title | Credits | Course Code | Course Title | Credits |
|---|---|---|---|---|---|
| GYH-501 | Urban Geography | 4 | GYH-551 | Agricultural Geography | 4 |
| GYH-502 | Research Methods in Geography | 4 | GYH-552 | Regional Planning & Development | 4 |
| GYH-503 | Fundamentals of Cartography, GIS & GNSS. | 4 | GYS-553<br>Or<br>GYS-554 | Population Geography<br>Or<br>Environmental Geography | 3 |
| GYS-504<br>Or<br>GYS-505 | Disaster Studies<br>Or<br>Coastal Geography | 3 | GYS-555<br>Or<br>GY-556 | Social Geography<br>Or<br>Geography of Health | 3 |
| GYE-506<br>Or<br>GYE-507<br>Or<br>GYE-508 | World Geography<br>Or<br>Geography of Health<br>Or<br>Bio- Geography | 3 | GYP-557 | Techniques in Human Geography | 3 |
| GYP-509 | Interpretation of Aerial Photograph and Satellite Images | 3 | GYP-558 | Dissertation and field Study | 4 |
| GYP-510 | Applications in GIS & GNSS | 3 | | ------- | |

## Preface

The Masters Programme hosted in the Department of Geography at Mangalore University is designed to reflect the knowledge of theories, concepts, techniques and technologies in human and physical aspects of geography. Geography is the study of physical environments and human habitats. It deals with people and places. It covers issues such as global warming and climate change, food and water resources, management of ecosystems, human modifications of land, regional economic disparities, and urban infrastructure from various theoretical positions. Both a physical and a social science, it provides a unique opportunity to obtain a broad exposure to modes of analyzing the many ecological and cultural problems of contemporary society. The department is under the Faculty of Science and Technology offers degrees at the Masters (M.Sc.), and Research (Ph.D.) levels.

## Programme Outcomes (POs) of Mangalore University for P.G. Programme

**PO1. Critical Thinking**: Take informed actions after identifying the assumptions that frame our thinking and actions, checking out the degree to which these assumptions are accurate and valid, and looking at our ideas and decisions (intellectual, organizational, and personal) from different perspectives.

**PO2. Communication**: Listen, read, comprehend, speak and write clearly and effectively in person and through electronic media in English/regional language/language of the discipline and exhibit sound domain knowledge including academic concepts and terminologies.

**PO3. Self-directed and Life-long Learning**: Engage in independent and lifelong learning in the broadest context of socio-technological changes.

**PO4. Ethics**: Understand different value systems including one's own, as also the moral dimensions of actions, and accept responsibility for it.

**General Structure of the M.Sc. Programme**

| | | |
|---|---|---|
| Duration | : | 04 Semesters |
| Minimum credits required | : | 91 |
| Number of Core Courses | : | 69 credits |
| Elective Courses within the Department | : | 12 Credits |
| Multi-Disciplinary Electives | : | 06 Credits |
| Dissertation | : | 04 Credits |

## Programme Specific Outcomes (PSOs) for M.Sc. Geography

**PSO1.** Understand the major biophysical and social patterns in the world, and the key drivers that give rise to those patterns. (PO1)

**PSO2.** Demonstrate in-depth, knowledge of theories, concepts, techniques and technologies in human and physical aspects of geography, as well as geographic information science and technology, through real-world practical applications at the local, regional, and global scales.

**PSO3.** Apply systems thinking and critical thinking skills to analyze problems and potential solutions in socio-economic-ecological systems at the human-environment interface. (PO1)

**PSO4.** Practice obtaining, analyzing, and interpreting complex geographic data. (PO3)

**PSO5**. Practice effective communication of concepts and problems to both scientific and public audiences.

**PSO6**. Work effectively in interdisciplinary and multicultural real-world contexts to combine theory and practice in responding to local to global issues for humans and nonhumans. (PO4)

# Semester I

# Semester wise/ Course details

## Course Outcomes, Content, Tagging and Reading list of Core and Elective Courses

## Semester I

### HARD CORE COURSE: GYH-401 Advanced Geomorphology

**Course Learning Outcomes:**

CO1. Demonstrate knowledge of the historical evolution and concepts of geomorphology.
CO2. Analyze the significance of spatial and temporal scales in geomorphology.
CO3. To know critically the theories and models in the real world with different perspectives.
CO4. Analyze human interventions and effects in geomorphologic processes.
CO5. Apply conceptual and theoretical measures to analyze geomorphic processes.
CO6. Apply basic techniques from global to regional level to identify different landforms

| Unit | Course Content | Hours |
|---|---|---|
| 1 | **Geomorphology:** Definition and its fundamental concepts. Interior of the earth: structure and convectional currents. Theory of isostacy: Views of Pratt and aries. Geological time scale. | 12 |
| 2 | **Theory of Plate tectonics**: Sea floor spreading, Wegener's theory of continental drift. Earth movements: Organic, eperogenic movements and resultant landforms: Folds and faults and their types. Volcanoes: causes, types of eruptions, significance, landforms, geographical distribution and major volcanic eruptions occurred. | 12 |
| 3 | **Earthquakes:** Causes, measuring earthquake, landforms, geographical distribution and key earthquakes so far. Tsunamis: Causes, consequences and major tsunamis taken places. | 12 |
| 4 | **Process of weathering:** Mass wasting, landforms produced by – Drainage system and drainage patterns. Glaciers, wind, underground water and sea waves: process and land forms produced. Critical study of the concept of cycle of erosion – W.M. Davis and W. Penk, Theories of slope evolution: Davis, Penck. Recent trends in geomorphology. | 16 |

**Essential Readings**


1. Anhert, F., (1996): Introduction to Geomorphology, Arnold, London, Sydney, Auckland.
2. Bloom, A. L. (2002): Geomorphology: A Systematic Analysis of Late Cenozoic Landforms, Pearson Education Pvt. Ltd., and Singapore.
3. Chattopadhyay, S. (2017): Geomorphological Field Guide Book on Laterites and Backwaters of Kerala (Edited by Amal Kar). Indian Institute of Geomorphologists, Allahabad.
4. Chorley R. J, Schumm, S.A. and Sugden D.E. (1984): Geomorphology, Methuen, London.
5. Cooke, R. U. and Doornkamp, J.C., (1974): Geomorphology in Environmental
Douglas, J. and Spencer, I. (1985): Environmental Change and Tropical Geomorphology, George Allen and Unwin, London.
6. Garner, H.F. (1974): Origin of Landscapes A synthesis in Geomorphology, Oxford University Press, New Delhi.
7. Hart, M.G. (1986): Geomorphology: Pure and Applied, George Allen and Unwin, London.
8. John R.hails., (1977): "Applied Geomorphology" Elsevier Scientific publishing Company, New York.
11. Sharma, H. S. (ed.) (1991): Indian Geomorphology, Concept, New Delhi.
12. Spark B.W. (1972): Geomorphology, Longman, New York.
13. Strahler A.H. and Strahler, A.N. (1998): Introducing Physical Geography, John Wiley and Sons, Inc. New York.
14. Thornbury, W.D. (1960): Principles of Geomorphology", John Wiley and Sons, New York.

## HARD CORE COURSE: GYH-402 Advanced Climatology

**Course Learning Outcome:**

CO1. Understand the fundamentals of climatology and climate change.
CO2. Evaluate climate changing scenarios and their impacts.
CO3. Analyses of observation and projected trends and impacts of climate change.
CO4. Evaluate the whole framework of international negotiations on climate change with reference to India's position.
CO5. Demonstrate local specific adaptation and mitigation strategies to curb climate change risk.

| Unit | Course Content | Teaching Hours |
|---|---|---|
| 1 | **Introduction:** Definitions, nature, scope and content of climatology. Elements of weather and climate. Origin, composition and structure of atmosphere. Temperature: Solar radiation principles, solar budget, greenhouse effects, horizontal and vertical distribution of temperature & inversion of temperature. Global warming and global cooling. | 12 |
| 2 | **Atmospheric pressure:** Pressure gradient, Coriolis Effect, horizontal and vertical distribution of air pressure and pressure belts. Winds: planetary, monsoons, local winds, jet streams. Mechanism of monsoon. Humidity and precipitation | 12 |
| 3 | **Air masses**: Definition, nature, source region, classification of air masses. Fronts -frontogenesis and frontolysis, classification of fronts, frontal zones. Cyclones: types, tropical cyclones-Origin, types and structure of tropical cyclone. Distribution of tropical and temperate cyclones, features of temperate cyclone, source region, and origin of temperate cyclone. Polar front, study of weather disturbances through satellites | 14 |
| 4 | **Classification of World Climates:** Koppen's & Thornthwaite classification. Changes in world climate: Global warming, depletion of ozone layer, Weather forecasting, El-Nino and la Nina phenomena, el-nino-southern oscillation (ENSO). Problems and prospects of weather forecasting in India. | 14 |

**References:**


1. Adger, W. N. (2006): Vulnerability, Global Environmental Change, 16 (3), 268-281 Barros, Vicente R. (eds.) (2014): Climate Change 2014. Impacts, Adaptation and Vulnerability: Global and Sectoral Aspects. Fifth Assessment Report of the Intergovernmental Panel on Climate Change (Part B; Regional Aspect), Cambridge University Press, New York.
2. Barry, R.G. and Chorley, R.J. (2003): Atmosphere, Weather and Climate, Routledge, London Brewster, E. N. (2010): Climate Change Adaptation: Steps for a Vulnerable Planet, New York, Nova Science
3. Critch field, H. J. (1983): General Climatology. Prentice Hall India Ltd (2010 Reprint)
4. IPCC, Climate Change (2013): The Physical Science Basis, the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Stocker, T.F., D. Qin, G.-K. Plattner, M. Tignor, S.K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex and P.M. Midgley

(eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA,

5. John E. Hobbs (2016): Applied climatology: A study of Atmospheric Resources, Elsevier, London.
6. Lal, D. S. (2003): Climatology, Allahabad: Sharda Pustak Bhawa.
7. Oliver, J.E. (1993): Climatology: An Atmospheric Science, Pearson Education India, New-Delhi.

## HARD CORE COURSE: GYH-403: Advanced Oceanography

**Course Learning Outcome:**

CO1. Understand the fundamentals of oceanography and ocean floor.
CO2. Evaluate ocean relief of submarine and chemical properties.
CO3. To understand the movements and circulation of ocean water.
CO4. To understand and evaluate ocean deposits and its impact of human on the marine environment.

| Unit | Course Content | Teaching Hours |
|---|---|---|
| 1 | **Scope and Content of Oceanography:** Configuration of Ocean Floor- Continental Shelf, Slope, Ocean Plains and Ocean Deeps | 12 |
| 2 | **Origin of Submarine:** Relief-Submarine Relief of the Atlantic, the Pacific and the Indian Ocean. Physical and Chemical Properties of Ocean waters: Composition, Temperature and Salinity – factors influencing and horizontal and vertical distribution. | 14 |
| 3 | **Movements and Circulation of Ocean Water:** Factors influencing Movement, Waves - Motion of waves, Characteristics of wave. Tides - Types and Importance. Ocean Currents - Characteristics of Ocean Currents, Types of ocean currents: Major Ocean currents of the World, Effects of Ocean Currents. | 12 |
| 4 | **Ocean Deposits:** Types and Distribution, Coral Reefs: Origin, Types and Theories of Origin of Coral Reefs (Darwin, Dally and Murray), Issue of Coral Bleaching. Impact of Humans on the Marine Environment. Recent Trends in Oceanography. | 14 |

**References:**


1. Lal. D.S. (2003): Oceanography, Sharada Pustak Bhavan, Allahabad 02.
2. King Cuchalaine A.M. (2000): Oceanography for geographers, Edward Arnold publications, London.
3. Savindra Singh (2004): physical geography, Prayog Pustak Bhavan, Allahabad -02
4. Siddharth (2005): Oceanography: A brief introduction, Rawat Publishers. New Delhi.
5. Sharma R.C. (2000): Oceanography for Geographers, Chaitanya Publishers, Allahabad - 02
6. Vattal and Sharma (2003): Oceanography for Geographers, Chaitanya Publishers, Allahabad -02
7. Yadav A.S. (2002): Geography of Minerals of Oceans, concept Publishers, New Delhi,
8. Basu S.K. (2003): Hand book of oceanography, Global vision, Delhi.
9. Garisson Tom (1999): Oceanography, Cole, Wadsworth, New York.
10. Sharma and Vattal (1962): Oceanography for Geographers, Chaitanya Publication House, Allahabad.
11. Turman Harold (1985): Introductory Oceanography, Bell & Howell Co. London.
12. http://drs.nio.org/drs/index.jsp

## HARD CORE COURSE: GYH-404: Geography of Sustainable Resources

**Course Learning Outcomes:**

CO1. Understand the kind of resources and its consciousness.
CO2. Identify the types of soil, factors and its conservation.
CO3. To know the importance of water and forest resources.
CO4. Illustrate the livestock region major fishing ground in the world.
CO5. Analyze the classification of minerals and their distribution and its conservation.

| Unit | Course content | Teaching Hours |
|---|---|---|
| 1 | **Consciousness and Definition of Resources**: The Concept of Resource-Wealth- Resistance and Neutral Stuffs. Resource Creating Factors, Classification of Resources. | 12 |
| 2 | **Soil:** Soil Formation, Factors Influencing Soil Formation, Soil Characteristics and Soil Profile, Classification of Soil (zonal types) Soil erosion, Soil Conservation. | 12 |
| 3 | **Water and Forest Resources:** Water Resources and its Development in India, Water Conservation, water cycle and water budget. Forest Types and Distribution in the world, Forest Products -Timber and Paper, Forest Conservation. National Environmental Policy. Sustainable Resource Development. Global goals for sustainable development, Role of SDGs in India. | 16 |
| 4 | **Mineral Resources:** Classification of Major Minerals, their Distribution and Production in India, Petroleum, Coal, Iron Ore, Bauxite and Copper. Mineral conservation and Mineral Policy of India. | 12 |

**References:**


1. Guha J.L. and Chattorji (2004): A New approach to economic geography, A study of resources, the world Press Pvt. Ltd. Culcutta.
2. Zimmerman (2000): World resources and industries
3. Khanna K.K. and Gupta V.K (1993): Economic and Commercial Geography, Sultan Chand, New Delhi.
4. Mallappa P. (2004): Udyam Saupahmagalu, Chetan Book House, Mysore.
5. Roy. PR. (2001): Economic Geography- A study of Resources, New Central Book Agency, (p) ltd. Calcutta.
6. P. Hagget (1997): Geography, A Modern Synthesis, Haper and Rao publications, New York.
7. Dubey R.N. & Negi B.S. (2002): Economic Geography of India, Kitab Mahal, Allahabad.
8. Browne, S. 2017. Sustainable Development Goals and UN Goal-Setting, Routledge.
9. http://www.nationmaster.com/graph/geo_nat_res-geography-natural-resources

## CORE COURSE: GYP-405: Techniques in Physical Geography

**Course learning outcomes:**

CO1: Understand the different types of profile drawing.

CO2: Analyse the morphometric and stream order bifurcation ratio in techniques in physical geography.

CO3: Evaluate the slope analysis.

CO4: Understand the Smith and Wentworth's method.

CO5: To understand the different types of climatic graphs.

| Exercise No | Title of the Exercise (Total 52 Hrs.) |
|---|---|
| 1 | Profile- Definition, Importance and Uses |
| 2 | Methods Drawing of Profile |
| 3 | Types of Profiles- Serial, Superimposed Profile |
| 4 | Types of Profiles- Projected, Composited and Longitudinal Profile |
| 5 | Construction of landforms through contour feature- Hill, Plateau, George, Escarpment |
| 6 | Construction of Land forms through Contour features- Waterfall, V and U Shaped Valley, Cliffs. |
| 7 | Morphometric Analysis |
| 8 | Linear Morphometric Parameters |
| 9 | Areal Morphometric Parameters |
| 10 | Slope Definition and types. |
| 11 | Smith's Slope Analysis. |
| 12 | Wentworth's Slope Analysis. |
| 13 | Block Diagrams- one point perspective and two-point perspective. |
| 14 | Representation of Relief on a Block Diagram. |
| 15 | Geomorphological Map Drawing. |

**Reference:**


1. Monkhouse F.J. and Wilkinson H.R. (1952): Maps and Diagrams, their compilations and concentration, Muthuen & Co. London.
2. Harwel J.D, Newson MD. (1973): Techniques in Physical Geography, Mc. Millan Edu. Ltd. London.
3. Mishra R.P. And Ramesh A. (1968): Fundamentals of Cartography, Prasaranga, University of Mysore, Mysore.
4. Robinson & Marison (1995): Elements of Cartography USA.
5. R.L. Singh (2010): Practical Geography, Sharada Pustak Bhavan, 11, University Road, Allahabad, UP – India.

**CORE COURSE: GYP-406: Interpretation of Indian Weather and Topo maps**

**Course Learning Outcomes:**

CO1: Understand the history and evolution of maps.
CO2: Understand the basic assumptions behind the making of maps.
CO3: To describe the physical features of any area.
CO4: Analyse topography through the interpretation of contours.
CO5: Interpret Indian daily weather maps.

| Exercise No | Title of the Exercise (Total 52 Hrs.) |
|---|---|
| 1 | Indian Topo maps- SOI. |
| 2 | Conventional Signs and Symbols. |
| 3 | Marginal information's of toposheet. |
| 4 | Physiography- Contour, Bench Mark and Spot Height. |
| 5 | Water Bodies – drainage pattern identification. |
| 6 | Study of Toposheets for mapping physical features. |
| 7 | Study of Toposheets for mapping cultural features. |
| 8 | Special features Interpretation in Topographical Maps. |
| 9 | Components of Indian Daily Weather Maps. |
| 10 | Sources of Weather Data: IMD. |
| 11 | Atmospheric Pressure Gradient. |
| 12 | Isobar Trends. |
| 13 | Wind Direction. |
| 14 | Wind Rose. |
| 15 | Other weather Phenomena. |

**References:**


1. Monkhouse F.J. & H.R. Wilkinson (1952): Maps and Diagrams, their compilations and concentration, Methuen & Co. London.
2. Ashis Sen (1997): Systematic Practical Geography, Oriental Longman Ltd. Kolkata
3. Namowitz S.N. & Donald B. Stone (1965): Earth Science – The World We Live in 3rd Edition, D. Vam North and company Inc. New Hersy, USA, pp. 3-59
4. Mishra R.P. (1969): Fundamentals of Cartography, Prasanga University of Mysore.
5. Harwell J.D. & M.D. Newson (1973): Techniques in Physical Geography, Macmillan Edn, Ltd. London.
6. R.L. Singh (2010): Practical Geography, Sharada Pustak Bhavan, 11, University Road, Allahabad, UP - India

# Semester II

**Semester II**

**HARD CORE COURSE: GYH-451: Development of Geographic Thought**

**Course Learning Outcomes:**

CO1. Understand historical evolution of the discipline geography.
CO2. Analyze the relationship between geographical thought and practice.
CO3. Analyze the relationship between geographical scholarship and larger socio-political processes.
CO4. Evaluate the inter mingling of imperialism and geographical knowledge.
CO5. Understand one's own geographical perspective in relation to border historical discourses and concepts.
CO6. Demonstrate geographical issues from a Third World perspective.
CO7. Demonstrate the inclusive nature of 21st century geographical discourses.

| Unit | Course Content | Teaching Hours |
|---|---|---|
| 1 | **The field of geography:** Definition and meaning of geography: Nature and scope of geography. Geography as a social and natural science. 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 | 13 |
| 2 | **Pioneers and their contributions to geography:** Ancient period – Greek, romans, Indians and Chinese. Dark age of geography Medieval period - Arabs and geographical discoveries. Modern period – Alexander Von Humbolt, Carl Ritter and Darwin. School of geography: German, French, British, American, and Russian. | 13 |
| 3 | **Dualism and dichotomies in geography** – Determinism, possiblism, neo determinism and social determinism. Quantitative revolution. Geographical models – need, features, types and classification. Theory building. Geographical paradigms. | 13 |
| 4 | **Explanations in geography**-cognitive, cause & effect, temporal & functional, systems analysis and regional concepts. Modern themes in geographical thought. | 13 |

**References:**


1. Adhikari S. (2004): Fundamentals of Geographic thought, concept publishers, New Delhi.
2. Dikshit R.D. (2001): Geographical Thought: A Conceptual History of ideas, prentice Hall publishing Company, New Delhi-2
3. Harvey ME (2002): theme in Geographical thought, R.K. Publications and distributors, Ansari Road, New Delhi – 2.
4. Majid Hussain (2001): Evolution of Geographic thought, Rawat Publications, New Delhi-
5. David Harvey (2000): Explanations in Geography, Macmillan, New York.
6. Peter Hagget (1972): Geography: A Modern Synthesis
7. Frazire J.W. (1982): Applied Geography, Prentice Hall, New Delhi.
8. Singh. I (2006): Diverse aspect of Geographical thought: ALFA Publications, New Delhi.

## HARD CORE COURSE: GYH-461: Digital Cartography

**Course Outcomes:**

CO1. Familiar with the map types and scale.
CO2. Understand principles and application of projection systems
CO3. Acquire knowledge visualize, the spatial data.
CO4. Describe the methods and application of information delivery and cartographic presentation on mobile devices.
CO5. Skilful in cartographic design and map-making.

| Unit | Course Content | Teaching Hours |
|---|---|---|
| 1 | **Map Characteristics:** Maps are unique - communication process - Map functions and map types: cadastral and utilities maps, large scale maps and small-scale maps - Thematic and temporal comparison – Geodesy – Map Projection-Digital data. | 13 |
| 2 | **Map Design and Models:** Cartographic design - Perceptual considerations – Graphic communication – Controls on map design - Design planning - Map elements -Colour and pattern use – colour theory and cartographic models. | 14 |
| 3 | **Map Symbolization:** Symbolization features -Mapping the statistical surface: point, line, area and volume symbols – Visualization methods - Statistical mapping.<br>**Applied Cartography:** Terrain Visualization - Multivariate and Uncertainty Visualization - Multiscale web mapping | 14 |
| 4 | **Modern Cartography:** Theories - Geodata Infrastructures – Geo-visualization – Visual Data Analytics - Location based services - Multimedia Cartography – Geo-relief – Mobile Cartography. | 13 |

**References:**


1. Robinson, A.H. et al. (1995) Elements of Cartography, John Wiley & Sons, U.S.A.
2. Kenneth Field, (2018). Cartography: A Compendium of Design Thinking for Mapmakers, ESRI Press
3. Misra, R.P. and Ramesh, A. (1986) Fundamentals of Cartography, Concept Publishing Company, New Delhi.
4. Kraak M.J. (2010) Cartography: Visualization of Geospatial Data (3rd edition), Pearson Education Ltd., London.
5. Monkhouse, F.J. and Wilkinson, H.R. (1994) Maps and Diagrams, Methuen, London.
6. Sarkar A. K. (1997) Practical Geography: A Systematic Approach, Oriental Longman, Calcutta.
7. Singh, R.L. and Dutt, P.K. (1979) Elements of Practical Geography, Kalyani Publishers, New Delhi.
8. Singh, R. L., Singh, R. P. B., (2008): Elements of Practical Geography, Kalyani Publishers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2. www.natmo.gov.in
3. www.surveyofindia.gov.in
4. www.gsi.gov.in
5. www. nbsslup.icar.gov.in

## HARD CORE COURSE: GYH-453: Basics of Remote Sensing

**Course Learning Outcomes**

CO1: Understand the history and evolution of Remote Sensing.
CO2: Identify and uses of various sources of satellite imageries from web platforms.
CO3: Illustrate the features of remote sensing data.
CO4: Carry out image processing using different software.
CO5: Analyse spatial data from imageries.
CO6: Analyse the temporal changes from imageries and prepare various thematic maps.

| Unit | Course Content | Teaching Hours |
|---|---|---|
| 1 | **Remote Sensing**: Definition, electromagnetic radiation (EMR) and electromagnetic spectrum, interaction of EMR with the atmosphere and with the surface feature. Atmospheric window, spectral signature of common land covers (minerals, rocks, water, vegetation and urban area) concept and types of resolutions. History of remote sensing. | 14 |
| 2 | **Fundamentals of Aerial Photography:** Classification of aerial photographs on the basis of height and tilt, components of the camera, film. Elements of Aerial photo interpretation: Formats of Imageries- Digital and Analog data | 13 |
| 3 | **Sensor & Platforms: Sensors:** active and passive sensors. Platforms: types, characteristics, payload Indian of launch vehicles, orbit positioning issues, errors induced due to platform disturbances. Microwave remote sensing, thermal remote sensing, interferometry SAR, SLAR, Digital image processing. Future of remote sensing, Organizations into remote sensing, | 14 |
| 4 | **Application of Remote Sensing:** Disaster mitigation and management, geology, soil mapping, ocean resource mapping, EIA, wetland management, forest resource management | 13 |

**Essential Readings:**


1. Bossler J.D (2002): Manual of Geospatial Science and Technology, Taylor and Francis, London.
2. Girard M.C and Girard C.M (2003): Processing of Remote Sensing Data, Oxford & IBH, New- Delhi.
3. John R. Jensen (2000): Remote Sensing of the environment: An earth resource perspective, Pearson publication.
4. Lilles and T M., and Kiefer R W., (2000): Remote Sensing and Image interpretation, New York,
5. John.Wiley and Sons. Pradip Kumar Guha (2013): Remote Sensing for the beginner, Third Edition, East-West Press, New Delhi.
6. Suresh S and Mani K., (2017): Application of Remote Sensing in understanding the relationship Between NDVI and LST, IJRET, Vol. 6, Issue: 02.

## SOFT COURSE: GYS-454: Geography of Settlements

**Course learning outcomes:**

CO1. Understand the significance and recent trends in settlements geography.
CO2. Access the functional classification of the settlements.
CO3. Evaluate the urban settlements and morphological Indian cities.
CO4. Analyze the theories of urban settlements and selected Indian cities.

| Unit | Course Content | Teaching Hours |
|---|---|---|
| 1 | **General Introduction, Evolution & Distribution of Settlements**: Nature, Scope, Significance and Recent Trends in Settlement Geography. Evolution of Settlements in India: Emergence of Village Settlements, Origin and Growth of Towns; Basic and Non-Basic Concepts in Settlement formation. Distribution of Settlements, Spacing of Settlements -Application of Models of Christaller and Losch. | 14 |
| 2 | **The Functional classification of Settlements:** Rural and Urban Settlements. Rural Settlements - Types 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. | 14 |
| 3 | **Theories in Settlement Geography** – CBD, Centrifugal and centripetal forces theory, Urban Fringe, Urban structures theories. Rank size relationship. Settlement Geography of selected Indian Cities: Mumbai, Kolkata, Bangalore, Delhi, Chennai, Hyderabad, Pune, Lucknow, Patna, Jaipur and Chandigarh. | 14 |

**References:**


1. Hudson, F. S. (1976): Geography of Settlements, Macdonald, London.
2. Northam Ray, M. (1979): Urban Geography, John Wiley and Sons, New York.
3. Ambrose, Peter, (1970): Concepts in Geography, Vol.-I, Settlement Pattern, Longman.
4. Baskin, C., (Translator) (1996): Central Places in Southern Germany, Prentice-Hall Inc. Englewood Cliffs New Jersey.
5. Haggett, Peter, Andrew D. Cliff and Allen Frey (Ed.) (1979): Locational Models Arnold Heinemann.
6. King, Leslie, J., (1986): Central Place Theory, Saga Publications, New Delhi.
7. Mayer, M. Harold and Clyde F. Kohn (Ed.) (1967): Readings in urban Geography, Central Book Depot, Allahabad.
8. Mitra, Asok, Mukherjee S and Bose, R., (1980): Indian Cities Abhinav Publications, New Delhi.
9. Nangia, Sudesh, (1976): Delhi Metrpolitan Region, K.B. Publications, New Delhi.
10. Prakasa, Rao, V. L. S., (1992): Urbanization in India: Spatial Dimensions, Concept Publishing Co., New Delhi.
11. Ramachandran, R., (1992): Urbanization and Urban Systems in India, Oxford University Press, New Delhi.
12. Singh, R. L. and Kashi Nath Singh (Ed.) (975): Readings in Rural Settlement Geography,National Geographical Society of India, Varanasi.

## SOFT COURSE: GYS-455: Geography of Tourism

**Course Learning Outcomes:**

CO1. Understand spatial distribution of resources in the evolution of tourism.
CO2. Asses' partialities, tourism development and its critiques.
CO3. Critique worldwide economic, cultural, political and technological exchanges and connections that tourism brings.
CO4. Rate tourism as a key sustainable sector in country's economic growth.
CO5. Evaluate socio-cultural, economic and environmental impacts of tourism.
CO6. Design sustainable tourism management plan using GST for tourism development.

| Unit | Course Content | Teaching Hours |
|---|---|---|
| 1 | **Geography of tourism:** Definition, nature, scope and extent. Concept of tourism, importance of tourism. Relationship between geography and tourism, Tourism promotion –Ecotourism, agro-tourism, heritage tourism and adventure tourism. Factors affecting tourism – Physical and cultural factors. Tourism motivation, tourism as an industry | 14 |
| 2 | **The Classification of tourism and tourists**: Types of tourism – Domestic and international tourism- Adventure, wildlife, medical, pilgrimage, business, leisure, pleasure, eco and cultural tourisms. Comparison between mass and alternative tourism. Tourist's types – local, national and international. Impact of tourism – Economic impact, physical and environmental impact, socio-cultural impact | 13 |
| 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.<br>**Case Studies –** Major tourist centers. Hill Station – MountAbu, Shimla, Kuduremukha. Beach Points – Mangaluru, Vizag, Panaji, marina beach. Historical Centers – Badami, Bijapur, Mysore, Ellora and Tajmahal. Religious Centers – Shirdi, Kanyakumari, Tirupathi and Dharmastala. Dams - T B dam, Bhakra Nangal, DVC. National Parks – Dachigam national park, Gir national park, Nanda devi national park, Periyar national park. | 14 |

**Essential Readings**


1. Beeton, S. (2006): Community Development through Tourism, Land links Press.
2. Bhatia A.K, (1996): Tourism Development: Principles and Practices, Sterlingpublishers, New Delhi,
3. Bhatia, A.K, (1991): International Tourism-Fundamentals and Practices, Sterling, New Delhi,
4. Buckley, R. (2009): Ecotourism: Principles and Practices, CABI
5. Dora Smolcic Jurdana (2006): Planning city tourism development – principlesand issues, Tourism and hospitality management, volume no 12, no 2,

6. Holden Andrew (2000): Environment and Tourism, Routledge, London Hunter C and Green H. 1995 Tourism and the Environment: A Sustainable Relationship Routledge, London,
7. Milton D. (1993): Geography of World Tourism Prentice Hall, New York.
8. Mishra Jitendra Mohan. Sampad Kumar Swain (2011): Tourism: Principles and Practices, Oxford University Press, ISBN0198072368, 9780198072362
9. Mustafa Mohammadi, Zainab Khalifah (2010): Local People Perception towards Social, Economic, Environmental Impacts of Tourism, Asian Social Science, Volume No. 6, No.121
10. P K, Manoj (2010): Tourism in Kerala: a study of the imperatives and impediments with focus on Eco-tourism. "Saaransh" RKG Journal of Management (ISSN: 0975-4601). 1. 78-82,
11. Robinson, H. (1996): Geography of Tourism Macdonald and Evans, London,
12. Shiji O, (2017): Urban tourism- the case of India, International Journal of Advanced Education and Research, Volume No 2,
13. Stephen Williams (1998): Tourism Geography, Routldge, London,
14. Suresh, K.T. (1994): Tourism Policy of India: An Exploratory Study, Equations, Bangalore.
15. Tribe, J. (2009): Philosophical Issues in Tourism. Channel View Publications

## OPEN ELECTIVE COURSE

## GYE-456: Geography of India (With special reference to Karnataka)

**Course learning outcome:**

CO1. Identify major physiographic divisions of India and Karnataka state.
CO2. Evaluate climate change scenarios and their impacts.
CO3. Analyze the agriculture development of India.
CO4. Analyze distribution of mineral resource in India.
CO5. Apply conceptual and theoretical measures to coastal management.

| Unit | Course Content | Teaching Hours |
|---|---|---|
| 1 | **Physical Setting of India and Karnataka:** Location, Physiographic Divisions, Natural Drainage Systems and their Distribution. Climate: seasons & climatic regions. Soils: Types, Distribution, Erosion and Conservation. Natural Vegetation: Types and Distribution, Degradation and Conservation. | 14 |
| 2 | **Agriculture:** Types of farming in India - Dry zone farming, Organic farming. Cropping seasons in India, Cropping Pattern in India, Agriculture regionalization, Major Agricultural Crops: Rice, Wheat, Cotton, Sugarcane, Tea, Coffee. Green Revolution inIndia, and Food Security in India. Irrigation: Major River Projects | 13 |
| 3 | **Mineral Resources:** Distribution, production and trade of important Minerals & Power resources: Iron Ore, Manganese, Mica, Copper, Bauxite, Coal, Petroleum, Natural Gas, Atomic Energy, Hydral and Thermal Power. Growth, Development and Distribution of Major Industries: Iron & Steel, Engineering, Cement, Paper, Fertilizers, Cotton Textiles, Silk, Knowledge-based Industries: Industrial Regions of India | 14 |

**References:**


1. Khullar DR. (2009): India: A Comprehensive Geography, kalyani Publishes, New Delhi, Hyderabad, Kolkota.
2. Alka Gautam (2009): Geography of India, Sharada pustak bhawan, University Road, Allahabad – UP.
3. Sharma TC & Coutinho O. (2005): Economic and Commercial geography of India, Vikas Publishing House ltd., New Delhi-14
4. Tiwari RC. (2008): Geography of India, Prayag pustak Bhavan, 20-A, University Road, Allahabad- UP
5. Pritivish Nag & Smita sengupta (1992): Geography of India, Concept Publishing Company,New Delhi – 59.
6. Ranganath (2007): Geography of India, Vidhyanidhi Prakashan, Station Road, Gadag-01.
7. Phani Deka & Abani Bhagabati (1992): Geography: Economic and Regional, Wiley Eastern Limited, Ansari Road, Daryaganj, N. Delhi-01.
8. Majid Husain (2008): Geography of India, Tata Mc. Graw hill publishing co. Ltd. New Delhi.
9. Singh R.L. (1971): India A Regional Geography, National Geographical Society of India, Varanasi, UP.
10. Jadish Sing (2003): India: A comprehensive systematic geography, Gyanodaya Prakashan Gorakhapur- UP.

**ELECTIVE COURSE: GYE-457: Resources Conservation and Management**

**Course learning outcomes**:

CO 1: Understand the history and evolution of resources.
CO 2: Justify the importance of water and forest resource management.
CO 3: Understand spatial distribution of mineral resources.
CO 4: Evaluate the contemporary issues on soil resource management.
CO 5: Suggest water conservation plans to attain sustainable development.

| Unit | Course Content | Teaching Hours |
|---|---|---|
| 1 | **Consciousness and definition of resources:** The concept of resource- Wealth- resistance and neutral stuffs. Resource creating factors, classification of resources. | 08 |
| 2 | **Natural Resources:** soil formation, factors influencing soil formation, soil characteristics and soil profile, classification of soil, soil erosion, soil conservation. Water and Forest Resources: Waterresources and its development in India, water conservation, water cycleand water budget. Types of forests in India and their distribution, forest products –timber and paper, decay of forests, conservation of forests. | 14 |
| 3 | **Mineral resources:** Classification of major minerals, their distribution and production, petroleum, coal, iron ore, bauxite and copper. Mineral conservation and mineral policy of India. | 08 |

**References:**


1. Guha J.L. and Chattoraj (2004): A New approach to economic Geography, A study of Resources, the World Press Pvt. Ltd. Culcutta.
2. Zimmerman- World resources and industries
3. Khanna K.K. and Gupta V.K (1993): Economic and Commercial Geography, Sultan Chand, New Delhi.
4. Mallappa P. (2004): Udyam Sampanmulagalu, Chethan Book House, Mysore
5. Roy. PR. (2001): Economic Geography- A study of Resources, New Central Book Agency, (p) Ltd. Calcutta.
6. P. Hagget (1997): Geography, A Modern Synthesis, Haper and Rao publications, New York.
7. Dubey R.N. and Negi B.S. (2002): Economic Geography of India, Kitab Mahal, Allahabad.
8. http://www.nationmaster.com/graph/geo_nat_res-geography-natural-resources.

## ELECTIVE COURSE: GYE-458: Environmental Geography

**Course Learning Outcomes:**

CO1. Understand the environment from different perspectives.
CO2. Examine the geographical explanation for biological diversity of the world.
CO3. Develop an environment perceptive when approaching complex development issues.
CO4. Evaluate the vulnerability of ecosystem services.
CO5. Demonstrate methodological procedure for conducting environment impact assessment.
CO6. Appreciate and recognize the complexity and value of ecosystem.

| Unit | Course Content | Teaching Hours |
|---|---|---|
| 1 | **Environmental Geography:** Nature and interdisciplinary aspect of environmental geography. Ecological approaches. Definition and meaning of environment, habitat. Ecological niche. Bio-sphere and biodiversity. | 14 |
| 2 | **Ecosystem**: Structure and functioning of ecosystem, pond as aecosystem, food chains, food webs, food pyramid. Biomes – equatorial totundra i.e., 11 types. Man and environmental relationships. Resource use and ecological imbalance with reference to soil, forests and energyresources. Manmade ecosystem - Urban, ecotourism, national parks and sanctuaries. Depletion of ozone, greenhouse effect and acid rain. | 13 |
| 3 | **Man induced changes in environment**: Environmental pollution, i.e. Air, water, noise, solid waste with special reference to India. Environmental hazards, i.e. earth as warehouses, flood, famines, landslides, avalanches, forest fires, impact of green revolution and extinction of species. | 14 |

**Essential Readings:**


1. Anderson J.M. (1981): Ecology for Environmental Science: Biosphere, Ecosystemsand Man, Arnold, London.
2. Balakrishnan, M. (1998): Environmental Problems and Prospects in India, in Das, R.C., et. al. Oxford & IBH Pub., New Delhi.
3. Canter Chary, L. W. (1996): Environmental Impact Assessment, 2nd edition, McGraw Hill, New York.
4. Chichester: Marsh, W.M. and Grossa, J.M. (1996): Environmental Geography: Science, Land use and Earth Systems, John Wiley & Sons.
5. Das, M.C. (1993): Fundamentals of Ecology, Tata Mc Graw Hill, New Delhi.
6. Farmer, A. (1997): Managing Environmental Pollution, Routledge, London
7. Gilpin, A. (1996): Dictionary of Environment and Sustainable Development, John Wiley and Sons Ltd.,
8. Goudie, Andrew (1984): The Nature of the Environment, Oxford Katerpring Co. Ltd. Huggett, R.J. (2002): Fundamentals of Biogeography, Routledge, London & New York.
9. Mary K. Theodore. (1996). Major Environmental Issues Facing 21st Century, Prentice Hall.

10. Middleton N. (1995): The Global Casino: An .Introduction to Environmental Issues, John Wiley and Sons Inc., New York
11. Nobel and Wright (1996): Environmental Science, Prentice Hall, New York.
12. Odum, E.P. (1971): Fundamental of Ecology, W.B. Sanders, Philadelphia.
13. Roberts, N. (1994): The Changing Global Environment, 3rd edition, Blackwell Pub. Co., London.
14. Sharma, P.D. (1975): Ecology and Environment, Rastogi Publication, Meerut.
15. Singh, R.B. (ed.) (1989): Environmental Geography, Heritage, New Delhi.

## CORE COURSE: GYP-459: Statistical Methods in Geography

**Course Learning Outcomes:**

CO1. Understand the basic concept of statistical methods.
CO2. Analyze the significance of spatial measures of dispersion in statistics.
CO3. Analyze the measures of central tendency models in the real world with different perspectives.
CO4. Understand the concept of process of data.

| Exercise No | Title of the Exercise (Total 52 Hrs.) |
|---|---|
| 1 | Processing of Data: Data, Preparation of Frequency Table. |
| 2 | Graphical Presentation of Frequency- Histograms. |
| 3 | Frequency Polygon and O-give Curves. |
| 4 | Measurement of Central Tendency- Meaning, Use. |
| 5 | Mean, Median and Mode- Ungrouped data. |
| 6 | Mean, Median and Mode- Grouped data. |
| 7 | Measures of Dispersion: Mean Deviation- grouped and Ungrouped |
| 8 | Standard Deviation- Grouped and Ungrouped |
| 9 | Quartile Deviation- Grouped and Ungrouped |
| 10 | Co-efficient Variation, Quartiles, Deciles and Percentiles- Ungrouped data. |
| 11 | Co-efficient Variation, Quartile, Deciles and Percentiles- grouped data |
| 12 | Measures of Association: Correlation- Meaning and Methods |
| 13 | Rank Order Correlation |
| 14 | Product Moment Correlation |
| 15 | Regression Coefficient |

**References:**


1. Haymond and Mccullah (1974): Quantitative techniques in geography, An introduction, Oxford London.
2. Aslam Mohamed (1977): Statistical Methods in Geographical Studies, Rajesh Publications, New Delhi.
3. Gupta C.B. (1979): An introduction to statistical methods, Vikas publishing house pvt. Ltd. New Delhi.
4. Murray R. Spiegal (1972): Theory and problems of statistics, Mc. Grawhill Book co. New York.
5. Singh R.L. (1979): Elements of Practical Geography, Kalyani Publishers, New Delhi

## GYP-460: Techniques of Mapping and Map Analysis

**Course learning outcomes:**

CO1. Identify the major elements of map.
CO2. Analyze methods representing geographic data.
CO3. Evaluate graphs and diagrams.
CO4. Analyze thematic maps.

| Exercise No. | Title of the Exercise (Total 52 Hrs.) |
|---|---|
| 1 | Introduction to cartography- Basic principles and elements of maps. |
| 2 | Representation of Data-Proportional Symbols. |
| 3 | Mono Dot Method. |
| 4 | Multiple Dot Method. |
| 5 | Circle Method. |
| 6 | Sphere Method. |
| 7 | Cube Method. |
| 8 | Choropleth Method |
| 9 | Isopleth Method |
| 10 | Choro-chromatic Method |
| 11 | Choro-schematic maps |
| 12 | Advanced Visualization Techniques. |
| 13 | Block Pile Diagrams |
| 14 | Pie Diagrams |
| 15 | Flow diagrams |

**References**


1. Monkhouse F.J. & H.R. Wilkinson (1952): Maps and Diagrams, their compilation andconcentration, Methuen & Co, London
2. Harwell J.D & M.S. Newson (1973): Techniques in Physical Geography, Macmillan Edn. Ltd, London.
3. Mishra R.P. & Ramesh A. (1968): Fundamentals of Cartography, Prasaranga, University of Mysore.
4. Menno-Jan Kraak & Ferjan Ormeling (2003): Cartography Visualization of Geospatial Data, Pearson Edn Pvt. Ltd. (Singapore) New Delhi.
5. Nag P. (1992): Thematic Cartography and Remote Sensing, concept Publishing Co. New Delhi.

# Semester III

## III SEMESTER
## HARD CORE COURSE: GYH-501: Urban Geography

**Course Learning Outcomes:**

CO 1. Understand the historical conditions determine the process of urbanization.
CO 2. Analyze the plurality in understanding 'the urban'.
CO 3. Analyze the complexities power matrix that govern the urban life.
CO 4. Analyze the social and spatial inequalities in urban life.
CO 5. Formulate environmental and humanistic strategies influencing urban policy interventions.

| Unit | Course Content | Teaching Hours |
|---|---|---|
| 1 | **Nature of urban geography-** Definition of urban settlements (towns, cities, and metro, etc.), Census definition of settlements (India), Historical perspectives on urbanization, Current factors and trends of urbanization in the world and India, Growth of world and Indian cities. | 13 |
| 2 | **Urban population density and land value curves**- Urban land use – vertical and horizontal growth of cities, Theories of urban structure: concentric, zonal, and multiple nuclei. | 12 |
| 3 | **Urban functions-** Basic and non-basic urban hierarchy- 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 | 13 |
| 4 | **Urban Planning and Development:** Concept of city, region and urban hinterland – Urban sprawl, urban slums, urban crimes and their trends with reference to India, concept and issues of Peri-urbanization. Elements of urban planning, Urban renewal,Policies of urban development in India, master plans CDP of Bangalore2015. Introduction to smart cities and sustainable urban development. | 12 |

**Essential Readings**:


1. Friedmann, J. (1988): Life space and economic space: Contradictions in regional development.
2. Friedmann, J. (ed.) (1988): Life Space and Economic Space: Essays in Third World Planning, 93–107.
3. New Brunswick, NJ: Transaction.
4. Hardoy, J. E., Mitlin. D. Satterthwaite. D. (1992): Environmental Problems in Third World Cities,
5. Earthscan, Great Britain. Harold Carter (1995): The Study of Urban Geography, Arnold, London
6. Harvey, D. (1973): Social Justice and the City. London: Edward Arnold.
7. Jensen, J.R. (2007): Remote Sensing of the Environment: An Earth Resource Perspective, Prentice-Hall, NJ, USA.
8. Marcotullio, P. McGranahan. G. (2007): Scaling Urban Environmental Challenges: From Local to Global and Back, Earth scan, Great Britain.
9. Michael. (2009): Urban Geography: A Global Perspective, Taylor & Francis, Great Britain.

Ramachandran R (1992): Urbanization and Urban Systems in India, Oxford University Press, Delhi.
10. Singh R. Y. (2002): Geography of Settlement, Rawat Publication, Jaipur.
11. Singh S. B, (1996): "New Perspectives in Urban Geography, M.D Publication, New Delhi.
12. Siva Ramakrishnan (1996): Urbanization in India, Concepts Publishing Company, New Delhi.
13. Vyasali Singh (2011): Urban Geography, Alfa Publication, New Delhi.

## HARD CORE COURSE: GYH-502: Research Methods in Geography

**Course learning outcomes:**

CO1. Identify researchable area/topic in geography.
CO2. Develop a research proposal.
CO3. Execute different methods of data collection and analysis.
CO4. Communicate research findings through appropriate mediums.
CO5. Connect real world with theory and methods.

| Unit | Course Content | Teaching Hours |
|---|---|---|
| 1 | **Research Methodology:** Meaning, Definitions, objectives, characteristics and types. Steps involved in Research. Research Ethics. | 13 |
| 2 | **Forms of Research:** Paper, Article, workshop, seminar, conference and symposium. Thesis writing: Its characteristics and format. Research Approaches. Developing the Objectives Significance of Research. | 14 |
| 3 | **Research Methods:** Research Methods versus Methodology. Research and Scientific Method. Problems Encountered by Researchers in India. Sampling techniques for geographical analysis. | 14 |
| 4 | **Research Process:** Identification of problem, Review concepts and theories, Review previous research finding, Formulate hypotheses, Design research (including sample design), Data Collection (Execution), Data Analysis, Testing of hypotheses, Generalization and Interpretation, Report writing Conclusions, Bibliography. | 13 |

**Reading materials:**


1. Gilbert, N. (2001): Researching Social Life, Sage, London.
2. Flowerdew, R. and D. Martin (2005): Methods in Human Geography: A Guide for students doing a research project, Prentice Hall, New York.
3 Clifford, N.J. and G. Valentine (2003): Key methods in Geography, Sage, London.
4. Leedy, P. D. and J.E. Ormrod (2001): Practical Research: Planning and Design,


Web resources:

- http://computer.org - http://www.acm.org
- http://www.intute.ac.uk/socialsciences/

**HARD CORE COURSE: GYH-503: Fundamentals of Cartography, GIS & GNSS**

**Course Learning Outcomes:**

CO1: Understand the history and development of spatial technology.
CO2: Locate the significance of GIS in contemporary world.
CO3: Explore and generate GIS data from open source.
CO4: Analyze methodological aspects of GIS
CO5: Apply GNSS in different real-world situations

| Unit | Course Content | Teaching Hours |
|---|---|---|
| 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 | 13 |
| 2 | **Data Collection & Management:** Data capture & geo-processing sources, input methodsfor spatial & non-spatial data, Editing: re-projection, geometrictransformation, geo- referencing. Map scale precision & accuracy. Database management system: Characteristics, components, data quality: Definition, components of geographic data quality. Accuracy, precision,error and uncertainty. Data assessment and evaluation. Linking spatial & non-spatial data. Database types: Hierarchical, network, relational and object oriented. | 13 |
| 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, and surface analysis. Interpolation and its methods. | 13 |
| 4 | **Global Navigation Satellite System:** Concept, GNSS reference systems, components space segment, control segment, user segment. GNSS signal propagation and quality, GPS observations: Pseudo ranges, differential GPS, relative positioning, errors in GNSS observations, GPS surveying techniques -Static, rapid static, Pseudo kinematic, kinematic, real time kinematic (RTK). | 13 |

**Essential Readings:**


1. Abdul-Rahman, Alias, Pilouk, and Morakot (2008): Spatial Data Modelling for 3D GIS, Chang, K, Introduction to Geographic Information Systems. (5th Ed.), McGraw Hill.
2. Hanan Samet (2006): Foundations of Multidimensional and Metric Data Structures, Morgan Kaufmann Publishers.
3. Okabe, A., Boots, B., Sugihara, K. and Chiu, S. N (2000): Spatial Tessellations – Concepts and Applications of Voronoi Diagrams (2ndEd.), John Wiley and Sons.
4. Paul A. Longley, Michael F. Goodchild, David J. Maguire, David W. Rhind, Geographic Information Systems and Science, John Wiley & Sons Ltd.
5. Peter A. Burrough, Rachael A. Mcdonnell and Christopher D. Lloyd (2014): Principles of Geographical Information Systems, International Third Edition, Oxford University Press, United Kingdom,
6. Raper, J (2000): Multi-Dimensional Geographic Information Science, Taylor and Francis. Springer.
7.

## SOFT COURSE: GYS-504: Disaster Studies

**Course Learning Outcomes:**

CO1. Identify major natural disaster.
CO2. Analyze the causes and consequence of disaster.
CO3. Execute the different preventing methods.
CO4. Connect real world with methods.

| Unit | Course Content | Teaching Hours |
|---|---|---|
| 1 | **Environment hazards & disasters:** Introduction, Meaning of Hazards & Disasters, Approaches to Disaster Management. Causes and Consequences of Disasters: Physical, Economic, and Cultural impacts. National and International Organizations in Disaster Management, Types of Environmental Hazards and Disasters - Geophysical, Hydrological, Meteorological, Biological, Technological. Population Explosion and its impacts. | 12 |
| 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-Resistant House Construction, Population Reduction in Vulnerable Areas and Awareness. **(2)** Emergency Stage, Rescue Training for Search and Operations (National and Regional Level), Ground Management Plan Preparation, Immediate Relief, Assessment Surveys **(3)** Post-Disaster Stage (Rehabilitation) - Political Administrative Aspects, Social Aspects, Economic Aspects, Cultural Aspects and Environmental Aspects. | 15 |
| 3 | **Natural Disaster mitigation:** Relief measure, role of GIS in Relief measures, role of GNSS in search and rescue, role of Remote sensing in prediction of hazards and disasters, measures of adjustment of natural hazards | 14 |

**References:**


1. R.B. Singh (Ed), (1990): Environmental Geography, Heritage Publishers New Delhi
2. Savinder Singh, (1997): Environmental Geography, Prayag Pustak Bhawan.
3. Kates, B.I & White, (1978): G.F the Environment as Hazards, oxford, New York.
4. R.B. Singh (Ed), (2000): Disaster Management, Rawat Publication, New Delhi.
5. H.K. Gupta (Ed), (2003): Disaster Management, Universities Press, India.
6. R.B. Singh,(1994):Space Technology for Disaster Mitigation in India (INCED), University of Tokyo.
7. Dr. Satender, (2003): Disaster Management t in Hills, Concept Publishing Co., New Delhi.
8. A.S. Arya Action Plan for Earthquake, Disaster Mitigation.
9. V.K. Sharma (Ed) (1994): Disaster Management IIPA Publication New Delhi.
10. R.K. Bhandani An overview on Natural & Man-made Disaster & their Reduction, CSIR, New Delhi
11. M.C. Gupta, (2001): Manuals on Natural Disaster management in India, National Centre for Disaster Management, IIPA, New Delhi.

## SOFT COURSE: GYS-505: Coastal Geography

**Course Learning Outcomes:**

CO1. Analyze critically the theories and models in the real world with different perspectives.
CO2. Analyze human interventions and effects in coastal area.
CO3. Apply conceptual and theoretical measures to coastal geography.
CO4. Apply basic techniques from global to regional level to identify the problems of coastal area.

| Unit | Course Content | Teaching Hours |
|---|---|---|
| 1 | **Coastal Management: Physical Aspects:** Definition of coastal zone and related nomenclature. Coastal processes: Wave, tide and wind. Coastal currents and cells. Coastal morph dynamics: Micro, macro and biogenic forms. Systems of change in coasts: cyclical and progressive. Classification of coasts based on processes and sediment characteristics | 14 |
| 2 | **Coastal biogeography:** Special reference to sea weeds, mangroves, dune vegetation and corals, their ecological and economic significance. Natural coastal hazards and their management: Sea level rise, erosion, sedimentation and tropical cyclones. Techniques of monitoring changes in coastal processes and landforms. | 14 |
| 3 | **Coastal Management:** Human Aspects: Coastal regulations with special reference to India. Human utilization of coasts, environmental impacts and management: Navigation, mining, fishing and fish-processing, off-shore oil exploitation, reclamation and tourism. Coastal engineering and its impacts: Ports and harbors, measures for prevention of erosion and sedimentation. | 14 |

**Reference:**


1. Bird, E.C.F. (2000): An Introduction to Coastal Geomorphology, John Wiley and Sons Ltd. New York: 340 p. [Topics 2.3, 4.4]
2. Carter, R.W.G. (1988): Coastal Environments: An Introduction to the Physical, Ecological and Cultural Systems of Coastlines, Academic Press, London: 617p. Topic 2.3]
3. Chow, V.T, Maidment, D.R. and Mays, L.W. (1988): Applied Hydrology, McGraw-Hill, New York: 572 p. [Topic 3.2]
4. Garrison, T. (1993): Oceanography: An Invitation to Marine Science, Wadsworth Pub. Co., Belmont: 540 p. [Topics 4.1, 4.2, 4.3]
5. Johnson, H.D. and Baldwin, C.T. (1996): 'Shallow clastic seas.' In Reading H.G. (Editor): Sedimentary Environments: Processes, Facies and Stratigraphy, 3rd edition, Blackwell Science Ltd. Oxford: pp 232–280. [Topic 2.3]
6. Knighton, D. (1998): Fluvial Forms and Processes: A New Perspective, Arnold, London: 385p. [Topics 2.1, 2.2]
7. Morisawa, M. (1985): Rivers, Longman, London: 222p. [Topics 2.1, 2.2, 3.1]
8. Murthy, K.S. (1998): Watershed Management in India, 3rd edition, Wiely Eastern Ltd. / New Age International Ltd., New Delhi: 198p. [Topic 3.4]
9. Newson, M. (1992): Land Water and Development, River Basin Systems and their Sustainable Management, Routledge, London: 350p.

## OPEN ELECTIVE COURSE: GYE-506: World Geography

**Course Learning Outcomes**

CO1. Understand political division of the world and its national borders.
CO2. Interpret inequality in terms of spatial patterns of change and its natural regions.
CO3. Determine spatial patterns of economic inequality and its natural resources.
CO4. To understand the natural resources and its importance.
CO5. Analyze the Spatio- temporal pattern of population of the global level.

| Unit | Course Content | Teaching Hours |
|---|---|---|
| 1 | **Political division of the world**- Continents- Oceans- Seas -Rivers | 10 |
| 2 | **Natural regions of the world** decimal classification, major regions with reference to location, extent places, climate, vegetation, animal life and human activities with reference to: Equatorial, Monsoon, Mediterranean, grassland, hot and cold deserts, tundra region | 16 |
| 3 | **Economic activities -**Agricultural types - Mines- iron-ore, Power Resources- coal, and petroleum, Industry- Location factors of industrial regions, **Population** patterns of distribution. | 12 |

**References:**


1. High Smith and High Smith (1965): World Regional Geography. Prentice Hall, New Delhi
2. Husain M. (2004): World Geography, Rawat, Jaipur,
3. Tikkha, Bali, Sekhon (2002): World Regional Geography, New Academic Publishing Company, Jalandhar.
4. Ranganath (2009): Regional Geography of world, Vidyanidhi, Gadag.
5. Hartshorn.T.A. (2009): Economic Geography, PHI, New Delhi-

## GYE-507: Geography of Health

**Course Learning Outcomes:**

CO1. Understand health issues in its spatial context.
CO2. Extrapolate influence of place and location on human health.
CO3. Analyze spatial patterns of disease and health care provisions.
CO4. Apply geographical concepts and techniques to health-related problems.
CO5. Apply geographical knowledge to health policy advocacy specifically to third world diseases.
CO6. Assess/Evaluate methods applied to infer causal relationships between spatial variability in environment and health outcomes.

| Unit | Course Content | Teaching Hours |
|---|---|---|
| 1 | **Concepts and Traditions:** Definition, scope, elements, growth of medical Geography methods and techniques. Human-Environment Interaction: Health and environment-concept of health, geographical approaches of health, natural environment and health- Inorganic and organic, social environment and health: Food intake, perception of diseases, treatment of diseases, Socio-economic conditions and health. | 14 |
| 2 | **Modernization, population change and health:** Disease classification- genetic, communicable, non-communicable, occupational, deficiency diseases, WHO classification of diseases. Diseases diffusion: Meaning, factors/barriers, phases, types of diffusion. Epidemiological Transition The theory of epidemiological transition (Omran theory) factors of transition- Demographic, changes in risk factors, practices of modern medicine & Indicators. | 14 |
| 3 | **Global Inequalities in Health resources**: Concept of health care, levelsof health care, social context of disease, health care accessibility and utilization, health care system worldwide, health care services in India, health care policy in India | 13 |

**Essential Readings:**


1. Aikat, B.K. (1985): Tropical diseases in India, Arnold Meinemann, Delhi, 1st Edition
2. Akhtar Rais (1990): Environmental population and health problems, Ashish Publishers Home, New Delhi.
3. Ansari, S.H. (2005): "Spatial Organization of health care facilities in Haryana" NGJI, Vol 51, PP 3-4, 51- 61.
4. Chakrabarti, N., (1954): "Some factors influencing the mortality of cholera. Calcutta," Medical Journal, Vol. 51.
5. Determinants of Health (1995): A New Synthesis. John Frank. Current Issues in Public Health, 1:233240.
6. Egles, J. and Woods, K.J. (1983): The Social Geography of Medicine and Health, Groom Helm London, 1st addition.

7. K. Chaubey,(2005): "Epidemic of HIV/AIDS in India: A Study in Medical Geography. Annals of NAGI, Vol. XXV No.1, Pp 28-33. Learmonth, A.T.A. (1985) Diseases in India, Concept Pub. Company, New Delhi,1st Edition.
8. Misra, R.P., (2007): Geography of Health, Concept Publishing Company, New Delhi.
9. Robert G. Evans, Morris Barer, and Theodore Marmor. (1994): "Why are Some People Healthy and Others Not? The Determinants of the Health of Populations". Aldine Transaction, USA.
10. Shafi, M. (1967): "Food Production, efficiency and Nutrition in India." The Geographer, Vol. pp. 23-27.
11. Siddiqui, M.F. (1971): "Concentration of Deficiency Diseases in Uttar Pradesh. The Geographer, Vol. 18 pp 90-98.
12. Singhai, G.C. (2006): Medical Geography, Vasundhra Publication, Gorakhpur, 2006. Wilkinson R G. (1996): "Unhealthy Societies: The Afflictions of Inequality", Routledge, Londn.

# GYE-508: Bio-Geography

**Course learning outcomes**

CO1. Understand health issues in its spatial context.
CO2. Extrapolate influence of place and location on human health.
CO3. Analyze spatial patterns of disease and health care provisions.
CO4. Apply geographical concepts and techniques to health-related problems.
CO5. Apply geographical knowledge to health policy advocacy specifically to third worlddiseases.
CO6. Assess/Evaluate methods applied to infer causal relationships between spatial variability in environment and health outcomes.

| Unit | Course Content | Teaching Hours |
|---|---|---|
| 1 | **Genesis of soils**: Classification and distribution of soils, Soil profile Soil erosion, Degradation and conservation | 10 |
| 2 | **Factors influencing:** World distribution of plants and animals. Problems of deforestation and conservation measures, social forestry, Agroforestry, Wild life Major gene pool centers | 12 |
| 3 | **Natural vegetation:** Soil types and their distribution, Deforestation Desertification Soil erosion Biotic, forest and wildlife resources and their conservation Land capability Agro and social forestry | 12 |

**References:**


1. Heintzelman and High Smith (1965): World Regional Geography. Prentice Hall, New Delhi.
2. Husain .M (2004): World Geography, Rawat, Jaipur.
3. Tikkha, Bali, Sekhon (2002): World Regional Geography, New Academic Publishing Company, Jalandhar.
4. Ranganath (2009):Regional Geography of world, Vidyanidhi, Gadag,
5. Hartshorn.T.A. (2009): Economic Geography, PHI, New Delhi.

## GYP-509: Interpretation of Aerial Photographs and Satellite Images

**Course learning outcomes:**

CO1. Identify the difference between aerial photographs and satellite imagery.
CO2. Analyze methods interpreting aerial photographs and satellite imagery.
CO3. Analyze aerial photograph with stereoscope.
CO4. Analyze satellite imaginary and produce different thematic maps.

| Exercise No. | Title of the Exercise (Total 52 Hrs.) |
|---|---|
| 1 | Study of marginal information of aerial photographs. |
| 2 | Types of Aerial Photographs. |
| 3 | Elements of Aerial Photo interpretation. |
| 4 | Stereo vision test and stereoscopic viewing through stereoscopes. |
| 5 | Determination of scale of vertical photographs |
| 6 | Study of aerial photographs for mapping physical features. |
| 7 | Study of aerial photographs for mapping cultural features. |
| 8 | Manual Preparation of Land Use and Land cover maps from aerial photographs. |
| 9 | Satellite image data sources. |
| 10 | Collecting major satellite images (Landsat, Sentinel 2A, Carto DEM) |
| 11 | Interpretation of Satellite Imagery. |
| 12 | Study of satellite images for mapping physical features. |
| 13 | Study of satellite images for mapping cultural features. |
| 14 | Comparison of True Color, False Color and Panchromatic images. |
| 15 | Preparation of LULC maps using the satellite imagery. |

**References:**


1. Paul R. Wolf (1999): Elements of Photogrammetry, Mc. Grawhill, International Book Company, New Delhi.
2. Averte and GL. Berrin (2001): Fundamentals of Remote Sensing and Aerial Photo interpretation, McMillan, New York.
3. Singh and Sharma (2004): Introduction of Remote Sensing, Rawath Publications, New Delhi
4. George Joseph (2002): Fundamentals of Remote Sensing, University press Pvt. Ltd. Hyderabad-29
5. A Verte and G.L. Berrin (2001): Fundamentals of Remote Sensing and Aerial Photo Interpretation, Mc. Millan, New York.

## GYP-510: Applications of GIS & GNSS

**Course learning outcomes:**

CO1. Define data structure in GIS
CO2. Analyze geographical change analysis using geo processing tool
CO3. Production of thematic maps in Arc GIS
CO4. Collecting points and tracking the routes in GNSS.

| Exercise No. | Title of the Exercise (Total 52 Hrs.) |
|---|---|
| 1 | Introduction to GIS software. |
| 2 | Spatial Referencing. |
| 3 | Digitization - Extraction of features from Toposheets, Satellite image. |
| 4 | Map layout. |
| 5 | Linking spatial and non-spatial data. |
| 6 | Surface Analysis - Elevation, Slope and Aspect mapping. |
| 7 | Measurement of lengths perimeter, areas. |
| 8 | Queries and Buffer analysis. |
| 9 | Overlay analysis. |
| 10 | Rainfall Variability and Intensity Map. |
| 11 | Drainage delineation – Stream ordering. |
| 12 | Introduction of GNSS. |
| 13 | Finding latitude, Longitude and altitude. |
| 14 | Tracking. |
| 15 | Routing in GNSS. |

**References:**


1. Peter A. Burrough and Rachael A. McDonnell (1998): Principles of Geographic Information systems, Oxford University Press, New York.
2. Aronoff S. (1989): Geographic Information System, A Management Perspective, WDL Publications, Ottawa, Canada
3. Ian Heywood, Sarah Cornelius, Steve Carver (2003): An Introduction to Geographic Information System, Pearson Education Ltd., India
4. Chrisman N.R. (1997): Exploring Geographic Information System, Wiley, New York.
5. www.gisdevelopment.net/tutorials/human008.html
6. www.gisloungue.com/remotesening.html.

# Semester IV

**SEMESTER IV**

**HARD CORE COURSE GYH-551: Agricultural Geography**

**Course Learning Outcomes:**

CO1. Understand the spatial distribution of agricultural phenomena.
CO2. Analyzing the agricultural practice and cultural development.
CO3. Evaluate the inter relationship between geographical knowledge and agricultural practice in everyday living.
CO4. Evaluate the effects of agricultural policy measures in regional disparities.
CO5. Demonstrate the ability of analyzing agricultural problems in their own perspective.
CO6. Demonstration of appreciation for the contribution of agricultural sector in the economic development.

| Unit | Course Content | Teaching Hours |
|---|---|---|
| 1 | **Agricultural Geography:** Definition, nature, scope, and significance of agricultural geography; Origin & evolution of agriculture, approaches: Commodity, systematic, regional and systems approaches | 14 |
| 2 | **Determinants of Agriculture:** Physical, socio-economic, cultural, institutional, technological and political. Land holding and land tenure systems, land use policy and planning, irrigation and dry-farming, command area development | 13 |
| 3 | **Measures of Agriculture:** Cropping pattern, crop combinations, crop diversification, and intensity of cropping, degree of commercialization, agricultural efficiency and productivity, HYV seeds. Classification of agriculture: Whitley's classification of world agriculture, Von-Thunen's theory of agriculture and its relevant modifications, game theory & decision making. Role of WTO in agriculture | 14 |
| 4 | **Revolutions:** Green revolution, white revolution, blue revolution, yellow revolution, horticulture & floriculture. Agriculture: Sustainable development. Remote sensing & agriculture. Emerging impact on agriculture: Food security, salinization and land degradation. Employment in agricultural sector, use of modern technologies. | 13 |

**Essential Readings**


1. Mohammad Shafi (2006): Agricultural Geography, Dorling Kindessley (India) Pvt. Ltd. New Delhi.
2. Negi. B.S. (2003): Indian Agriculture: problems, Progress & Prospects, Vikas publishing house Pvt. Ltd. S. Ansari Road, Daryagani, New -Delhi-2.
3. Majid Hussain (2000): Agricultural Geography, Ed Anmol Publishing Pvt. Ltd. Ansari Road, Daryagani, New Delhi-2.
4. Shafi M. (1999): Agricultural Geography, Kedarnath Ram Nath, 132, R.G. College road, Meerat UP-1.
5. Singh & Dhillion (2000): Agricultural Geography, Prayog Pustak Bhavan, 20 A, University Road, Allahabad-211002, UP.
6. Jasbir Singh (2001): Agricultural geography, Prayog Pustak Bhavan, 20 A, University Road, Allahabad-211002, UP.

7. Memoria C.B. (1998): Agricultural Problems in India: Prayog Pustak Bhavan, 20 A, University road, Allahabad-211002, UP.
8. Majid Husain (2007): Systematic Agricultural Geography, Rawath Publications, Jawahar Nagar, Jaipur, New Delhi – 92.
9. Goh Cheng Leong & Gillian C. Morgan (2009): Human and Economic Geography, Oxford University Press, New Delhi, New York.
10. The Hindu Publications (2005 to 2010): Survey of Indian Agriculture.

## HARD CORE COURSE GYH-552: Regional Planning and Development

**Course Learning Outcomes:**

CO1: Understand the significance of decentralized planning
CO2: Understand the planning process at each level of Local Institutions
CO3: Evaluate role of the Local Governments in the planning
CO4: Comprehend the advantages of local level planning with people's participation
CO5: Create a spatial data base for local level planning

| Unit | Course Content | Teaching Hours |
|---|---|---|
| 1 | **Concept of region:** 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. | 14 |
| 2 | **Conceptual and theoretical frame work of regional planning**: Growth pole and growth foci. Planning processes: Sectoral, multilevel, decentralized planning. Integrated area development planning (IADP). Planning for tribal and hill areas, drought prone areas, command areas and watershed. Planning for metropolitan region: CDP, satellite towns, urban green belt. | 13 |
| 3 | **Concept of development**: Indicators of development. Regional imbalance. Regional development strategies. Problems and issues in regional planning. Sustainable development of regions. Regionalization of India: Based on natural, economic and administration (macro and meso levels only). | 14 |
| 4 | **Theories of regional development:** Central place theory, diffusion theory (Hegerstand's). The role of locational theories in regional planning process. An evaluation of regional disparities / imbalances – backward regions of India. Identification of backward areas, planning backward area. Causes and consequences regional disparities. Measures of disparities. Harnessing the information through GIS, remote sensing, GPS for regional planning and development. | 13 |

**Essential Readings:**


1. Action Programme for the 11th FYP, New Delhi: Planning Commission of India.
2. Administrative Reforms and Public Grievances website, http://arc.gov.in/6-1.pdf
3. Company Concept Publishing Company. Experiences, New Delhi: Concept Publishing Company. Future. New Delhi: Second Administrative Reforms Commission. Retrieved from Department of Government of India. (2006).
4. Report of the Expert Group: Planning at the grassroots level – An Government of India. (2007). Sixth Report on Local Governance: An Inspiring journey into the Hooja, Rakesh and Prakash Chand Mathur. (Eds.) (1991), District and Decentralized Planning, http://www.indiaenvironmentportal.org.in/files/Man%20and%20development%202.pdf ISS. (1994), Decentralized Planning and Panchayati Raj, New Delhi: Institute of Social Sciences.

5. Isaac, Thomas and Richard, W. Franke. (Eds.) (2000): Local Democracy and Development: People's Campaign for Decentralization in Kerala, New Delhi: Leftward. Jaipur: Rawat Publications.
6. John, M.S. and Jos Chathukulam. (2002): Building Social Capital through State Initiative Meghalaya), Man and Development. Retrieved from Mishra, S.N. et.al. (2000), Decentralized Planning and Panchayati Raj Institutions, New Delhi: Mittal Publications.
7. Participatory Planning in Kerala, Economic and Political Weekly, Vol. XXXVII, No.20,18
8. Rai, Manoj, et. al. (Eds.) (2001): The State of Panchayats: A Participatory Perspective, New Delhi:

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## SOFT CORE COURSE GYS-553: Population Geography

**Course Learning Outcomes:**

CO1. Analyse the scale, issues and nature of relationship between humans and environment on different geographical levels.
CO2. Evaluate constrains to population development and mobility.
CO3. Demonstrate knowledge and critical understanding of the key population indicators and concepts.
CO4. Demonstrate capabilities for effective communication of population information and relevant arguments to the society.
CO5. Evaluate theories of human migration to explain historical and current patterns.
CO6. Assessing the linkages existing between various demographic parameters to explain the current population problems at the regional level.

| Unit | Course Content | Teaching Hours |
|---|---|---|
| 1 | **Population Geography:** Nature and scope of population geography, population geography and demography, Sources of population data. Density and distribution of population and its pattern in the world, factors influencing distribution of the world population | 14 |
| 2 | **Population change:** 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 |
| 3 | **Migration:** Meaning and types, causes and consequences, theories of migration – Ravenstein & lee. | 13 |
| 4 | **Population and resources**: optimum population, population resource regions, Malthus population theory, population policy of India | 14 |

**Essential readings**


1. Beaujeu, Garnier, J. (1966): Geography of Population, Longman,London
   Bogue, D.J. (1969): Principles in Demography, John Wiley, New York.
2. Bose, A. et al. (1974): Population in India's Development (1947-2000),Vikas Publication House, New Delhi.
3. Chandna, R .C. (2000): Geography of Population, Kalyani Publ., New Delhi.
4. 22 Clarke, J.I. (1972): Population Geography, Pergamon Press, Oxford Clarke,John I. (1973): Population Geography, Pergamon Press, Oxford. Crook, Nigel (1997): Principal of Population and Development, Pergamon Press, New York.
5. Garnier, B. J. (1970): Geography of Population, Longman, London.
6. Ghosh, S. (1998): Settlement Geography, Orient Longman Ltd. , Kolkata
7. Jones, H.R., (2000): Population Geography, Paul Chapman, London
8. Mamoria, C.B. (1981): India's Population Problems, Kitab Mahal, New Delhi.
9. Mitra, Ashok (1978): India's Population Problems and Control (Vol. I & II), Kitab Mahal, New Delhi.
10. Srinivasan, K. and Vlassoff, M. (2001): Population and Development Nexus in India, Challenges for the new Millennium, Tata McGraw Hill, New Delhi.

11. Sundaram K. V and Nangia, Sudesh (eds.) (1986): Population Geography, Heritage, New Delhi. Trewartha, G.T. (1969): A Geography of Population: World Patterns, John Wiley, New York. Wood, R. (1979): Population Analysis in Geography, Longman, London.
12. Zacharia, E. and Sinha, V.C. (1986): Elements of Demography, Allied Publishers Pvt. Ltd., New Delhi
13. Zelinsky .W. (1966): A prologue to population Geography, Prentice Hall India, New Delhi

**SOFT CORE COURSE GYS-554: Environmental Geography**

**Course Learning Outcomes:**

CO1. Understand the environment from different perspectives
CO2. Examine the geographical explanations for biological diversity of the world
CO3. Develop an environment perceptive when approaching complex development issues.
CO4. Evaluate the vulnerability of ecosystem services.
CO5. Demonstrate methodological procedure for conducting Environment Impact Assessment
CO6. Appreciate and recognize the complexity and value of ecosystem

| Unit | Course Content | Teaching Hours |
|---|---|---|
| 1 | **Environmental Geography:** Nature and interdisciplinary aspect of environmental geography. Ecological approaches. Definition and meaning of environment, habitat. Ecological niche. Bio-sphere and Biodiversity. | 11 |
| 2 | **Ecosystem**: Structure and functioning of ecosystem, pond as aecosystem, food chains, food webs, food pyramid. Biomes – equatorial totundra i.e., 11 types. Man and environmental relationships. Resource use and ecological imbalance with reference to soil, forests and energyresources. Manmade ecosystem - Urban, ecotourism, national parks and sanctuaries. Depletion of ozone, greenhouse effect and acid rain. | 12 |
| 3 | **Man induced changes in environment**: Environmental pollution, i.e. Air, water, noise, solid waste with special reference to India. Environmental hazards, i.e. earth as warehouses, flood, famines, landslides, avalanches, forest fires, impact of green revolution and extinction of species. | 11 |

**Essential Readings:**


1. Anderson J.M. (1981): Ecology for Environmental Science: Biosphere, Ecosystems and Man, Arnold, London.
2. Balakrishnan, M., (1998): Environmental Problems and Prospects in India, in Das, R.C., et. al. Oxford & IBH Pub., New Delhi.
3. Canter Chary, L. W. (1996): Environmental Impact Assessment, 2nd edition, McGraw Hill, New York
4. Chichester: Marsh, W.M. and Grossa, J.M. (1996): Environmental Geography: Science, Land use and Earth Systems, John Wiley & Sons.
5. Das, M.C.(1993): Fundamentals of Ecology, Tata Mc Graw Hill, New Delhi.
6. Farmer, A. (1997): Managing Environmental Pollution, Routledge, London
7. Gilpin, A. (1996): Dictionary of Environment and Sustainable Development, John Wiley and Sons Ltd.,
8. Goudie, Andrew (1984): The Nature of the Environment, Oxford Katerpring Co. Ltd. Huggett, R.J. (2002): Fundamentals of Biogeography, Routledge, London & New York.
9. Maryk, Theodore (1996): Major Environmental Issues Facing 21st Century, Prentice Hall.

10. Middleton N.(1995): The Global Casino: An .Introduction to Environmental Issues, John Wiley and Sons Inc., New York
11. Nobel and Wright (1996): Environmental Science, Prentice Hall, New York.
12. Odum, E.P. (1971): Fundamental of Ecology, W.B. Sanders, Philadelphia.
13. Roberts, N. (1994): The Changing Global Environment, 3rd edition, Blackwell Pub. Co., London.
14. Sharma, P.D. (1975): Ecology and Environment, Rastogi Publication, Meerut.
15. Singh, R.B. (ed.) (1989): Environmental Geography, Heritage, New Delhi.
16. Singh, R.B. and Misra, S. (1996): Environmental Laws in . India: .Issues and Responses,Rawat Pub., New Delhi:
17. Slaymaker, A. & Spencer T. (1998): Physical Geography & Global Environmental Change, Longman, UK.
18. Speth, I.G. (2005): Global Environmental Challenges – Transitions to a Sustainable World, Orient Longman, New Delhi
19. Strahler, A.H. and Strahler A.N. (1977): Geography and Mans Environment, John Wiley, New York.
20. Strahler, A.N. and Strahler, A.H. (1973): Environmental Geosciences: Interaction between natural systems and Man, John Wiley and Sons, New York.
21. William, M.M. and John, G. (1996): Environmental Geography - Science, Land use and Earth System, John Wiley and Sons, New Yor

## SOFT CORE COURSE GYS-555: Social Geography

**Course Learning Outcome**

CO1. Locate the sub discipline of Social and Cultural Geography within the discipline
CO2. Critically understand the key concepts of Social and Cultural Geography
CO3.Demonstrate knowledge of key methods in analyzing cultural geography
CO4. Apply concepts and evaluate emerging issues in contemporary cultural context

| Unit | Course Content | Teaching Hours |
|---|---|---|
| 1 | **Nature of social geography:** Concept and meaning of culture-elements of culture, convergence and divergence of culture-cultural change, **Cultural diversity:** Human races-Caucasoid, mongoloids and negroids - World's major regions-major languages of the World, and India's cultural Regions. Ethnic groups, case study, bushman, pygmies and eskimos. tribes of India | 15 |
| 2 | **Major human activities and cultural and occupations of man;** Historical origin and diffusion of agriculture, industrialization and its impact on culture, modernization broad features and impact on culture. | 12 |
| 3 | **Culture and social well-being:** Cultural indicators and human development index (HDI) at global, India and Karnataka Level. Human settlements: Patterns of rural and urban settlements, Characteristics of settlements, Technological impacts on human settlements. Emerging issues of aged population and their care. | 14 |

**Essential Readings:**


1. Ahmad, A. (1999): Social Geography, Rawat Publication, New Delhi.
2. Ahmed, A. (1993): (ed) Social Structure and Regional Development: A Social Geography. Perspective, Rawat Publications, Jaipur
3. Anderson, K. Domosh M., Pile, S., Thift, N (eds). (2002): Handbook of Cultural Geography. Sage Cosgrove Denis (1984) Social Transformation and Symbolic Landscape, Croom Helen, London.
4. Crang, Mike.(1998): Cultural Geography, Routledge, London Feasibility reports. By KILA
5. Pannikar, K.M. (1959): Geographical Factors in Indian History, Bharatiya Vidya Bhavan, Bombay Pannur writings. Africa in Kerala. Ente Hridathile Adivasi Personality of India
5. Rachel, Pain. (eds). Introducing Social Geographies, Arnold Hodder group, London & Oxford University Press
6. Raza, M. and Ahmed, A. (1990): An Atlas of Tribal India, Concept Publishing Co, Delhi.
6. Robertson Iain and Penny Richards (2003). Studying Cultural Landscapes, Oxford University Press, London and New York.

## SOFT CORE COURSE GYS-556: Geography of Health

**Course Learning Outcomes:**

CO1. Understand health issues in its spatial context
CO2. Extrapolate influence of place and location on human health
CO3. Analyze spatial patterns of disease and health care provisions
CO4. Apply geographical concepts and techniques to health-related problems
CO5. Apply geographical knowledge to health policy advocacy specifically to third world diseases
CO6. Assess/Evaluate methods applied to infer causal relationships between spatial variability in environment and health outcomes.

| Unit | Course Content | Teaching Hours |
|---|---|---|
| 1 | **Concepts and Traditions:** Definition, scope, elements, growth of medical Geography methods and techniques. Human-Environment Interaction: Health and environment-concept of health, geographical approaches of health, natural environment and health- Inorganic and organic, social environment and health: Food intake, perception of diseases, treatment of diseases, Socio-economic conditions andhealth. | 14 |
| 2 | **Modernization, population change and health:** Disease classification- genetic, communicable, non-communicable, occupational, deficiency diseases, WHO classification of diseases. Diseases diffusion: Meaning, factors/barriers, phases, types of diffusion. Epidemiological Transition The theory of epidemiological transition (Omran theory) factors of transition- Demographic, changes in risk factors, practices of modern medicine & Indicators. | 14 |
| 3 | **Global Inequalities in Health resources**: Concept of health care, levels of health care, social context of disease, health care accessibility and utilization, health care system worldwide, health care services in India, health care policy in India | 13 |

**Essential Readings:**


1. Aikat, B.K. (1985): Tropical diseases in India, Arnold Meinemann, Delhi, 1st Edition
2. Akhtar Rais (1990): Environmental population and health problems, Ashish Publishers Home, New Delhi.
2. Ansari, S.H. (2005): "Spatial Organization of health care facilities in Haryana" NGJI, Vol 51, PP 3-4, 51- 61.
3. Chakrabarti, N. (1954): "Some factors influencing the mortality of cholera. Calcutta," Medical Journal, Vol. 51.
4. Determinants of Health (1995): A New Synthesis. John Frank. Current Issues inPublic Health, 1:233240.
5. Egles, J. and Woods, K.J. (1983): The Social Geography of Medicine and Health, Groom Helm London, 1st addition.
6. K. Chaubey, "Epidemic of HIV/AIDS in India: A Study in Medical Geography. "Annals of NAGI, Vol. XXV No.1, 2005 pp 28-33.

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MANGALORE UNIVERSITY
ಮಂಗಳೂರು ವಿಶ್ವವಿದ್ಯಾನಿಲಯ
ಜ್ಞಾನವೇ-ಬೆಳಕು

## GYP-557: Techniques in Human Geography

**Course Learning Outcomes:**

CO1: understand network analysis and shortest path matrix in research techniques in human geography.
CO2: understand population potential and Centro graphic analysis in techniques in human geography.
CO3: Analyse the nearest neighbor and functional classification of towns.
CO4: Analyse the crop combination and crop diversification method in research techniques.
CO5: Evaluate the crop intensity.

| Exercise No | Title of the Exercise (Total 52 Hrs.) |
|---|---|
| 1 | Network Analysis: Alfa, Beta and Gama Indices |
| 2 | Accessibility Matrices: 'C' Matrix |
| 3 | Accessibility Matrices: Shortest Path Matrix. |
| 4 | Nearest Neighbor Analysis |
| 5 | Location Quotient |
| 6 | Rank Size Relationship |
| 7 | Functional Classification of Towns |
| 8 | Analysis of Crop combination and Mapping- J.C. Weaver's Method |
| 9 | Analysis of Crop combination and Mapping- Doi's Method |
| 10 | Analysis of Crop combination and Mapping- Rafiuallah's Methods |
| 11 | Crop diversification |
| 12 | Crop Intensity |
| 13 | Index of Diversification |
| 14 | Population Potential |
| 15 | Centrographic Analysis |

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## GYP-558: Dissertation and field Study

**Course Learning Outcomes**

CO1: Design and execute a meaningful research project that demonstrates spatial thinking.
CO2: Articulate research or project objectives and questions clearly and situate research withinan academic or Scholarly context.
CO3: Understand the challenges of empirical geographical research.
CO4: Able to deal with practical research problems.
CO5: Narrate the research process clearly in the form of a formal multi-chapter master's dissertation in a structured format.
CO6: Defend her/his thesis in any scholarly engagements.

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/Lad 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, GNSS & RS methods have to be used with appreciate primary and secondary data.
3. The students should follow the research guidelines by reading research Methodology before taking up the project Work.
4. Project work must include quality maps, diagrams and flowcharts.
5. 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 Objectives
   g) Materials and Method
   h) Result & Discussion
   i) Conclusion
   j) Photos
   k) References

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

**Note**:

1. Local Field study is a part of each semester. Which is compulsory and to be conducted in the mid of each semester. Local Field Study tour report submission is compulsory.

2. Viva-Voice based on dissertation.

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