ಮಂಗಳೂರು ವಿಶ್ವವಿದ್ಯಾನಿಲಯ

MANGALORE UNIVERSITY

(Accredited by NAAC with 'A' Grade)

ಕ್ರಮಾಂಕ/ No. : MU/ACC/CR 28/2020-21/A2

ಕುಲಸಚಿವರ ಕಛೇರಿ
ಮಂಗಳಗಂಗೋತ್ರಿ – 574 199
Office of the Registrar
Mangalagangothri – 574 199
ದಿನಾಂಕ/Date:25.11.2020

NOTIFICATION

Sub: Revised syllabus of M.Sc. Geography programme.
Ref: Academic Council approval vide agenda No.:ಎಸಿಸಿ:ಶೈ.ಸಾ.ಸ.1:10 (2020–21) dtd 06.10.2020.

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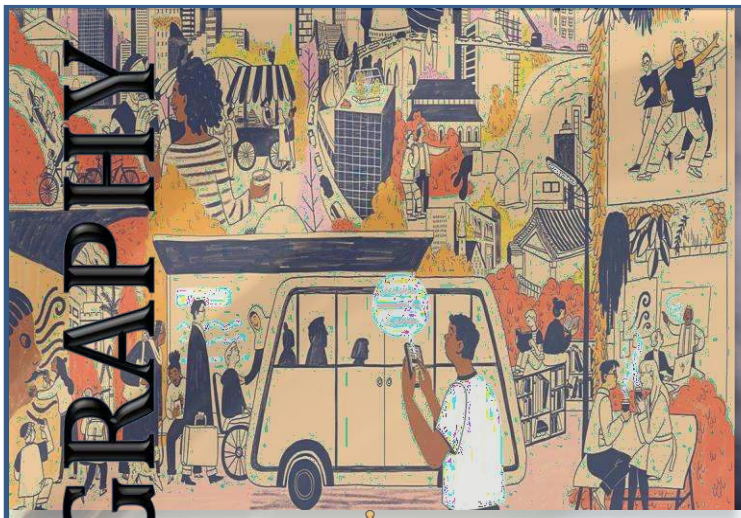
The revised syllabus of M.Sc. Geogrphy programme which is approved by the Academic Council at its meeting held on 06.10.2020 is hereby notified for implementation with effect from the academic year 2020-21.

Copy of the Syllabus shall be downloaded from the University Website (www.mangaloreuniversity.ac.in)

REGISTRAR

To,

1. The Chairman, Dept. of Marine Geology, Mangalore University, Mangalagangothri
2. The Co-ordinator, M.Sc. Geography Programme, Dept. of Marine Geology, Mangalore University.
3. The Chairman, P.G. BOS in Geography, Dept. of Marine Geology, Mangalore University.
4. The Registrar (Evaluation), Mangalore University.
5. The Superintendent (ACC), O/o the Registrar, Mangalore University.
6. The Asst. Registrar (ACC), O/o the Registrar, Mangalore University.
7. Guard File.



MANGALORE UNIVERSITY

DEPARTMENT OF

GEOGRAPHY

SYLLABI OF M.Sc. IN GEOGRAPHY

(CHOICE BASED CREDIT SYSTEM- SEMESTER SCHEME)

2020-21

Onwards

Annexure - I

MANGALORE UNIVERSITY

MANGALAGANGOTHRI- 574 199

Department of Studies in Geography
M.Sc. Degree Programme

(CHOICE BASED CREDIT SYSTEM- SEMESTER SCHEME)

Syllabus for M.Sc. Programme in

GEOGRAPHY

(From the Academic Year 2020-21 onwards)

Mangalore University
M.Sc. Degree Programme in Geography

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

(Year 2020-21 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 18-01-2020, which syllabi will be implemented from the academic year 2020-21. (Ref: No: MU/Syndicate/Special BOS/11/2019-20/S3 Dated: 30-12-2019). The Hard Core, Soft Core and Open Elective Courses spread out across the four semesters have 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 1st 2nd, 3rd and 4th semesters with the provision of offering project work in lieu of one of the Practical Courses in the 4th Semester. Elective Courses are offered in the 2nd and 3rd semesters for students of other departments, each Course having 3 credits. Project Work having 4 credits is offered in the 4th 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 2nd, 3rd and 4th Semesters. The distribution of Soft Core Courses across the semesters is as follows: 2nd semester- 1 Soft Core Course out of a choice of two Courses, 3rd Semester- 1 Soft Core Course out of a choice of two Courses, 4th 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 1st 2nd and 3rd semesters and 1 in the 4th semester. The BOS has proposed 3 open electives each in the 2nd & 3rd 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 1st, 2nd, 3rd, & 4th 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	Advance Geomorphology	4	GYH 451	Development of Geographic Thought	4
GYH 402	Advance Climatology	4	GYH 452	Economic Geography	4
GYH 403	Advance Oceanography	4	GYH 453	Basics of Remote Sensing	4
GYH 404	Geography of Resources	4	GYS 454 GYS 455	Geography of Settlements OR Geography of Tourism	3
GYP 405	Techniques in Physical Geography	3	GYE 456 GYE 457 GYE 458	Geography of India (With special reference to Karnataka) OR Resource Conservation and Management OR 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 Methodology	4	GYH 552	Regional Planning & Development	4
GYH 503	Fundamentals of Cartography, GIS & GNSS.	4	GYS 553 Or GYS 554	Population Geography Or Environmental Geography	3
GYS 504 Or GYS 505	Disaster Studies Or Coastal Geography	3	GYS 555 Or GYS 556	Social Geography Or Geography of Health	3
GYE 506 Or GYE 507 Or GYE 508	World Geography Or Geography of Health Or Bio- Geography	3	GYP 557	Techniques in Human Geography	3
GYP 509	Interpretation of Aerial Photography 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 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

Units	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: reasons, types of eruptions, significance, volcanic activity, products, landforms, geographical distribution and major volcanic eruptions occurred.	14
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 –Recent trends in geomorphology.	14

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.

Units	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

Essential Readings

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.

Units	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	14
3	**Movements and Circulation of Ocean Water:** Waves, Tides, Currents and their Effects. Coastal Ecology-Coastal Dunes and Mangroves.	12
4	**Ocean Deposits:** Types and Distribution, Coral Reefs: Origin, Types and Theories of Origin of Coral Reefs (Darwin, Dally and Murray). 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 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. Analyse the classification of minerals and their distribution and its conservation.

Units	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	11
2	**Soil:** Soil Formation, Factors Influencing Soil Formation, Soil Characteristics and Soil Profile, Classification of Soil (zonal types) Soil erosion, Soil Conservation.	11
3	**Water and Forest Resources:** Water Resources and its Development in India, Water Conservation, water cycle and water budget. Forest Types and Distribution, Forest Products-Timber and Paper, Forest Decay, Forest Conservation. Livestock: Livestock Rearing in the World and Live Stock Regions, Live Stock Products: Milk, Meat and Wool. Major fishing Grounds of the world.	18
4	**Mineral Resources:** Classification of Major Minerals, their Distribution and Production, 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. 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, Hanging Valley, Cliffs.
7	Morphometric Analysis (Linear features)
8	Morphometric Stream Ordering.
9	Bifurcation Ratio and Drainage Density
10	Slope Analysis: Meaning, Definition.
11	Smith's Method
12	Wentworth's Method
13	Block Diagrams- one point perspective
14	Block Diagrams- two point perspective
15	Geological 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	Interpretation of SOI Topo maps: Marginal information-
4	Physiography- Contour, Bench Mark and Spot Height.
5	Water Bodies- Natural and Man-made drainage
6	Vegetation- Natural and Human Induced Vegetation
7	Cultural features- Transportation and Settlements
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

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.

Units	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. Evaluation of geographic thought. Limits in geography. Traditions in geography: Area differentiation, landscape theme, Environment theme, spatial distribution and geometric theme. Inter-disciplinary and intra-disciplinary approaches in geography	13
2	**Pioneers and their contributions to geography:** Ancient period – Greek, romans, Indians and Chinese. Medieval period - Arabs and geographical discoveries. Modern period – Alexander Von Humbolt, Carl Ritter and Darwin. School of geography – German, French, British, American, Russian and Indian.	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 452: Economic Geography

Course leaning outcomes:

CO1. Analyze how the economy is organized within the power space relation.
CO2. Understand the key drivers of economic change
CO3. Evaluate critically how different theories and models are applicable in the economic development of different regions.
CO4. Demonstrate the inter dependence of different sectors of economy.
CO5. Evaluate the process of global shift and identities in the capitalist economy.
CO6. Analyze how the changing political powers and policies achieving regional identities.

Units	Course Content	Teaching Hours
1	**Economic Geography:** Nature, scope and importance of economic geography, evolution of economic geography, approaches to economic geography, concept of economy, spatial structure of the economy, economy and economic geography	13
2	**Primary economic activities**: Hunting, fishing, food gathering, herding, timbering, agriculture and mining. Commercial economic activities: Dairying, mixed farming, poultry and plantations. Fishing: Marine, fresh water and aquaculture. Issues and challenges for the development of fishing. Von-Thunen's theory.	14
3	**Knowledge-based technologies:** Electronic age, spatial information technology, telecommunication, high tech-transport, effects of liberalization, privatization and globalization (LPG) on economic activities in the world and India. Secondary activities: Webber's Industrial location theory.	14
4	**Economic development:** Growth and development, definition, concept, contents of development and sustainable development. Human resource development: Concept, measurement, indicators and Components. Tertiary activities: Christellers's service sector theory.	13

Essential Readings

1. Alexander J. W. (1963): Economic Geography, Prentice-Hall Inc., Englewood Cliffs, New Jersey.
2. Bagchi-Sen S. and Smith H. L. (2006): Economic Geography: Past, Present and Future, Taylor and Francis.
3. Berry, B.J.L. et al. (1976): Geography and Economic Systems, Prentice Hall, Englewood Cliff.
4. Coe N. M., Kelly P. F. and Yeung H. W. (2007): Economic Geography: A Contemporary Introduction, Wiley-Blackwell.
5. Combes P., Mayer T. and Thisse J. F. (2008): Economic Geography: The Integration of Regions and Nations, Princeton University Press.
6. Gautam, A. (2010): Advanced Economic Geography. Sharda Pustak Bhawan, Allhabad. Hodder B. W. and Lee R. (1974): Economic Geography, Taylor and Francis. Hudson, R. 2005. Economic Geography. Sage Publication, New Delhi.
7. Jones & Darkenwald (1960): Economic Geography, New York

8. Knowled, R. and Wareing, J. (1992): Economic and Social Geography. Rupa and Company, Calcutta. Knox, P. (2003): The Geography of World Economy. Arnold, London.
9. Naresh Kumar (1991): Geography of Transportation, Concept Publications. Rostov, W.W. (1960): The Stages of Economic Growth, Cambridge Univ. Press, London.
10. Saxena, H.M. (2013): Economic Geography. Rawat Publications, Jaipur.
11. Sharma T.C. and Countinho. O. (1998): Economic and Commercial Geography of India, Vikas Publishing house, Delhi.
12. Wheeler, J.O. et.al. (1995): Economic Geography, John Wiley, New York.
13. Willington D. E. (2008): Economic Geography, Husband Press.

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.

Units	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, aerial platforms. Elements of Aerial photo interpretation: Formats of Imageries: Digital and Analog data	**13**
3	**Sensor & Platforms: Sensors:** active and passive sensors, electro mechanical and optical sensors. Platforms: types, characteristics, payload of launch vehicles, -SLV, PSLV, GSLV, AGSLV, orbit positioning issues, errors induced due to platform disturbances. Microwave remote sensing: thermal remote sensing, interferometry SAR, SLAR. Future of remote sensing, Digital image processing, 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.

Units	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.

Units	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. **Case Studies –** Major tourist centers. Hill Station – Mount Abu, 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, Sterling publishers, 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 – principles and 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.

Units	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:** Major Agricultural Crops: Rice, Wheat, Cotton, Sugarcane, Maize, Jowar, Tea, Coffee, Rubber, Mulberry Crops. Green Revolution in India, 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.

Units	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 (zonal types) soil erosion, soil conservation. Water and Forest Resources: Water resources and its development in India, water conservation, water cycle and water budget. Types of forests and their distribution, forest products –timber and paper, decay of forests, conservation of forests and distribution	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.

Units	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 a ecosystem, food chains, food webs, food pyramid. Biomes – equatorial to tundra i.e., 11 types. Man and environmental relationships. Resource use and ecological imbalance with reference to soil, forests and energy resources. 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, 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. 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	Cartographic Appreciation
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	Block Pile Diagrams
13	Pie Diagrams
14	Flow diagrams
15	Method of Interpretation

References

1. Monkhouse F.J. & H.R. Wilkinson (1952): Maps and Diagrams, their compilation and concentration, 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.

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.

Units	Course Content	Teaching Hours
1	**Nature of urban geography-** Definition of urban settlements (towns, cities and metro etc.) -Census definition of settlements, (India)- Urbanization through times-Current factors, trends of urbanization in the world and India. Growth of the world and Indian cities.	13
2	**Urban population density and land value curves**- Urban land use – vertical and horizontal growth of cities, concentric, zonal and multiple nuclei theories of urban structure	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	**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 Bangalore 2015.	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 Methodology

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.

Units	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

Units	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:** Data capture & geo-processing sources, input methods for spatial & non-spatial data, editing, re-projection, geometric transformation, geo- referencing, display. 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 observation 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.

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.

Units	Course Content	Teaching Hours
1	**Environment hazards & disasters:** Meaning & approaches, Causes and consequences of disaster: Physical, economic and cultural, National and International organizations into disaster management. Types of environmental hazards and disaster: Natural disaster- Earthquake, tsunamis, landslides, volcanic eruption, cyclones, tornados, floods, droughts, heat waves and cold waves. Man induced hazards-Soil erosion, release of toxic chemicals, nuclear explosion, population explosion and resultant environmental disasters.	13
2	**Emerging approaches to Disaster management:** (1) Pre-disaster stage (Preparedness)-hazard zonation maps-predictability and forecasting warning, land use zoning, Information, Education & Communication (IEC) Disaster resistance house construction, Population reduction in vulnerable area and awareness. (2) Emergency Stage- Rescue training for search and operation at national and regional level, ground management plan preparation, immediate relief, Assessment surveys. (3) Post disaster stage rehabilitation – Political administrative aspects, social aspect, economic aspect, cultural aspect and environmental aspects	14
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.

Units	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:
GYE506: 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.

Units	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.

Units	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, 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.
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, London.

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 world diseases.
CO6. Assess/Evaluate methods applied to infer causal relationships between spatial variability in environment and health outcomes.

Units	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 Photography and Satellite Images

Course learning outcomes:

CO1. Identify the difference between aerial photographs and satellite imaginary
CO2. Analyze methods interpreting aerial photographs and satellite imaginary
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	Comparison of features in topo sheets and Aerial Photographs.
2	Comparison of features in Aerial Photographs and Satellite images.
3	Comparison of features in Topo sheets and Satellite imageries.
4	Determination of Aerial Photo scale.
5	Procedures of acquiring Aerial Photographs.
6	Types of Aerial Photographs.
7	Medium of Aerial Photographic Interpretation.
8	Test for Stereographic View.
9	Elements of Aerial Photographs.
10	Stereographic Interpretation of Aerial Photographs.
11	Manual Preparation of Land Use Maps.
12	Interpretation of Satellite Imagery.
13	Identification of features through signatures color imagery.
14	Preparation of Thematic maps using the satellite imagery.
15	Interpretation Methods.

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	GIS Interpretation Procedure.
2	Measurement of Scales Nominal, Ordinal and Ratio.
3	Extraction of Geographical features through topo sheets.
4	Vector Data Model.
5	Raster Data Model.
6	Cartesian coordinates System.
7	Spagathi Mode.l
8	TIN and Buffering.
9	Over lay analysis.
10	Rainfall Variability and Intensity Map.
11	Model Creation.
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
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.

Units	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

Units	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:

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.

Units	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

Units	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 a ecosystem, food chains, food webs, food pyramid. Biomes – equatorial to tundra i.e., 11 types. Man and environmental relationships. Resource use and ecological imbalance with reference to soil, forests and energy resources. 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 York.

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

Units	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	13
2	**Major human activities and cultural and occupations of man;** Agriculture including its origin & diffusion, industrialization and its impact on culture and modernization broad features and impact in culture.	14
3	**Culture and social well-being:** Cultural indicators and human development index (HDI) at global, India and Karnataka Level. Human settlements: Rural and urban settlement patterns. Economic and social characteristics- Impact of technology 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.

Units	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, 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 in Public 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.

7. 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, London.

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

References:

1. Aslam Mohamood (1977): Statistical Methods in Geographical Studies, Rajesh Publications, New Delhi
2. Gupta C.B. (1979): An Introduction to Statistical Methods, Vikas Publishing House Pvt. Ltd. New Delhi.
3. Murray R. Toffee R. Transportation Geography, Prentice Hall Publication, New York.

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 within an 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. The Project should not be cross 50 pages including photos, references and tables.
5. Project work must include quality maps, diagrams and flowcharts.
6. The Project report should include followings:
   a) Title of the project
   b) Introduction
   c) Review of Literature
   d) Study area
   e) Data sources
   f) Main 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 tee and.

Note:

1. Field study tour is a part of IV semester. Study tour is compulsory and to be conducted between end of the III semester and in the beginning of the IV semester for a duration of two weeks. Study tour report submission is compulsory.

2. Viva-Voice based on dissertation and study tour report.

References:

1. Ahuja (2004): Research Methods, R.K. Books, New Delhi
2. Kothari (1990): Research Methodology – Wiley Eastern Ltd. New Delhi.
3. Gopal M.H. (1970): Introduction to Research Procedure in Social Science, Asia Publishing House, Bombay.
4. Young Pauline V. (1980): Scientific Survey and Research, Prentice Hall, New Delhi.
5. Limb (2001): Quantitative Methodologies for Geographer R.K. Books, New Delhi.
6. Mishra R.P. (2001): Research Methods in Geography, R.K. Books, New Delhi.
7. Pal (2005): Computing Techniques in Geography, R.K. Books, New- Delhi.

Question Paper Setting:

A) BASIS FOR INTERNAL ASSESSMENT:

Internal assessment marks in theory papers shall be based on two tests. The tests may be conducted 8 and 14 weeks after the start of a semester. Average of two test marks will be considered as internal assessment marks. Practical internal assessment marks shall be based on test and records. 20 marks for experiment and 10 marks for record. The practical test may be conducted 12 weeks after the start of a the semester on project work in 4th semester shall be of at least 45 minutes duration for 30 marks and which will be the internal assessment marks for project work components.

B) THEORY QUESTION PAPER PATTERN:

The Syllabus of each hard core course shall be grouped into three UNITs of 15 teaching hours and that of soft core and open Electives shall be of three UNITs of 12 teaching hours. Question Papers in all the four semesters shall consist of Two Parts- Part A and Part-B. Part A shall contain Nine (09) very short answer objective type questions carrying 2 marks each, drawn equally from all the three UNITs of the syllabus. All the nine subdivisions are to be answered. Part B shall contain Six (06) brief and/or long answer questions carrying 13 marks each drawn from all the three UNITs of the syllabus (2 questions per UNIT). There may be a maximum of three sub-divisions per question, carrying 3 or more marks per sub-division. Four (04) out of Six (06) questions are to be answered

C) PRACTICAL EXAMINATION PATTERN:

Practical examination course papers out of 70 marks 15 marks shall be allotted for viva-voce and 55 marks for practical paper. In the 4th semester there shall project work/dissertation in lieu of one of the practical for the entire programme (Geography) consisting of 70 marks. The project work may be conducted either in the department or in field work tour or Geographical excursion to important places in India. Project report shall be valued for 70 marks.

M.Sc. Geography Programme
(Title of Paper)

Semester	Paper Code	Classification	Title
I	GYH401	Theory (Hard Core)	Advance Geomorphology
I	GYH402	Theory (Hard Core)	Advanced Climatology
I	GYH403	Theory (Hard Core)	Advanced Oceanography
I	GYH404	Theory (Hard Core)	Geography of Resources
I	GYP405	Practical (Hard Core)	Techniques in Physical Geography
I	GYP406	Practical (Hard Core)	Interpretation of Indian Weather and Topo maps
II	GYH451	Theory (Hard Core)	Development of Geographic Thought
II	GYH452	Theory (Hard Core)	Economic Geography
II	GYH453	Theory (Hard Core)	Basics of Remote Sensing
II	GYS454 OR GYS455	Theory (Soft Core)	Geography of Settlements OR Geography of Tourism
II	GYE456 OR GYE457 OR GYE458	Theory OEC	Geography of India (With special Reference Karnataka) OR Resource Conservation and Management OR Environmental Geography
II	GYP459	Practical (Soft Core)	Statistical Methods in Geography
II	GYP460	Practical (Soft Core)	Techniques of Mapping and Mapping Analysis
III	GYH501	Theory (Hard Core)	Urban Geography
III	GYH502	Theory (Hard Core)	Research Methodology
III	GYH503	Theory (Hard Core)	Fundamentals of Cartography, GIS & GNSS

III	GYS504 OR GYS505	Theory (Soft Core)	Disaster Studies OR Coastal Geography
III	GYE506 OR GYE507 OR GYE508	Theory OEC	World Geography OR Geography of Health OR Bio-Geography
III	GYP509	Practical (Soft Core)	Interpretation of Aerial Photographs and Satellite Imageries
III	GYP510	Practical (Soft Core)	Applications of GIS & GNSS
IV	GYH551	Theory (Hard Core)	Agricultural Geography
IV	GYH552	Theory (Hard Core)	Regional Planning & Development
IV	GYS553 OR GYS554	Theory (Soft Core)	Population Geography OR Environmental Geography
IV	GYS555 OR GYS556	Theory (Soft Core)	Social Geography OR Geography of Health
IV	GYP557	Practical (Soft Core)	Techniques in Human Geography
IV	GYP558	Dissertation, Field study	Dissertation and field study