



University of Kashmir, Srinagar, J&K
P.G. Department of Geography & Disaster Management
(DST-FIST Sponsored and UGC-SAP Assisted Department)

COURSE STRUCTURE

FOR

M. A./M. Sc. GEOGRAPHY

Batch 2021 Onwards

Under

CHOICE BASED CREDIT SYSTEM (CBCS) SCHEME

Department of Geography & Disaster Management

University of Kashmir
Srinagar-190006

CHOICE BASED CREDIT SYSTEM (CBCS)

Program Outcome: The programme has been conceptualized with the aim of preparing geographers who are adequately trained to address the problems and issues being faced in the contemporary times. The curriculum is being continuously updated so that new concepts, innovations, methodologies and approaches are incorporated to keep the subject in line with the changing trends at the global level. The students are expected to have a clear understanding of conceptual framework of the subject field of geography. The programme prepares our students to place themselves as regional and urban planners, environmental managers, resource planners and cartographers etc. The programme prepares our students for various competitive examinations so that they can carve a niche for themselves in the civil services. The theoretical and practical training in various geospatial technologies adequately trains the students to make their careers as Remote Sensing and GIS professionals. Modern tools, techniques and introduction of latest instrumentation in surveying has largely enhanced the employability of our students. The programme provides enough opportunities to the students to select their field of specialization for pursuing research degrees and contribute to the extension of knowledge pertaining especially to our region. The programme develops the competence to facilitate development of inter-disciplinary approach for an easy shift over from curricular work to research activity which would be able to help the process of socio-economic development of Jammu & Kashmir. The emphasis of this programme is to produce applied geographers who are able to work in a multidisciplinary environment and contribute their share in providing solutions to our day to day problems.

Course Description: The M.A / M.Sc. Post Graduate Programme in Geography is of two year duration, based on 96 credits comprising of four semesters. All the 96 credits will spread over 6 different components viz: I) Teaching, II) Tutorial, III) Seminar, IV) Practical, V) Field Tour & VI) Project Work/ Dissertation. The students are offered (43) Papers Comprising of (16) Core Courses, which are compulsory, along with (19) Discipline Centric Theory Courses; (4) Generic Elective & (4) Open Elective Courses.

✓ A credit means one hour of teaching/work or two hours of practical work/tutorial per week for 16 weeks in a semester.

✓ A candidate compulsorily has to obtain 24 credits per semester i.e., 48 credits in one year Programme (2 semesters), 96 credits in two year Programme (4 semesters).

✓ A candidate has to obtain minimum of 24 credits in a semester; 14 credits compulsorily are to be opted from "Core Courses", while the remaining 12 credits can be obtained in either of the following two ways:

✓ 8 credits are to be obtained from Discipline centric courses.

✓ At least 2 credits are to be obtained from Generic Elective courses.

✓ A candidate has a choice to take a maximum of 2 credits if required from Open Elective courses.

NOTE: The student shall have to prepare the Dissertation comprising of four credits for the Course No. GG21405DCE in the 4th Semester. The Dissertation is to be prepared under the supervision of a faculty member of the department. A faculty member shall have to supervise/guide a maximum of five students of the same batch for the preparation of the dissertation of the student.

The students shall have to prepare a field studies report (Geomorphologic and Socio-economic) for Course No. GG21304CR comprising of 4 credits. Two faculty members shall be in charge of field tour which shall be conducted within or outside the UT. The student shall have to deposit an amount of Rs.5000/- as a part of fee towards the field studies.

Semester-I**M.A./ M.Sc. Geography Study Course Structure**

<i>Course Code</i>	<i>Course Title</i>	<i>Category</i>	<i>Hours during a Week</i>			<i>Credits</i>
			<i>Lecture</i>	<i>Tutorial</i>	<i>Practical</i>	
GG21101CR	Geomorphology	Core	4	2	0	4
GG21102CR	Economic Geography	Core	4	2	0	4
GG21103CR	Oceanography	Core	2	1	0	2
GG21104CR	Cartographic & Quantitative Techniques in Geography	Core	0	0	8	4
GG21105DCE	Geography of Tourism	Discipline Centric Elective	2	1	0	2
GG21106DCE	Geography of Health & Healthcare	Discipline Centric Elective	2	1	0	2
GG21107DCE	Geography of India	Discipline Centric Elective	2	1	0	2
GG21108DCE	Rural Development	Discipline Centric Elective	2	1	0	2
GG21109DCE	Sustainable Development	Discipline Centric Elective	2	1	0	2
GG21001GE	Climatology	Generic Elective	2	1	0	2
GG21001OE	Study of Maps & Charts	Open Elective	2	1	0	2
Total Contact Hours:		Total Credits: 28				

Semester-II**M.A./ M.Sc. Geography Study Course Structure**

<i>Course Code</i>	<i>Course Title</i>	<i>Category</i>	<i>Hours during a week</i>			<i>Credits</i>
			<i>Lecture</i>	<i>Tutorial</i>	<i>Practical</i>	
GG21201CR	Climatology	Core	4	2	0	4
GG21202CR	Hydrology	Core	2	1	0	2
GG21203CR	Remote Sensing & GIS	Core	4	2	0	4
GG21204CR	Remote Sensing & GIS (Practical)	Core	0	0	8	4
GG21205DCE	Urban Geography	Discipline Centric Elective	2	1	0	2
GG21206DCE	Agricultural Geography	Discipline Centric Elective	2	1	0	2
GG21207DCE	Land Use Planning	Discipline Centric Elective	2	1	0	2
GG21208DCE	Watershed Management	Discipline Centric Elective	2	1	0	2
GG21209DCE	Fluvial Geomorphology	Discipline Centric Elective	2	1	0	2
GG21002GE	Geography of Jammu & Kashmir	Generic Elective	2	1	0	2
GG21002OE	World Geography	Open Elective	2	1	0	2
Total Contact Hours:		Total Credits: 28				

Semester-III**M.A./ M.Sc. Geography Study Course Structure**

<i>Course Code</i>	<i>Course Title</i>	<i>Category</i>	<i>Hours during a week</i>			<i>Credits</i>
			<i>Lecture</i>	<i>Tutorial</i>	<i>Practical</i>	
GG21301CR	Evolution of Geographic Thought	Core	4	2	0	4
GG21302CR	Regional Planning & Development	Core	4	2	0	4
GG21303CR	Ecology & Environment	Core	2	1	0	2
GG21304CR	Field Studies (Geomorphic & Socio-Economic)	Core	0	0	8	4
GG21305DCE	Geography of Resources	Discipline Centric Elective	2	1	0	2
GG21306DCE	Soil Geography	Discipline Centric Elective	2	1	0	2
GG21307DCE	Environmental Impact Assessment	Discipline Centric Elective	2	1	0	2
GG21308DCE	Geography of Transport	Discipline Centric Elective	2	1	0	2
GG21309DCE	Natural Hazards	Discipline Centric Elective	2	1	0	2
GG21003GE	World Geography	Generic Elective	2	1	0	2
GG21003OE	Geography of India	Open Elective	2	1	0	2
Total Contact Hours		Total Credits: 28				

Semester-IV**M.A./ M.Sc. Geography Study Course Structure**

<i>Course Code</i>	<i>Course Title</i>	<i>Category</i>	<i>Hours during a week</i>			<i>Credits</i>
			<i>Lecture</i>	<i>Tutorial</i>	<i>Practical</i>	
GG21401CR	Population & Settlement Geography	Core	4	2	0	4
GG21402CR	Social & Cultural Geography	Core	4	2	0	4
GG21403CR	Biogeography	Core	2	1	0	2
GG21404CR	Advanced Surveying & GPS Applications (Practical)	Core	0	0	8	4
GG21405DCE	Dissertation (Project Work)	Discipline Centric Elective	4	2	0	4
GG21406DCE	Political Geography	Discipline Centric Elective	2	1	0	2
GG21407DCE	World Geography	Discipline Centric Elective	2	1	0	2
GG21408DCE	Glaciology	Discipline Centric Elective	2	1	0	2
GG21004GE	Geography of India	Generic Elective	2	1	0	2
GG21004OE	Geography of Jammu & Kashmir	Open Elective	2	1	0	2
Total Contact Hours:		Total Credits: 28				

GEOMORPHOLOGY

GG21101CR

Course Outcome: The course has been designed to provide learners an understanding of fundamental principles, theories and process in geomorphology and the evolution of landforms in various environmental settings. After the completion of this course, students are expected to possess the skills to quantitatively use and evaluate geomorphological data with numerical, statistical and spatial technological methods. They are also expected to possess the ability to analyze relationships between physical and human aspects of environments and landscape.

Credit-I

1. Fundamental Concepts of Geomorphology
2. Development of Geomorphology: American & European School
3. Multi-cyclic & Polycyclic Evolution of Landscapes
4. Super Continent Cycle & Theory of Continental Drift
5. Isostasy & Crustal Equilibrium in Major Relief Features of the Earth

Credit-II

1. Geomorphic Processes: Exogenic & Endogenic
2. Geomorphic Agents: Water, Wind & Glacier
3. Evolution of Landforms: Wilson Cycle
4. Mass Movement & Mass Wasting
5. Slope Elements

Credit-III

1. Models of Landscape Development: W.M. Davis, W. Penk & L.C. King
2. Geo-syncline Theory: Hall & Dana
3. Mountain Building Theory: Kobler
4. Slope Evolution Models: King, Wood & Strahler
5. Earth Movements: Diastrophic & Sudden

Credit-IV

1. Geochronology Dating Techniques: Carbon -14 & Dendrochronology
2. Genetic Classification of Major Landforms: First, Second & Third Order
3. Morphometry of Drainage Basins:
 - Linear Aspects: One dimension
 - Areal Aspects: Two dimensions
 - Relief Aspects: Three dimensions
4. Application of Geomorphology in Groundwater Exploration
5. Application of Geomorphology in Petroleum Exploration

Suggested Readings:

1. A. H. Strahler, & A. N. Strahler., Modern Physical Geography, John Willy & Sons, Inc. 2001.
2. D.S. Lal., Physical Geography, Sharda Pustak Bhawan. 2009.
3. Majid Hussain, Physical Geography, Anmol Publications Pvt. Ltd. 2007.
4. S.A, Qazi., Principals of Physical Geography, AHP Publishing Co.2004.
5. Satopa Mukherjee., Understanding Physical Geography, Oriental Longman. 2002.
6. Savindra Singh., Physical Geography, Prayag Pustak Bhawan, 2000.
7. Singh,S., Geomorphology, Prayag Pustakalaya, Allahabad, 1998.

ECONOMIC GEOGRAPHY

GG21102CR

Course Outcome: The course aims at providing students with tools, models and methods which are useful in understanding economic phenomenon with reference to the changing geographical attributes. At the end of the course, the students will be able to identify and measure factors responsible for establishment and localization of industry at national and global level. The course will enable students to understand various aspects manufacturing, clustering and agglomeration dynamics, to evaluate the role of different attractive and repulsive forces within relevant models to explain the international flows of goods, capital and work force.

Credit- I

1. Spatial Organization of Economic Activities
2. Classification of Industries
3. World Industrial Regions: Spatial Distribution
4. Emerging Industries in India: Automobile, Fast-moving Consumer Goods & Information & Communications Technology
5. Special Economic Zones/Micro, Small & Medium Enterprises (MSME) & their Significance

Credit -II

1. Industrial Location: Influencing Factors
2. Theories of Industrial Location:
 - i. A.Weber
 - ii. E.M Hoover
 - iii. A. Pred
 - iv. D.M Smith

Credit -III

1. Balance of Payment: Concept, Significance & Components
2. Recent Initiatives of World Bank & World Trade Organization in Global Trade
3. Global Economic Blocs: G8, BRICS & SAARC- Role and Mandate
4. Market Linkages: Market Centers, Retailing & Whole Selling, E- Commerce
5. Foreign Direct Investment & Foreign Institutional Investment in India: Sectoral Analysis

Credit -IV

1. Role of Industries in Regional Development
2. Impact of Globalization on Indian Economy
3. Liberalization, Privatization, Globalization & other Policy Reforms in India
4. Industrial Policies of India: 1956 & 2018
5. International Trade Theories: Comparative Cost Advantage & Absolute Advantage Theory

Suggested Readings:

1. A.M. Bagulia., Encyclopedia of Economic Geography; Wiley Blackwell Companion
2. B.W Hodder & Roger Lee. Economic Geography, Mutheun & Co Ltd. 1974
3. Chrales Redway Dryer., Elementary of Economic Geography, Wiley Blackwell Companion.
4. Cumbers Mackinnon., Introduction to Economic Geography: Globalization, Uneven Development &
5. J G Bartholomew., Atlas of Economic Geography, Wiley Blackwell Companion
6. James Franklin Chamber., Geography: Physical, Economic, Regional, Wiley Blackwell companion
7. K. Siddhartha., Economic Geography; Kitab Mahal, 2016.

8. Peter E. Lloyd & Peter Dicken, Location in Space: A Theoretical Approach to Economic Geography, Harper and Row Publishers, 1972
9. Roy, P., Economic Geography-A Study of Resources, New Central Book Agency Ltd, Calcutta, 1997
10. T. C Sharma., Economic Geography of India, Rawat Publishers, 2013.
11. Trevor J. Barnes, Jamie Peck & Eric Sheppard., Economic Geography, Wiley Blackwell Companion.
12. Trevor J. Barnes., Reading Economic Geography, Wiley Blackwell Companion.
13. Truman A. Hartshorne and John. W. A., Economic Geography, Prentice Hall of India, 2000
14. Uma Kapila., Indian Economy Performance and Policies (16th edition), Academic Foundation, 2015.

OCEANOGRAPHY

GG21103CR

Course Outcome: The objective of the course is to give an overview of the science of oceanography and to identify reasons why sustainable practices regarding ocean resources are important. The students will analyze atmospheric and oceanic circulation systems as well as their interconnections and driving forces and the principles involved in the generation of waves and tides and evaluate their effects on coastal processes and marine ecosystems. At the end of the course, the students will assess the consequences of rise in sea-level on the coastal zone and society and possible mitigation and adaptation strategies and can pursue career/ research opportunities in this applied field.

Credit-I

1. Introduction to Oceanography
2. Ocean Bottom Relief
3. Waves & Tides
4. Ocean Currents & Salinity
5. Sea Surface Temperature & Ocean Conveyor Belts

Credit-II

1. Oceans as Store-houses of Non-conventional Sources of Energy
2. Ocean Hazards: Tsunami & Cyclone
3. Law of the Sea & Exclusive Economic Zone
4. Climate Change & Oceans: Ocean Acidification & Coral Bleaching
5. Recent Technologies in Ocean Bathymetry

Suggested Readings:

1. Davis, R.J.A., Oceanography-An Introduction of the Marine Environment. Win C. Brown, Iowa, 1986.
2. Douglas A. Segar., Introduction to Ocean Science, Wadsworth Pub., London, 1998
3. Grald, S., General Oceanography-An Introduction, John Wiley & Sons, New York, 1980.
4. Hussain, T. and Tahir, M., Oceanography, Jawahar, New Delhi, 2012.
5. Hussain Majid, Physical Geography, Anmol Publications, 2007
6. King, C.A.M., Oceanography for Geographers, Earnold, London, 1975.
7. Kings, C.A.M., An Introduction to Oceanography, McGraw, New York, 1969.
8. Paul R. Pinet, Oceanography, Jones and Bartlett Publishers, 1998. .
9. Siddhartha, K., Oceanography-A Brief Introduction, Kisalya Pub., New Delhi, 2013.
10. Singh, S., Physical Geography, Prayag Pub., Allahabad, 2013.
11. Strahaler, A.H., Introducing Physical Geography, Wiley Pub, 2013.
12. Trujillo, A.P & Thurnman, H.V., Essentials of Oceanography, Prentice Hall, 2016.
13. Trujillo, A.P. & Thurnman, H.V., Introductory Oceanography, Prentice Hall, 2010.

CARTOGRAPHIC & QUANTITATIVE TECHNIQUES IN GEOGRAPHY GG21104CR

Course Outcome: The course is aimed to introduce the foundational skills of how to generate and display the quantitative and qualitative spatial and non-spatial data to solve Earth and Space science problems, and how to gain an appreciation for the processes that operate at these spatio-temporal scales. The students will develop hands on computer algorithms and digital image processing techniques. The course will help the students to identify the specific data and methodologies for effective mapping and evaluation of natural resources. Moreover, the application of geospatial technologies for hazard mitigation and management is the core concern of the curriculum.

Credit-I

1. Scales, Projections & Datums
2. Preparation of Choropleth, Isopleth, Chorochromatic & Flow Maps
3. Physical & Socio-Economic Data for Map Making
4. Construction & Interpretation of Hythergraph & Climograph
5. Spatial Interpolation

Credit-II

1. Digital Cartography & its Significance
2. Sources of Cartographic Data: Conventional & Non Conventional
3. Cartographic Overlay: Point, Line & Area
4. Mapping of Crop Combination Analysis: Weaver, Doi & Rafiullah's Method
5. Slope Analysis & Mapping: Wentworth, Robinson & Smith

Credit-III

1. Sampling: Types & Tests
2. Correlation: Multiple & Partial
3. Regression Analysis: Linear & Multiple
4. Multivariate Analysis: Principal Component Analysis & Cluster Analysis
5. Measures of Inequality: Lorenz Curve, Gini's Coefficient & Location Quotient

Credit-IV

1. Time Series: Moving Average, Least Square Method & Line of Best Fit, First & Second Degree Parabola
2. Exponential & Logistic Curve
3. Interpolation: Newton's Method
4. Goodness of Fit Tests: T -Test, Chi -Square Test, Anderson Darling & ANOVA Test
5. Mann Kendall Test

Suggested Readings:

1. Archer, J.E and Dalton, T. H., Field Work in Geography, E. T. Bastsford Ltd., London, 1968.
2. Ishtiaq, M., A text Book of Practical Geography, Heritage Publishing House, New Delhi, 1989.
3. Johnston, R. J., Multivariate Statistics in Geography. Longman, London, 1978.
4. Jones, P. A., Field work in Geography, Longman, London, 1968.
5. Keates, J. S., Cartographic Design and Production, Longman, London, 1973.
6. Mishra, R. P. & Ramesh, A., Fundamentals of Cartography, Concept Publishing Company, New Delhi, 1969.
7. Monkhouse, F. J., Maps and Diagrams, Methuen & Co., London, 1967.
8. Nayer, N. B., Encyclopedia of Surveying, Maps and Remote Sensing, Rawat Publishers, New Delhi, 1996.
9. Sarkar, A., Practical Geography, Sangam Books, New Delhi, 1997.
10. Singh, L.R., Elements of Practical Geography, Kalyani Publishers, New Delhi, 1997.
11. Summer, G., Mathematics for Physical Geographers, 1978.
12. Yeats, M. H., An Introduction to Quantitative Analysis in Human Geography, 1974.

GEOGRAPHY OF TOURISM

GG21105DCE

Course Outcome: To study the relationship of geography and tourism. To prepare learners with knowledge and skills those are essential to understand and manage the needs of destination. Develop strategies for ongoing personal and professional development as a recreation and leisure services professional. To facilitate the assessment of the tourism potential of a destination and prepare tourism development plan as well as marketing techniques.

Credit-I

1. Tourism: Elements, Nature & Characteristics
2. Typology of Tourism: Classification of Tourists
3. Tourism Motivation
4. Tourism Resources: Global, National & Local
5. Theories of Tourism Development: Buttlar

Credit-II

1. Sustainable Tourism, Eco-tourism, Responsible Tourism & Concept of Carrying Capacity in Tourism
2. Tourism Planning & its Approaches: National Tourism Policy, Issues & Challenges
3. Tourism in J&K: Potential, Flow & Distributional Pattern
4. Impact of Tourism: Environmental, Economic, Social & Cultural
5. Application of Geospatial Technology in Tourism Development

Suggested Readings:

1. Bhatia, A. K., International Tourism - Fundamentals and Practices, Sterling Publisher, New Delhi, 1991.
2. Bhatia, A. K., Tourism Development: Principles and Practices, Sterling Publisher Ltd., New Delhi, 1996.
3. Das, M., India: A Tourist Paradise, Sterling Publishers, New Delhi, 1999.
4. Hall, C Michael, and Page J. Stephen; The Geography of Tourism & Recreation, Routledge, London, 2006.
5. Kaul, R. K., Dynamics of Tourism and Recreation, Inter India, New Delhi, 1985.
6. Lew, A. A., Hall, C. M. and Williams, A. M., (ed). Tourism, Wiley-Blackwell, Hoboken, 2014.
7. Pearce, D., Tourism Today: A Geographical Analysis, Longman Scientific and Technical, New York, 1987.
8. Pearce, D. G., Tourism Today: A Geographical Analysis, Longman, Harlow, 1987.
9. Robinson, H. A., Geography of Tourism, Macdonald and Evans, London, 1996.
10. Smith, L. J. S., Practical Tourism Research, CABI, Wallingford, 2010.
11. Smith, L. J. S., Tourism Analysis: A Handbook, Halstead Press, Sydney, 2010.

GEOGRAPHY OF HEALTH & HEALTHCARE

GG21106DCE

Course Outcome: This course is envisaged to make the students understand the spatial dimensions of various health and healthcare related issues. It also critically evaluates the spatial distribution of various health care facilities especially in the environmentally disadvantageous regions. The student is prepared to contribute to health care planning in terms of spatial location of healthcare units and facilities.

Credit-I

1. Development of Healthcare Geography
2. Relevance of Health & Healthcare Geography in Contemporary World
3. Epidemiological Transition Model (Omran's)
4. Disease Ecology & Disease Ecology Model
5. Disease Diffusion: Processes & Types

Credit-II

1. Environment & Health: Physical, Socio-cultural & Economic Factors Affecting Human Health
2. Geo-ecology & Spatial Pattern of Diseases: Cardio-metabolic, Malaria, TB, Goitre & Cancer
3. Nutritional Deficiency Diseases & its Management
4. Health and Wellbeing
5. Healthcare Planning & Policies in India

Suggested Readings:

1. A. Learmonth., Disease Ecology; Blackwell Pub, 1987.
2. Akhtar, R. and A.T.A. Learmonth., Geographical Aspects of Health and Disease in India, Concept Publishing Company, New Delhi, 1985.
3. Akhtar, R., Environment and Health, Ashish Pub. House, 1991.
4. Amy J. Blatt, Perspectives in Medical Geography, Routledge, London 2012
5. Anthony C. Gatrell, Susan J. Elliott; Geographies of Health: An Introduction, Wiley Publishing, 2014
6. Gerald, F. Pyle., Applied Medical Geography, V.H. Winston, 1979.
7. Melinda S., Medical Geography, Guilford Press, 2010.

GEOGRAPHY OF INDIA

GG21107DCE

Course Outcome: The main objective of this course is aimed at making the students to gain In-depth knowledge of physiography, climate, demography natural vegetation, agriculture energy resources and industries of India. It also broadens understanding of students with respect social, cultural and ethno-linguistic profile of India. This course has been conceptualized to address the requirements of a large segment of students interested in various competitive examinations.

Credit-I

1. Physiography
2. Drainage & Water Resources
3. Climate
4. Soil & Natural Vegetation
5. Biogeographic Zones of India

Credit-II

1. Demographic Profile of India
2. Spatial Distribution of Social Groups: Caste, Religion & Language
3. Agro-ecological Regions of India
4. Mineral & Energy Resource of India
5. Emerging Environmental Issues in India: Deforestation, Land Degradation & Pollution

Suggested Readings:

1. Chandra Vijay Purty., Geography of India, ABD Publishers.
2. D. R Khullar., India; A Contemporary Geography- Kalyani Publications New Delhi 2010.
3. Majid Hussain, Geography of India, 2nd Ed. Tata McGraw Hill, 2011.
4. R. L. Singh., India- A Regional Geography, National Geographical Society of India, 2003.
5. Singh, R.L., India, Regional Geography, Banarus Hindu University, 1987.
6. Spate, O.H.K., India and Pakistan, Mac Million & Co. 1967.

RURAL DEVELOPMENT

GG21108DCE

Course Outcome: The Programme has been framed to provide an understanding and experience of different aspects of Rural Development. It is to provide a holistic perspective of schemes/programmes of central govt. in general and state govt. in particular as bulk of the population of the country is still concentrated in rural areas. It aims to develop expertise in planning and management of rural development programmes with a focus on participatory development. This will open a plenty of career opportunities for the candidates interested in this field.

Credit-I

1. Rural Development: Concept, Approaches & Strategies
2. Rural Development: Influencing Factors
3. Panchayati Raj Institutions (PRIs): Evolution, Structure & Functions
4. Rural Development under Five Year Plans
5. Rural Community Facilities & Services

Credit-II

1. Rural Housing in India: Problems & Solutions
2. Rural Empowerment Programmes: Bharat Nirman, Provisions of Urban Amenities in Rural Area (PURA)- Features & Challenges
3. Rural Social Infrastructure: Issues, Problems & Remedies
4. Rural Poverty & Poverty Alleviation Programmes
5. Rural Communication & Information Communication Technology: Issues & Problems

Suggested Readings:

1. A.Vinayak Reddy and M. YadagiraCharyulu, Rural Development in India : Policies and Initiatives, New Century Publications, New Delhi, 2009.
2. George H. Axinn and nancy W. Axinn., Collaboration in International Rural Development, Sage Publication, New Delhi, 1997
3. Katar Singh., Rural Development, principles, polices and Management, Sage Publication, New Delhi,1986.
4. Laxmi Devi., Encyclopedia of rural Development (set of 5 vol.) Anmol Publications Pvt. Ltd. New Delhi.
5. N.Lalitha, Rural Development in India: Emerging Issues and Trends- Dominant Publishers, Delhi, 2004.
6. Ram K. Parma., Policy Approach to Rural Development, Print well, Jaipur., 1996.
7. Venkatta Reddy. K., Rural Development in India, Himalaya Publishing House, New Delhi. 2000.

SUSTAINABLE DEVELOPMENT

GG21109DCE

Course Outcome: The course introduces the students to the concept of Sustainable Development. Students will have an understanding of the carrying capacity of ecosystems as related to providing for human needs. At the end of course, students will be able to apply concepts of sustainable development to address sustainability challenges in a global context. Students will identify, act on, and evaluate their professional and personal actions with the knowledge and appreciation of interconnections among economic, environmental and social spheres.

Credit-I

1. Sustainable Development: Concept, Components, Approaches & Limitations
2. Events in Sustainability (Agenda 21)
3. Natural Resources Accounting & Valuation of Ecosystem Services
4. Role of International Organizations in Sustainable Development (FAO, WHO, UNEP) & Relevant Treaties
5. Moving Towards Sustainability: An Indian Perspective

Credit-II

1. Limits to Growth: Concept & Significance
2. Carrying Capacity: Concept & Measurements
3. Ecological Foot-Print Analysis
4. Global Environment Issues: Industrialization, Urbanization & Pollution
5. Millennium Development Goals & Sustainable Development Goals (2015-2030)

Suggested Readings:

1. Jaffrey D. Sachs., The Age of Sustainable Development, Columbia University Press, 2015.
2. Jennifer A. Elliot., An Introduction to Sustainable Development, Routledge Publishers, 2015
3. K.V. Sundaram., Sustainable Development and Sustainable Life Styles, Northern Book Centre, 2003.
4. M.C Dash., Concepts of Environmental Management for Sustainable Development, I.K International Publishing House Pvt. Ltd. 2013.
5. Peter Rogers., An Introduction to Sustainable Development, Routledge Publishers, 2007
6. R.B Singh., Environment and Sustainable Development: Emerging Challenges, World Focus. 2017
7. Teri., Global Sustainable Report 2015: Climate Change and Sustainable Development, Oxford University Press, 2015.

CLIMATOLOGY

GG21001GE

Course Outcome: The course is aimed to broaden the understanding of basic concepts of climatology and its geographical significance along with knowledge of earth's atmosphere with respect to structure, composition and distribution of temperature over earth surface. At the end of course, the students will be having a fair knowledge about elements and factors influencing climate of a region.

Credit -I

1. Climatology: Concept & Significance
2. Atmosphere: Composition & Structure
3. Insolation, Heat Budget & Latitudinal Heat Balance
4. Temperature Distribution: Horizontal & Vertical
5. Pressure Belts & General Atmospheric Circulation

Credit - II

1. Precipitation: Forms & Types
2. Cyclones: Tropical & Temperate
3. Climate of India & Its Controls
4. Indian Monsoon, Western Disturbances & their Significance
5. Climate Change & its Implications

Suggested Readings:

1. A.K. Barua., Climatology, Dominant Publishers and Distributors, 2005.
2. Anthony J. Vega & Robert V. Rohil., Climatology, 2008.
3. Critchfield, H., General Climatology, Prentice Hall, NewYork, 1975.
4. Edward Aguada: & J. E. Brat., Understanding Weather and Climate- Pearson International 2016.
5. Fedrick K. Lutgen., The Atmosphere: An introduction to Meteorology, Princeton Hall, 2006.
6. J.T. Houghton., Global warming a complete briefing (5Ed.), Cambridge University Press, 2015.
7. S.K. Paneersalvam., Global warming and Climate Change, AHP Publishing Co, 2012
8. Stringer, E.T., Foundation of Climatology, Surjeet Publication, Delhi,

STUDY OF MAPS & CHARTS

GG21001OE

Course Outcome: The main purpose of geography is to show different physical or cultural phenomena on maps for enlightening various aspects of spatial organisation and areal differentiation. The main outcome of the course lies in the fact that it gives clear idea regarding different types of maps and different map making processes, and their utility in various fields of human interest.

Credit - I

1. History & Development of Map Making
2. Maps & Charts: Essential Elements, Types & Uses
3. Scale: Meaning & Types
4. Map Projection: Cylindrical, Conical & Mercator's
5. Coordinate Systems & Time Zonation

Credit-II

1. Topographic & Thematic Map Reading & Interpretation
2. Cadastral Mapping & their Utility
3. Thematic Atlas: Types
4. Services of Survey of India (SOI) & National Atlas & Thematic Mapping Organisation (NATMO)
5. Open Series Maps

Suggested Readings:

1. Ishtiaq, M., A text Book of Practical Geography, Heritage Publishing House, New Delhi, 1989.
2. Mishra, R. P. & Ramesh, A., Fundamentals of Cartography, Concept Publishing Company, New Delhi, 1969.
3. Nayer, N. B., Encyclopedia of Surveying, Maps and Remote Sensing, Rawat Publishers, New Delhi, 1996.
4. Sarkar, A., Practical Geography, Sangam Books, New Delhi, 1997.
5. Singh, L.R., Elements of Practical Geography, Kalyani Publishers, New Delhi, 1997.

Semester-II**M.A./ M.Sc. Geography Study Course Structure**

<i>Course Code</i>	<i>Course Title</i>	<i>Category</i>	<i>Hours during a week</i>			<i>Credits</i>
			<i>Lecture</i>	<i>Tutorial</i>	<i>Practical</i>	
GG21201CR	Climatology	Core	4	2	0	4
GG21202CR	Hydrology	Core	2	1	0	2
GG21203CR	Remote Sensing & GIS	Core	4	2	0	4
GG21204CR	Remote Sensing & GIS (Practical)	Core	0	0	8	4
GG21205DCE	Urban Geography	Discipline Centric Elective	2	1	0	2
GG21206DCE	Agricultural Geography	Discipline Centric Elective	2	1	0	2
GG21207DCE	Land Use Planning	Discipline Centric Elective	2	1	0	2
GG21208DCE	Watershed Management	Discipline Centric Elective	2	1	0	2
GG21209DCE	Fluvial Geomorphology	Discipline Centric Elective	2	1	0	2
GG21002GE	Geography of Jammu & Kashmir	Generic Elective	2	1	0	2
GG21002OE	World Geography	Open Elective	2	1	0	2
Total Contact Hours:		Total Credits: 28				

CLIMATOLOGY

GG21201CR

Course Outcome: The course focuses on various aspects of climate, climatic control and its genesis. The course is aimed to broaden the understanding of students regarding global, regional and local climatic scenarios. It enables the students to learn various adaptation and mitigation strategies through which negative fallout of climate change can be reduced for ensuring sustainable environment.

Credit-I

1. Climatology & Paleo-Climatology
2. Evolution of Earth's Atmosphere
3. Insolation, Heat Budget & Latitudinal Heat Balance
4. Vertical & Horizontal Distribution of Temperature
5. Stability & Instability of Atmosphere

Credit-II

1. Global Circulation System
2. Jet Streams: Origin & Types
3. Tri-cellular Meridional Pattern of Atmosphere
4. General Circulation Models (GCM) & Representative Concentration Pathways (RCP)
5. Climatic Classification Schemes: (i) Koppen (ii) Thornthwaite

Credit-III

1. El-Nino, Southern Oscillation, LaNina, NAO
2. Climatic Changes: Evidences & Indicators
3. Climate Change Possible Cause & Related Theories
(i) Karoll Milankovitch Theory (ii) Carbon Dioxide Hypothesis (iii) Tectonic Hypothesis
4. Global Warming: Greenhouse Effect
5. Impact of Climatic Change & Adaptation Strategies

Credit-IV

1. Weather Forecasting: Concept & Methods
2. Cyclone Warning System in India
3. Climate of India & Its Controls
4. Western Disturbances: Origin & Significance
5. Theories of Indian Monsoon: Classical & Modern Theory

Suggested Readings:

1. A.K. Barua., Climatology, Dominant Publishers and Distributors, 2005.
2. Anthony J. Vega & Robert V. Rohil., Climatology, 2008.
3. Critchfield, H., General Climatology, Prentice Hall, New York, 1975.
4. Edward Aguada & J. E. Brat., Understanding Weather and Climate, Pearson International 2016.
5. Fedrick K Lutgen., The Atmosphere an introduction to Meteorology, Princeton Hall, 2006.
6. J.T. Houghton., Global Warming A Complete Briefing (5Th Ed.), Cambridge University Press, 2015.
7. S.K. Paneerselvam., Global Warming and Climate Change, AHP Publishing Co., 2012.
8. Stringer, E.T., Foundation of Climatology, Surjeet Publication, Delhi, 1982.

HYDROLOGY

GG21202CR

Course Outcome: The course is designed to let the learners understand the global water budget, hydrological cycle, hydrograph and flood design analysis. The groundwater, recharge, movement and aquifer properties are importantly taught from geological and engineering perspective for application in public services through government and private organisations.

Credit-I

1. Hydrology: Meaning & Scope
2. Global Water Budget
3. Drainage Basin & its Characteristics
4. Hydrographs: Types, Components & Factors Influencing its Shape
5. Base Flow, Flood Frequency Analysis & Flood Design

Credit-II

1. Groundwater: Sources & Recharge
2. Porosity, Permeability, Hydraulic Conductivity & Transitivity
3. Aquifer: Structure & Types
4. Aquifer Characteristics: Storage Coefficient, Specific Storage, Storativity & Specific Yield
5. Darcy's Law, Conjunctive Use of Surface & Groundwater

Suggested Readings:

1. Andrew D. Ward and Stanley Trimble., Environmental Hydrology (2nd ed.), Lewis Publishers, 2004.
2. Chow V.T., Applied Hydrology, Tata McGraw Hill Publishing Co, 1988.
3. Hendriks Martin., Introduction to Hydrology. Oxford University Press, London, 2010.
4. Patra K.C., Hydrology and Water Resources Engineering, Narosa Publishing House, 2010.
5. Jain S.K., Agarwal P.K. and Singh V.P., Hydrology and Water Resources of India, Springer, The Netherlands, 2007.
6. Raghunath H.M., Hydrology, Newage International (P) Ltd., New Delhi, 2006.
7. Shaw E.M., Hydrology in Practice, 3rd Ed, Routledge, 2004.
8. Singh V.P., Elementary Hydrology, Prentice Hall, Englewood, New Jersey, 1993.
9. Suresh R., Watershed Hydrology, Standard Publishers Distributors, New Delhi, 2005.
10. Ward A.D. and Elliot W.J. (eds.) Environmental Hydrology, Lewis Publishers, 1995.
11. Madan Mohan das and Mimi Das Saikia., Hydrology, Prentice Hall of India, 2013.
12. Timothy, Davie., Fundamentals of Hydrology, Routledge, Taylor and Francis Group, U.K. 2003.
13. Todd, D.K., Groundwater Hydrology. John Wiley & Sons Inc. 2009.

REMOTE SENSING & GIS

GG21203CR

Course Outcome: Students will acquire knowledge regarding the use of modern tools and technology like RS, GIS and GPS in geographical studies and can apply this knowledge in any field of study. The Students can acquire a broad knowledge regarding natural resources, various sensors and can developed idea about aerial photographs, satellite imagery etc. Through this course students can develop their base regarding the practical use of advanced technology in different field of geography through which they can prepare more accurate and precise maps of different cultural and physical features.

Credit-I

1. Fundamentals of Remote Sensing: EMR & EMS
2. Interaction of EMR with the Atmosphere & Earth Surface Features
3. Mechanism of Remote Sensing Data Acquisition & Processes
4. Resolution in Remote Sensing: Spatial, Spectral, Temporal & Radiometric
5. Platforms and Sensors: Types & Characteristics

Credit-II

1. Aerial Photographs & their Types
2. Image Interpretation & its Elements
3. Image Interpretation Keys: Items, Subject, Regional & Analogous Key
4. Search Methods: Logical Search & Fishing Method
5. Multi Concept in Remote Sensing

Credit-III

1. Hyper Spectral Remote Sensing
2. Microwave Remote Sensing: RADAR & LiDAR
3. Introduction to Digital Images Processing
4. Pre Processing: Radiometric & Geometric Errors
5. Image Enhancement Techniques: Contrast Enhancement, Histogram Equalisation & Band Combinations

Credit-IV

1. GIS: Concept, Development & Components
2. Geographic Data: Types & Characteristics
3. Data Models: Raster & Vector
4. GIS Analysis: Queries, Reasoning, Measurements & Transformations
5. GIS DBMS: Concepts, Components & Quality

Suggested Readings:

1. Campbell, J.B., Introduction to Remote Sensing, (2nd ed.), Taylor and Francis, London, 1996.
2. Curran, P., Principles of Remote Sensing, Longman, London, 1985.
3. Fazal S. and Rahman A., GIS Terminology, New Age International Publishing, New Delhi, 2007.
4. Fazal S., GIS Basics, New Age International Publishing, New Delhi, 2008.
5. Fazal S., Remote Sensing Basics, Kalyani Publishers, New Delhi, 2009.
6. Jenson, J.R., Remote Sensing and Environment. Pearson India, 2013.
7. Joseph George., Fundamentals of Remote Sensing, (2nd ed.) University Press, Hyderabad, 2005.
8. Kumar, S., Basics of Remote Sensing and GIS, Laxmi Pub, 2005.
9. Lo, C.P. and Yeung AKW., Concepts and Techniques of GIS (2nd ed.), Prentice Hall of India, New Delhi, 2006
10. Leick. A., GPS Satellite Surveying (2nd ed.), John Wiley and Sons, New York, 2003.
11. Lillesand T.M and Keifer R.W., Remote Sensing and Image Interpretation (6th ed.) John Wiley and Sons, New York, 2008.

12. N. K. Agarwal., Essentials of GPS, Spatial Network Pvt. Ltd, 2004.
13. Sabins, J.F.F., Remote Sensing: Principles and Interpretation, W.H. Freeman & Co., New York, 1997
14. Sabins, F.F., Remote Sensing: Principles and Interpretation. Freeman, New York, 1986.
15. Siegal, B.S. and A.R Gillespie., Remote Sensing in Geology, Wiley, New York, 1980

REMOTE SENSING & GIS (PRACTICAL)

GG21204CR

Course Outcome: This course provides the necessary skills, aptitude and training to the students in various geospatial technologies. It prepares the students adequately in different techniques of image interpretation and analysis. The practical course provides hands on exposure to our students in various remote sensing and GIS softwares. The student is professionally well equipped to work independently or in team for providing solutions to problems in a GIS environment

Credit-I

1. Aerial Photographs: Understanding Marginal Information of Photographs
2. Determining Scale of Aerial Photographs, Photo (stereo-pair) Interpretation using Stereoscopes.
3. Visual/Digital Interpretation of Aerial Photographs & Satellite Images
4. Image Processing: Geometric & Radiometric
5. Image Enhancements: Spatial (Resolution Merge), Spectral (Principal Components Analysis) & Radiometric (Histogram Equalization), Filtering

Credit-II

1. Satellite Data Procurement: USGS Earth Explorer, Google Earth Engine, Bhuvan
2. Image Classification: Supervised & Unsupervised
3. Accuracy Assessment
4. Land Use & Land Cover Mapping
5. Land Use & Land Cover Change Detection

Credit-III

1. Vector Layers: Point, Line, Polygon
2. GIS Data Format Conversions
3. Spatial Analysis: Krigging & Inverse Distance Weighted (IDW)
4. Overlay & Suitability Analysis: Multi-criteria Analysis
5. Map Designing and Layout

Credit-IV

1. Generating Digital Elevation Model (DEM)
2. Spatial Interpolation: Point, Line, Polygon
3. Topographic Analysis: Hypsometry, Bathymetry, Slope, Aspect
4. Morphometric Analysis: Watershed Delineation, Drainage Mapping
5. Hazard Susceptibility Analysis: Floods & Landslide

Suggested Readings:

1. Campbell, J.B., Introduction to Remote Sensing, (2nd ed.), Taylor and Francis, London, 1996.
2. Curran, P., Principles of Remote Sensing, Longman, London, 1985.
3. Fazal S. and Rahman A., GIS Terminology, New Age International Publishing, New Delhi, 2007.
4. Fazal S., GIS Basics, New Age International Publishing, New Delhi, 2008.
5. Fazal S., Remote Sensing Basics, Kalyani Publishers, New Delhi, 2009.
6. Jenson, J.R., Remote Sensing and Environment. Pearson India, 2013.
7. Joseph George., Fundamentals of Remote Sensing, (2nd ed.) University Press, Hyderabad, 2005.
8. Kumar, S., Basics of Remote Sensing and GIS, Laxmi Pub, 2005.
9. Lo, C.P. and Yeung AKW., Concepts and Techniques of GIS (2nd ed.), Prentice Hall of India, New Delhi, 2006
10. Leick. A., GPS Satellite Surveying (2nd ed.), John Wiley and Sons, New York, 2003.

11. Lillesand T.M and Keifer R.W., Remote Sensing and Image Interpretation (6th ed.) John Wiley and Sons, New York, 2008.
12. N. K. Agarwal., Essentials of GPS, Spatial Network Pvt. Ltd, 2004.
13. Sabins, J.F.F., Remote Sensing: Principles and Interpretation, W.H. Freeman & Co., New York, 1997
14. Sabins, F.F., Remote Sensing: Principles and Interpretation. Freeman, New York, 1986.
15. Siegal, B.S. and A.R Gillespie., Remote Sensing in Geology, Wiley, New York, 1980

URBAN GEOGRAPHY

GG21205DCE

Course Outcome: The course comprises of two credits which allows students exposure to the emerging urban scenario at national and international level. Indian cities are growing at a rapid pace in terms of their demographic and spatial size and functional activities. Urban growth has been lopsided one skewed in favour of large metropolitan cities associated with serious environmental problems. They need constant attention for their future expansion and management to improve liveability. This course helps students to develop professional capacities and skills to address these complex problems like delimitation of city limits and influence areas, land use planning with a focus on locational planning of urban utilities, preparation of town plans and spatial analysis of environmental problems to improve quality of urban life.

Credit-I

1. Nature, Trends & Recent Approaches in Urban Geography
2. Urbanization Growth, Global Trends & Patterns, Emerging Patterns of Urbanization in India
3. Urbanization Policy & Programmes, Concept of Green Belts, Satellite Towns, Smart Cities
4. Urban Environmental Problems: Urban Heat Island Effect & Slums
5. Urban Environment & Health Related Issues: Air Pollution, Water Pollution & Solid Waste

Credit-II

1. Primate City & Rank Size Rule
2. Central Place Theory of Christaller & Losch
3. Central Business District: Delimitation & Characteristics
4. Rural Urban Fringe: Delimitation & Characteristics, City Region
5. Urban Development through Master Plans: Case Study of Chandigarh/ Srinagar

Suggested Readings:

1. David, Herbert., Urban Geography – A Social Perspective, David and Charles, Newton Abbot London-Vancouver, 1972.
2. Gans J. Herbert., The Urban Villagers: Group and Class in the Life of Italian-Americans, Blackwell Publications, New York, 1982.
3. Hall, Tim., Urban Geography, Routledge Contemporary Human Geography Series, 2011.
4. Kaplan, D.H, and Hollaway Steven., Urban Geography, Wiley Publishers, 2012.
5. Knox, Paul L., and McCarthy, Linda M., Urbanization: An Introduction to Urban Geography, Pearson New International Edition, 2011.
6. Laves, Lowenstein K., Urban Studies – An Introductory Reader (2nd Edition), the Free Press Collier Macmillan Publisher, Third Avenue, New York, 10022, 1977.
7. Mandal, R.B., Urban Geography – A Text Book, Concept Publishers, New Delhi – 110054, 2001
8. Markanday, K and Reddy G., Urban Growth Theories and Settlement Systems of India, Concept Publishing Company, 2011.
9. Mehta, A., Economic theory and Planning, University Oxford Press, 1974.
10. Mumford, Lewis. The City in History: Its Origins, Its Transformations, and Its Prospects 1972.
11. Pascoe, Michel., Urban Geography – A Global Perspective, Rutledge, New Fetter Lane, London. 2001
12. Peter Geoffrey Hall., Cities of Tomorrow: An Intellectual History of Urban Planning and Design in the Twentieth Century, Willey Blackwell, London. 2011
13. Philipp Rode., Governing Compact Cities, Blackwell publishers, 2011
14. Ray, Northam. M., Urban Geography (2nd Edition), John Willey and Sons, 1979.
15. Siddhartha, K and Mukherje, S., Cities, Urbanization and Urban System, Kasalaya Publications, New Delhi, 2001.
16. Siddhartha, K., Models in Regional Planning, Kasalaya Publications, New Delhi, 2008.
17. Verma, L.N., Urban Geography, Black Swan Publications, New Delhi, 2001.
18. Weng, Qahio and Quattrochi, D.A., Urban Remote Sensing, CRC Press, Taylor and Francis Group, London, 2007.
19. Wilson, A.G., Urban and Regional Models in Geography and Planning, John Willey and Sons, London. 1975.

AGRICULTURAL GEOGRAPHY

GG21206DCE

Course Outcome: The main aim of the course is to familiarize the students with the concept, origin, and development of agriculture; to examine the role of agricultural determinants towards changing cropping patterns, productivity and diversification. The course further aims to familiarize students with the application of various models and classification schemes of agricultural productivity. At the end of course, the students will be able to get updated knowledge of agriculture related contemporary issues and strategies.

Credit-I

1. Agricultural Geography: Development & Approaches
2. Factors Affecting Agriculture: Physical, Socio-economic, Environmental, Technological & Institutional
3. Cropping Pattern, Diversification, Specialisation & Commercialisation of Crops
4. Agricultural Productivity & Production: Measurement & Determinants
5. Regional Variation in Agricultural Productivity

Credit-II

1. Agricultural Systems of the World: Whittlesey's Classification
2. Agricultural Land Use Model: Von Thuenen, Modification and Relevance
3. Agricultural Regions of India: Agro-climatic & Crop Combination Regions
4. Problems of Indian Agriculture: Management and Planning
5. Food Security & Food Aid Programmes in India, Food Deficit & Surplus Regions, Nutritional Index

Suggested Readings:

1. Hussain, M., Systematic Agricultural Geography, Rawat Publications, Jaipur, 1996.
2. Ilbery, B. W., Agricultural Geography, Oxford University Press, Oxford, 1985.
3. Singh, J. and Dhillon, S.S., Agricultural Geography, Tata McGraw Hill, New Delhi, 1984.
4. Singh, Jasbir., Agricultural Geography, 3rd edition, Oxford, New Delhi, 2003.
5. Symons, L., Agricultural Geography, G. Bells, London, 1967.
6. Grigg, D.B., The Agricultural Systems of the World: An Evolutionary Approach, Cambridge University Press, Cambridge, 1978.
7. Morgan, B.W. and Munton, J.C., Agricultural Geography, Methuen, London, 1971.
8. Shafi, M., Agricultural Productivity and Regional Imbalances, Concept, New Delhi, 1984.
9. Singh, Jasbir., Dynamics of Agricultural Change, Oxford, New Delhi, 1990.
10. Tarrant, J.R., Agricultural Geography, Davis and Charles, Newton Abbot, 1974.
11. Whealler, K.E., Ladley, A.M. and Leong, F.C., Studies in Agricultural Geography, Bland Educational, London, 1970.

LAND USE PLANNING

GG21207DCE

Course Outcome: Improper land use planning is among the primary factors influencing exposure and vulnerability of communities. The course covers the important principles, methods and techniques of land use planning. The course also focuses on factors and drivers governing the land use change. At the end of course learners will be having a functional and integrated understanding of the dynamics of urban and rural land use and demonstrate how to effectively utilize policies and planning instruments to manage urban growth and achieve sustainable, equitable and efficient development outcomes.

Credit-I

1. Land Use Planning: Concept, Objectives & Principles
2. Land Use Planning: Methods & Techniques
3. Land Use Planning for Sustainable Land Management (SLM)
4. Hazard Sensitive Land Use Planning
5. Land Use Planning in India & Legal Provisions

Credit-II

1. Factors Governing Land Utilization
2. Drivers of Land Use Changes
3. Land Capability Classification
4. Land Suitability, Land Sensitivity & Land Reclamation
5. Rural & Urban Land Use Planning

Suggested Readings:

1. Edward S. Kaiser and F. Stuart Chapin, 1957, Urban Land Use Planning, 4th Edition.
2. Hok-Lin Leung, 2003, Land Use Planning Made Plain, University of Toronto Press.
3. Jane Silberstein, M.A., and Chris Maser, 2013, Land-Use Planning for Sustainable Development,
4. Second Edition, CRC Press.
5. John Randolph, 2004, Environmental Land Use Planning and Management.
6. Julian Conrad Juergensmeyer and Thomas E Roberts, 2003, Land Use Planning and Development
7. Regulation Law, Thomas West.
8. Philip R. Berke, David R Godschalk, 2006, Urban Land Use Planning, 5th Ed., University of Illinois Press.
9. T. William Patterson, 1979, Land Use Planning, Techniques of Implementation, Van Nostrand Reinhold Company.

WATERSHED MANAGEMENT

GG21208DCE

Course Outcome: The main aim of the course is to introduce students to concept of Watershed Management. The course emphasizes on identifying watershed as an ideal planning unit wherein a student realizes the importance of equitable and judicious management of resources in a region. The course is intended for students interested in the sustainable management of watershed applying earth observation and GIS.

Credit-I

1. Watershed: Definition & Concept
2. Watershed as a Planning Unit
3. Watershed Delineation & Characteristics
4. Watershed Codifications
5. Sustainable Watershed Approach

Credit-II

1. Watershed Management: Concept & Approaches (Integrative & Consortium)
2. Watershed Management Strategies: Preventive & Restorative
3. Watershed Management Modelling: The Water Resources System Model (WRSB)
4. Application of Remote Sensing & GIS in Watershed Studies
5. Case Studies of Watershed Management: Regional/ Local, National Watershed Management Plan

Suggested Readings:

1. Asish Ghosh., Natural Resource Conservation and Environmental Management, APH Publishing Corporation, Ansari Road New Delhi, 2003.
2. M.K. Maitra., Watershed Management Project Planning, Development and Implementation, OMEGA Scientific Publishers, 2001.
3. S. Chandra., Water Resources of Himalaya in Himalayan Ecosystem, Ed DN Tiwari IBD Dehradun, 1995.
4. S.S. Negi., Natural Resource Management in the Himalayas-Land Water and Environmental Management, APH Publishing Corporation, Ansari Road New Delhi, 2003
5. T.N. Khoshoo., Environmental Priorities in India and Sustainable Development, 1986.

FLUVIAL GEOMORPHOLOGY

GG21209DCE

Course Outcome: The course aims to develop an understanding of various fluvial processes and the factors influencing their operation, development and human-fluvial system Interaction. The students will also learn some practical aspects of bank erosion assessment and discharge measurement etc. The course will imbibe interest among the students to pursue this branch of Physical Geography which has considerable applications in engineering, disaster management and other related fields.

Credit-I

1. Fluvial Geomorphology: An Overview
2. Processes of Erosion, Transportation & Deposition: Factors Influencing their Operation
3. Formation of Fluvial Landforms
4. Stream Flow Sources, Surface Water - Groundwater Interaction
5. River Discharge Measurement Methods: Float Method, Current-meter Method

Credit-II

1. River Profiles: Longitudinal Profile, Cross-Valley, Graded Profile
2. Drainage Patterns & their Natural Controls
3. Fluvial Response to Tectonic, Climatic & Sea Level Changes
4. Anthropocene: Human- River Interaction
5. River Management, Bank Erosion Hazard Index

Suggested Readings:

1. Bloom Arthur L., Geomorphology: A systematic Analysis of Late Cenozoic Landscape. III Edition; Pearson Education, 2001
2. Charleton R. O, Fundamentals of Fluvial Geomorphology, Special Indian Edition Routledge Publishers, 2008)
3. Edward Keller, Environmental Geology. Meril Publishers, 1978
4. Frank Process & Ramon & Seiver, Understanding Earth, Freeman Publishers, 1999.
5. Montgomery Carla W., Environmental Geology, McGraw-Hill 9th Edition 2008
6. Newson MD and Hanwell JD., Systematic Physical Geography. MacMillan Publishers, 1981
7. Qazi S. A., Principles of Physical Geography, APH Publishers, 2004
8. Raghunath HM., Hydrology -Principles Analysis and Design, 3rd Edition, New Age Publishers, 2014.
9. Richard Keith., Rivers: Form and Process in Alluvial Channels, Mechuen & Co. Publishers, 1982
10. Strahler A.N., The Earth Science. 3rd Edition, Harper & Row Publishers, 1971.
11. Strahler Alan., Introducing Physical Geography., Wiley and Sons, 2011

GEOGRAPHY OF JAMMU & KASHMIR

GG21002GE

Course Outcome: This course introduces the students to the distinct geographical characteristics of the Jammu & Kashmir. It provides the necessary inputs to the students belonging to various disciplines of earth and environment sciences to explore their interests within the broad geographical domain of the UT. This course has been conceptualized to address the requirements of a large segment of students interested in various competitive examinations.

Credit-I

1. Jammu & Kashmir: Space Relationships
2. Physiography
3. Climate
4. Soil & Natural Vegetation
5. Drainage System

Credit-II

1. Population: Distribution, Density & Composition
2. Population Growth & Trends in Urbanization
3. Horticulture of J&K with respect to Apple, Saffron & Walnuts
4. Tourism in Jammu & Kashmir
5. Energy Resources of Jammu & Kashmir: Hydel & Geothermal

Suggested Readings:

1. Drew, F.K., The Territories of India, Kashmir State. Standard Press London, 1979.
2. Gazetteer of Kashmir and Ladakh, 1890.
3. Lawrence, S.W., The Valley of Kashmir, Oxford University Press, 1895.
4. Raina, A.N., Geography of Jammu and Kashmir, National Book Trust, New Delhi, 1971.
5. Qazi, S.A., Geography of India with Special Reference to J&K State, APH Publishing Co. 2000.
6. Majid Hussain., Systematic Geography of Jammu and Kashmir, Rawat Publications, 2000.
7. R. L. Singh., India- A Regional Geography, National Geographical Society of India, 2003.

WORLD GEOGRAPHY

GG21002OE

Course Outcome: This course aims to promote a broad understanding of landforms, climate and drainage patterns at global level. It also deals with global distribution of industry, minerals, and agricultural and population resource regions. This course has been conceptualized to address the requirements of a large segment of students interested in various competitive examinations.

Credit -I

1. Major Land Forms
2. Mountain Systems & Passes
3. Drainage Systems: Amazon, Nile, Mekong & Danube
4. Deserts: Characteristics & Distribution
5. Oceans as Global Trade Routes & Transits

Credit -II

1. Population Resource Regions
2. Major Agricultural Regions
3. Major Industrial Regions
4. Major Multipurpose Projects: Tennessee, Aswan & Damodar Valley
5. Major Economic Activities: Primary, Secondary & Tertiary

Suggested Readings:

1. Clark, Earl & Daniel Rockman Bergsmark., Modern World Geography, J.B. Lippincott Company, 2009.
2. Bradley, John Hudgon., World Geography; Gin & Co.
3. Gautam, Alka., Regional Geography of the World, 2018
4. Khullar, D. R., World Geography, Access Publishing, 2016.
5. Kumar, Mahesh., World Geography, Cosmos Publications, 2020
6. Hussain, Majid: World Geography; Rawat Publication, 2012.
7. Hussein, Majid., Indian and World Geography, 5th Ed. TataMcGraw Hills, New Delhi, 2020
8. Sharma, Vivek and Singh, Deepika, Magbook India and World Geography, Arihant Publications, 2020
9. Simon Adams: Geography of the world; Dorling Kindersly, 2006.

Semester-III
M.A./ M.Sc. Geography Study Course Structure

<i>Course Code</i>	<i>Course Title</i>	<i>Category</i>	<i>Hours during a week</i>			<i>Credits</i>
			<i>Lecture</i>	<i>Tutorial</i>	<i>Practical</i>	
GG21301CR	Evolution of Geographic Thought	Core	4	2	0	4
GG21302CR	Regional Planning & Development	Core	4	2	0	4
GG21303CR	Ecology & Environment	Core	2	1	0	2
GG21304CR	Field Studies (Geomorphic & Socio-Economic)	Core	0	0	8	4
GG21305DCE	Geography of Resources	Discipline Centric Elective	2	1	0	2
GG21306DCE	Soil Geography	Discipline Centric Elective	2	1	0	2
GG21307DCE	Environmental Impact Assessment	Discipline Centric Elective	2	1	0	2
GG21308DCE	Geography of Transport	Discipline Centric Elective	2	1	0	2
GG21309DCE	Natural Hazards	Discipline Centric Elective	2	1	0	2
GG21003GE	World Geography	Generic Elective	2	1	0	2
GG21003OE	Geography of India	Open Elective	2	1	0	2
Total Contact Hours:		Total Credits: 28				

EVOLUTION OF GEOGRAPHIC THOUGHT

GG21301CR

Course Outcome: The course provides a broad overview of the development of geographical thought. It appreciates the diverse subject matter of Geography which has incorporated and developed theories and ideas from interdisciplinary contexts and also focuses on the evaluation of core elements which make up geographical thought and how these have emerged as a result of debate, controversy and innovations in geographical research. The course aims to enable the learners to evaluate and articulate the strengths and weaknesses in the philosophical basis of Geographical research and also equip them with the abilities to formulate and articulate their own perspectives on issues related to thought and practice in geography.

Credit-I

1. Changing Nature of Geography
2. Paradigm Shift in Geography: Modern & Postmodernism
3. Development of Scientific Geography: Immanuel Kant, Bernhard Varineus
4. Darwin's Impact on Geography
5. Quantitative Revolution in Geography

Credit-II

1. Recent Concepts: Areal Differentiation, Spatial Organization, Spatial Diffusion, Social Wellbeing
2. Space & Place: Location & Region
3. Perspectives in Geography: Positivism, Pragmatism, Idealism, Realism
4. Recent Approaches: Radical, Humanistic & Behavioral
5. System Theory

Credit-III

1. British School of Thought: J.H. Mackinder, Geddes, Stamp
2. Soviet Union School of Thought: V.V. Dokuchaiev, Voeikov & Anuchin
3. American School of Thought: E. Churchill Semple, Huntington & Hartshorne
4. Contribution of William Morris Davis

Credit-IV

1. Development of Modern Geography: Humboldt, & Carl Ritter
2. German School of Thought: Ratzel, Alfred Hettner & Penk
3. French School of Thought: Vidal-de-la Blache, Jean Brunches
4. Arab School of Geography: Al Masudi & Al Biruni
5. Development of Geography in India

Suggested Readings:

1. Dickenson, R.E., The Makers of Modern Geography, Routledge, London. 1969.
2. Dikshit, R.D., Geographical Thought, A Contextual History of Ideas, IPH, New Delhi. 1999.
3. Dikshit, R.D., Art and Science of Geography, 1994.
4. Freeman T.W., Hundred Years in Geography, 1961.
5. Hartshorne, R., The Nature of Geography, Lancaster, 1935.
6. Hartshorne, R., Perspectives on Nature of Geography. Rondo Macrolly, Chicago, 1959.
7. Husain, M., Evolution of Geographical Thought, Rawat Publications, Jaipur. 1984.
8. James, P.E., All Possible World - A history of Geographical Ideas, The Odyssy Press, New York 1972.
9. Jenson, H., Geography-Its History and Concepts, Harper Publishers, New York, 1981.
10. Lalita, R., Geographical Thought – A Systematic record of evolution, Concept Publishing, New Delhi, 2008.
11. Stodard, D.R. Darwin's impact on Geography, A.A.A.G.Vol.58, 1966.
12. Tozer, H.F., History of Ancient Geography, Cambridge, 1951

REGIONAL PLANNING & DEVELOPMENT

GG21302CR

Course outcome: The course comprises of four credits. The course explores the current context and content of regional/spatial planning from perspective of developing countries and also investigates underlying theoretical debates. Course is designed to analyse the existing spatial distribution and exploitation pattern of regional resource structures, levels of sectoral development, regional imbalances and sustainable regional developmental strategies to address the issues of regional imbalances and disparities. The focus of the course is to impart knowledge, understanding and skills necessary to practise professionally as a regional/spatial planner. Course enables the students to formulate/prepare short term regional developmental plans at micro-spatial scale.

Credit-I

1. Regional Concepts in Geography: Conceptual & Theoretical Framework
2. Approaches to Delineation of Region & their Utility in Planning
3. Types of Regions
4. Relevance of Regional Planning in Regional Development
5. Introduction of Regional Planning in India

Credit-II

1. Planning Processes: (i) Sectoral & Spatial (ii) Short Term & Long Term
2. Concept of Multi-Level Planning & Decentralized Planning
3. Regional Development & Social Movements in India
4. Developmental Strategies: Hilly Regions & Tribal Regions
5. Developmental Strategies: Regions of Drought & Flood

Credit-III

1. Development: Concept & Measurement
2. Rostow's Stage Theory of Growth
3. Growth Pole Theory
4. Regional Income Inequality Model
5. Core Periphery Model

Credit-IV

1. Measurement of Levels of Regional Development & Disparities
2. Construction of Composite Index
3. Levels of Regional Development & Disparities in India with special Reference to J&K
4. Planning Initiatives for Balanced Regional Development in India
5. Emerging Corridors of Development in India

Suggested Readings:

1. Agarwal, A.G., Urban and Regional Models in Geography and Planning, John Wiley and Sons, 1974.
2. Campbell, S. and Frankenstein, S., Planning Theory, Blackwell Publishers, 1997.
3. Campbell, S., and Feinstein, S. Readings in Planning Theory, Blackwell Publishers, 1997.
4. Carter, Harold., The Study of Urban Geography, Edward Arnold Publishers Ltd., 1982.
5. Chadwick, George., A Systems view of Planning, Pergamum Press Oxford, New York., 1978.
6. Clout, H.D., Rural Geography, Pergamum Press Oxford, New York. 1984.
7. Gary Hack, et al. Local Planning: Contemporary Principles and Practice, Oxford Press London, 2009.
8. Heredero, J.M., Rural Development and Social Change, Monahan Press Gujarat, 1979.
9. Hugget, Richard., System Analysis in Geography, Clarendon Press Oxford, 1980.
10. Issard, Walter., Methods of Regional Analysis, The M.I.T Press, 1976.

11. Mehta, A., Economic theory and Planning, University Oxford Press, 1974.
12. Mishra, R.P., Regional Planning and Development, Heritage Publishers, New Delhi, 1990.
13. Mishra, R.P., Regional planning Concepts, Techniques, Policies and Case Studies, Concept Publishing Company, New Delhi, 1992.
14. Mumford, Lewis., The City in History: Its Origins, Its Transformations, and Its Prospects 1972.
15. Siddhartha, K., Models in Regional Planning, Kasalaya Publications, New Delhi, 2008.
16. Siddhartha, K., Regional Planning of India, Kasalaya Publications, New Delhi, 2007.
17. Singh, R.L., India- A Regional Geography, National Geographical Society of India, Varanasi, 2003.
18. Sundram, K.V., Geography and Planning, Concept Publishing Company, New Delhi, 1985.
19. Todara, Michel P., and Smith, Stephen, C. Economic Development (12th ed.), Pearson Publishers, 2014.

ECOLOGY & ENVIRONMENT

GG21303CR

Course Outcome: The course provides a holistic approach to create and disseminate knowledge to the students about environmental problems at local, regional and global scale and also provides practical training on modern instrumentation and analytical techniques for environmental analyses and more importantly sensitizes the students towards environmental concerns, issues, and impacts of climate change and related mitigation strategies. The course enables the learners to apply their knowledge for efficient decision-making, environmental management and sustainable development.

Credit-I

1. Ecosystem: Concept & Components
2. Ecosystem: Form & Functions
3. Trophic Levels, Ecological Niche, Ecological Pyramid
4. Energy Flow Models: U Shaped & Y Shaped Energy Flow Model
5. Ecological Adaptations

Credit-II

1. Biogeochemical Cycles: Carbon & Nitrogen Cycle
2. Biodiversity: Significance, Spread & its Conservation
3. Threats to Biodiversity
4. Preservation & Conservation of Ecosystem through Resource Management
5. Ecological Footprint & Concept of Green Economy

Suggested Readings:

1. Chapman and Reiss; Ecology Principles and Applications, Cambridge University Press, 1999.
2. E.P. Odum, Fundamentals of Ecology, Thomas Business Information India Pvt. Ltd. 2006
3. John L. Harper., Ecology-From Individuals to Ecosystems, Wiley Blackwell.
4. P.D. Sharma., Ecology and Environment (11th Edition), Rastogi Publications, 2005.
5. Paul Lauris and W.G. Mosely., An Introduction to Human - Environmental Geography, Wiley Blackwell, 2013.

FIELD STUDIES (GEOMORPHIC & SOCIO-ECONOMIC)

GG21304CR

Course Outcome: The main objective of the fieldwork is to conduct an extensive survey of a contiguous wider region and identify salient landforms; their genesis and their impact on human life, flora and fauna. It also provide the students with the understanding of ground reality of a chosen village/town by observation; mapping of land quality, land use and cropping pattern and conducting Socio-economic survey of the households with the help of a specially prepared questionnaire.

Credit -I

1. Research in Geography: Meaning, Types & Significance
2. Literature Review & Formulation of Research Design
3. Defining Research Problem, Objectives & Hypothesis
4. Research Materials & Methods
5. Techniques of Writing Scientific Reports: Preparing Notes, References, Bibliography, Abstract & Keywords
6. Plagiarism: Classification & Prevention

Credit -II

1. Fieldwork in Geographical Studies: Role & Significance, Selection of Study Area & Objectives, Pre-Field Academic Preparations, Ethics of Fieldwork
2. Field Techniques & Tools: Observation (Participant, Non-Participant), Questionnaires (Open, Closed, Structured, Non-Structured), Interview
3. Field Techniques & Tools: Landscape Survey Using Transects & Quadrants, Constructing a Sketch, Photo & Video Recording
4. Positioning & Collection of Samples, Preparation of Inventory from Field Data
5. Post-Field Tabulation, Processing & Analysis of Quantitative & Qualitative Data
6. Fieldwork: Logistics & Handling of Emergencies

Every student needs to participate in fieldwork and prepare a field report according to the following guideline, failing which he/she will not be evaluated.

1. Each student will prepare a report based on primary data collected from field survey and secondary data collected from different sources.
2. Students will select either one rural area or an urban area (municipal ward) for the study, with the primary objective of evaluating the relation between physical and cultural landscape.
3. A specific problem or a special feature should be identified based on which, the study area will be selected.
4. The report should be typed in Times New Roman, Font Size 12 and Spacing 1.5 in English on A4 size paper in candidate's own words within 5,000 words (Introductory Chapter: 1000 words; Physical Aspects: 1500 words; Socio-economic Aspects: 1500 words; Concluding Chapter: 500 words, approximately) excluding tables, photographs, maps, diagrams, references and appendices.
5. Photographs, maps and diagrams should not exceed 15 pages.
6. A copy of the bound report, duly signed by the concerned teacher, will be submitted during examination.
7. The field work and post-field work will include:
 - a. Collection of primary data on physical aspects (relief and soil) of the study area.
Students should use survey instruments like prismatic compass, dumpy level, Abney level or clinometer wherever necessary.
 - b. Collection of soil samples from different land cover land use regions of the study area for determining pH and NPK values with help of a soil kit.
 - c. Collection of socio economic data at the household level (with the help of a questionnaire) in the selected study area.

- d. Plot to plot land use survey for preparation of a land use map, covering whole or part of the selected area.
- e. Visit to different organisations and departments for collection of secondary data.
- f. Any other survey relevant to the objective of the study.
- 8. The Field Report should contain the following sections (a–e).
 - a. Introduction: Study area extent and space relations, reasons for selection of the study area on the basis of a specific problem or special feature, objectives, methods of data collection, analyses and presentation, sources of information, etc.
 - b. Physical aspects: Lithology and geological structure, relief, slope, drainage, climate, soil, vegetation, environmental issues, proneness to natural hazards, etc.
 - c. Socio-economic aspects:
 - i. Population attributes: number, sex ratio, literacy, occupational structure, ethnic and religious composition, language, per capita income, etc.
 - ii. Settlement characteristics: Number of houses, building materials, number and size of rooms, amenities, etc.
 - iii. Agriculture: General land use, crop-combination, use of fertiliser and irrigational facilities, production and marketing etc.
 - iv. Other economic activities: Fishing, horticulture, brick-making, household and other industries, etc.
 - d. Conclusions: Relation between physical and cultural landscape. Evaluation of problems and prospects. General recommendations.
 - e. Bibliography.
- 9. The students will prepare (i) a chorochromatic land use land cover map on the basis of plot to plot survey; (ii) a profile of 250–1000 m, surveyed and plotted, with different land use land cover superimposed on it.
- 10. All sections of the report should contain relevant maps, diagrams and photographs using primary and secondary data, clearly citing sources.
- 11. All surveys should pertain to the objective of the study. Surveys not relevant for establishing the relation between physical and cultural landscape should be avoided.
- 12. Marks division: 60 on report + 20 on viva-voce +20 Internal = 100

Suggested Readings:

- 1. Gopal Singh., Map World and Practical Geography, Vikas Publishing House, 2000.
- 2. Pal, S.K., Statistics for Geographers- Techniques and Applications, Concept, New Delhi, 1998.
- 3. Robinson, et al., Elements of Cartography, John Wiley and Sons, U.S.A, 1995.
- 4. Sarkar, A.K., Practical Geography: A Systematic Approach, Oriental Longman, Calcutta, 1997.
- 5. Singh, R.L, and Dutt, P.K., Elements of Practical Geography, Kalyani Publishers, New Delhi, 1979.

GEOGRAPHY OF RESOURCES

GG21305DCE

Course Outcome: The course aims to enhance student's knowledge pertaining to inventory, evaluation and appraisal of the natural resources. It highlights various aspects of natural resource management. The course also encourages the learners to comprehend the policies governing resource use and identify various socio-economic dimensions (stakeholders, interests, trade-offs, synergies, ethical principles) while formulating management plans for ensuring sustainable use of resources which is essential for the maintaining ecological balance.

Credit-I

1. Geography of Resources: Nature & Significance
2. Resources: Classification & Significance
3. Models of Natural Resource Process: Zimmermann, Kirk, Brookfield
4. Utilization & Exploitation of Natural Resources: Soil, Water, Forests, Mineral
5. Resource Appraisal & Problems of Resource Depletion: Global & National Scenario

Credit-II

1. Natural Resource Management: Issues & Constraints
2. Resource Conservation Principles & Management Methods
3. Natural Resource Management: Indian Scenario
4. Natural Resource Management Systems
5. Integrated Resource Management: A Case Study from Himalayan Region

Suggested Readings:

1. Sundaram.M, and M. Mrityunjay., Natural Resources Management and livelihood Security –Survival Strategies and Sustainable Policies, BhoovigyanVikas Foundation, 2004.
2. Harikesh N. Misra., Managing Natural Resources- Focus on Land and Water, Prentice Hall India Learning Private Limited, 2014.
3. Konnethd, Frederick and Norman J. Rosenberg., Assessing the Impacts of Climate Change on Natural Recourses Management, Springer, 1994.
4. Russell D. Taylor., Natural Resources Management and Local Development, Springer, 2010.
5. Jana, Bipal, & KR. Majumder, Impact of Climatic change on Natural Resource Management, Mrinmoy Publishing House, 2012.

SOIL GEOGRAPHY

GG21306DCE

Course Outcome: The course provides a broad overview of the soil forming factors and related processes, properties of soils, soil organic matter, soil nutrients, techniques of soil survey and soil classifications. It also addresses various aspects of soil erosion, land degradation and methods of soil conservation. The Course trains the students in soil surveys and soil resource mapping which are essential component of sustainable soil management practices.

Credit-I

1. Soil: Concept & Approaches (Pedological & Edaphological)
2. Soil Formation & Profile
3. Pedogenic Regimes
4. Physical Properties of Soil
5. Chemical Properties of Soil

Credit-II

1. Soil Classification: Zonal Scheme & National Bureau of Soil Survey & Land Use Planning
2. United States Department of Agriculture System (USDA): Soil Classification
3. Soil Erosion & Land Degradation: Concept and Types
4. Soil Loss Models: Modified Universal Soil Loss Equation (MUSLE)
5. Soil Conservation: Significance & Methods (Biological & Mechanical)

Suggested Readings:

1. Daniel Hillel., Soil in the Environment; Crucible of Terrestrial Life, Academic Press, 2007.
2. Edward J. Plaster; Soil Science & Management, Delmar Cengage Learning; 6th edition, 2013.
3. Garrison Sposito., The Chemistry of Soils, Oxford University, 1989.
4. James B. Nardi., Life in the Soil: A Guide for Naturalists and Gardeners, University of Chicago Press, 2007.
5. Nyle Briday., The Nature and Properties of soil, Macmillon Publishing Company USA 1990.

ENVIRONMENTAL IMPACT ASSESMENT

GG21307DCE

Course Outcome: This course is designed to introduce students to environmental impact assessment and to provide theoretical and practical education in this field. The focus is on the rationale and methodology of integrated environmental impact assessment, including consideration of the relevant bio-physical, social, cultural, economic and human health aspects of development proposals, programs and policies. The Case studies will illustrate aspects of EIA in practice. At the end of course, students will acquire the knowledge and professional skills necessary to enable them to undertake environmental impact assessment.

Credit-I

1. Environment Impact Assessment (EIA): Concept & Objectives
2. EIA: Approaches & Methods
3. EIA: Baseline Data Generation
4. Public Participation in Environmental Decision Making
5. EIA: 2006 Notification & RFCTLARR Act, 2013

Credit-II

1. Strategic Environmental Assessment
2. Ecological Assessment
3. Social Impact Assessment
4. Air & Water Quality Assessment
5. EIA/EMP Case Studies: Hydel Power Projects, Industrial Estates & Highways

Suggested Readings:

1. Alan Gilpin, Environmental Impact Assessment: Cutting Edge for the 21st, 1995.
2. Charles H. Eccleston., Environmental Impact Assessment: A Guide to Best, 2011.
3. John Glasson, Riki Therivel, & Andrew Chadwick., Introduction to Environmental Impact Assessment, 2013.
4. Neil Craik., The International Law of Environmental Impact Assessment, 2010.
5. O.V. Nandimath, Handbook of Environmental Decision Making in India: An EIA Model, Oxford Publishing, 2008
6. V. S. Kulkarni, Dr. S. N. Kaul, et al., A Handbook of Environment Impact Assessment, Scientific Publishers, 2002

GEOGRAPHY OF TRANSPORT

GG21308DCE

Course Outcome: The main objectives of this course is aimed at making the students understand and to examine the major problems, issues and trends facing the transport sector in both the developed and developing worlds. The course content is built largely around two main themes, the nature of transport and current problems, issues and trends in transport at a variety of geographical scales and across several modes.

Credit -I

1. Transport Geography: Concept & Significance
2. Ullman's Principles of Transport
3. Transport Network Analysis
4. Transport: Patterns & Modes
5. Models of Transport Development: Taaffe, Morrill & Gould (TMG) Model (1963), Lanchene Model (1965) Gould's Spatial Exploration Model (1966), The Vance Model (1970), The Rimmer Model (1977)

Credit - II

1. Rail Transport: Introduction, Organization & Types
2. Road Transport: National Highway Authority of India (NHAI), Major Highways & Expressways
3. Air Transport: Introduction, Organization & Significance
4. Water Transport in India, Significance of Ports, Interlinking of Rivers
5. Transportation Policy & Planning in India

Suggested Readings:

1. H. Robinson and C. G. Baniford (1978), Geography of Transport, Macdonald & Evans Ltd.
2. C. D. Foster (1975), The Transport Problem, Revised edition, Croom Helm Ltd. London
3. P.S. Gautam (1992), Transport Geography of India, New Gian Offset Press, Delhi-11035
4. Raza and Aggarwal (1986) Transport geography of India, Commodity Flows and the Regional Structure of Indian Economy, Concept Publishing Company, New Delhi
5. B. C. Vaidya (2003), Geography of Transport Development in India, Concept Publishing company, New Delhi
6. H. M. Saxena (2005), Transport Geography, Rawat Publications, Jaipur

NATURAL HAZARDS

GG21309DCE

Course Outcome: This course focuses on the major natural hazards their mode of occurrence, intensity levels, frequency and desired response mechanisms. The students are expected to gain comprehensive knowledge about the early warning systems, various preparedness and mitigation strategies

Credit-I

1. Hazard: Characteristics & Classification
2. Earthquakes: Occurrence Mechanism, Seismic Zonation & Earthquake Prediction
3. Landslide: Classification, Causes & Landslide Susceptibility in the Himalaya
4. Volcanoes: Types & Volcano Monitoring System
5. Tsunami: Characteristics, Mechanism & Tsunami Warning System (TWS)

Credit –II

1. Floods: Types & Causes
2. Droughts: Classification, Implications & Mitigation
3. Cyclones: Genesis, Characteristics & Global Distribution
4. Regional Natural Disasters: 2005 Kashmir Earthquake & 2014 Kashmir Flood
5. Global Scenario of Natural Disasters: Cyclone Bhola 1970, Indian Ocean Tsunami 2004 & Hurricane Katrina 2005

Suggested Readings:

1. Anil K. Gupta, 2016, Resource Book on Chemical (Industrial) Disaster Management
2. Bryant Edwards, 2005, Natural Hazard, Cambridge University Press.
3. Donald Hyndman and David Hyndman, 2009, Natural Hazards and Disasters, Brooks/Cole.
4. Edward A. Keller and Robert .H. Blodgett, 2008, Natural Hazards, Pearson Prentice Hall.
5. G. K. Gosh, Disaster Management, A.P.H. Publishers.
6. Geological Hazards www.nidm.gov.in
7. Hydro-meteorological Hazards www.nidm.gov.in
8. K. K. Singh, Lotfi Aleya and Vinod Singh, Disaster Management, Motilal Banarsidass Publishers Private Limited.
9. Rajesh K. Yadav *et. al.* Encyclopedia of Disaster and Hazards Management, Oxford Book Company
10. Vogelbacher, 2013, Flood Disaster Risk Management - Hydrological Forecasts - Requirements and Best

WORLD GEOGRAPHY

GG21003GE

Course Outcome: This course aims to promote a broad understanding of landforms, climate and drainage patterns at global level. It also deals with global distribution of industry, minerals, and agricultural and population resource regions. This course has been conceptualized to address the requirements of a large segment of students interested in various competitive examinations.

Credit -I

1. Major Land Forms
2. Mountain Systems & Passes
3. Drainage Systems: Amazon, Nile, Mekong & Danube
4. Deserts: Characteristics & Distribution
5. Oceans as Global Trade Routes & Transits

Credit -II

1. Population Resource Regions
2. Major Agricultural Regions
3. Major Industrial Regions
4. Major Multipurpose Projects: Tennessee, Aswan & Damodar Valley
5. Major Economic Activities: Primary, Secondary & Tertiary

Suggested Readings:

1. Clark, Earl & Daniel Rockman Bergsmark., Modern World Geography, J.B. Lippincott Company, 2009.
2. Bradley, John Hudgon., World Geography; Gin & Co.
3. Gautam, Alka., Regional Geography of the World, 2018
4. Khullar, D. R., World Geography, Access Publishing, 2016.
5. Kumar, Mahesh., World Geography, Cosmos Publications, 2020
6. Hussain, Majid: World Geography; Rawat Publication, 2012.
7. Hussein, Majid., Indian and World Geography, 5th Ed. TataMcGraw Hills, New Delhi, 2020
8. Sharma, Vivek and Singh, Deepika, Magbook India and World Geography, Arihant Publications, 2020
9. Simon Adams: Geography of the world; Dorling Kindersly, 2006.

GEOGRAPHY OF INDIA

GG21003OE

Course Outcome: The main objective of this course is aimed at making the students to gain In-depth knowledge of physiography, climate, demography natural vegetation, agriculture energy resources and industries of India. It also broadens understanding of students with respect social, cultural and ethno-linguistic profile of India. This course has been conceptualized to address the requirements of a large segment of students interested in various competitive examinations.

Credit-I

1. Physiographic Divisions of India
2. Drainage & Water Resources
3. Climate
4. Soil & Natural Vegetation
5. Biodiversity & Wildlife Conservation

Credit-II

1. Demographic Profile of India: Growth, Distribution & Density
2. Racial, Ethnic & Religious Composition of India
3. Mineral & Energy Resource
4. Principal Exports & Imports
5. Emerging Environmental Issues in India: Deforestation, Land Degradation & Pollution

Suggested Readings:

1. Chandra Vijay Purty., Geography of India, ABD Publishers.
2. D. R Khullar., India; A Contemporary Geography- Kalyani Publications New Delhi 2010.
3. Majid Hussain, Geography of India, 2nd Ed. Tata McGraw Hill, 2011.
4. R. L. Singh., India- A Regional Geography, National Geographical Society of India, 2003.
5. Singh, R.L., India, Regional geography, Banarus Hindu University, 1987.
6. Spate, O.H.K., India and Pakistan, Mac Million & Co. 1967.

Semester-IV
M.A./ M.Sc. Geography Study Course Structure

<i>Course Code</i>	<i>Course Title</i>	<i>Category</i>	<i>Hours during a week</i>			<i>Credits</i>
			<i>Lecture</i>	<i>Tutorial</i>	<i>Practical</i>	
GG21401CR	Population & Settlement Geography	Core	4	2	0	4
GG21402CR	Social & Cultural Geography	Core	4	2	0	4
GG21403CR	Biogeography	Core	2	1	0	2
GG21404CR	Advanced Surveying & GPS Applications (Practical)	Core	0	0	8	4
GG21405DCE	Dissertation (Project Work)	Discipline Centric Elective	4	2	0	4
GG21406DCE	Political Geography	Discipline Centric Elective	2	1	0	2
GG21407DCE	World Geography	Discipline Centric Elective	2	1	0	2
GG21408DCE	Glaciology	Discipline Centric Elective	2	1	0	2
GG21004GE	Geography of India	Generic Elective	2	1	0	2
GG21004OE	Geography of Jammu & Kashmir	Open Elective	2	1	0	2
Total Contact Hours:		Total Credits: 28				

POPULATION & SETTLEMENT GEOGRAPHY

GG21401CR

Course Outcome: The course is meant to provide an understanding of spatial and structural dimensions of population and the emerging issues. The course is further aimed at familiarizing the students with global and regional level problems and also equips them for comprehending the Indian situation. The course also aims to impart knowledge of concepts and theoretical framework relating to settlement geography, which makes possible the students in building capacity to use theoretical and empirical advancements to develop strategies, policies and programmes to meet challenges of housing problems.

Credit-I

1. Population Geography: Evolution & Subject Matter
2. Population Theories: Malthus, Neo Malthusianism, Demographic Transition
3. Factors Influencing Growth, Distribution & Density of Population
4. Population Dynamics of India and J&K
5. Population Projection Techniques

Credit-II

1. Fertility: Determinants & World Patterns
2. Mortality: Determinants & World Patterns
3. Migration: Measures, Determinants & Consequence
4. Human Development: Concept of Human Development Index & its Components
5. Population Challenges in Developed & Developing Countries (Ageing & Declining Sex Ratio)

Credit-II

1. Nature & Scope of Settlement Geography
2. Evolution, Size & Growth of Human Settlement; Diffusion of Settlements
3. Site & Situation Factors in the Development of Settlements
4. Rural Settlement, Patterns & Forms
5. Urban Settlements: Emerging Issues & Challenges

Credit-IV

1. Classification of Settlements
2. Theories of the Morphological Structure of Cities: Concentric Zone, Sector Theory, Multi-Nuclei Theory
3. Social Area Analysis Model & Exploitative Model
4. Origin of Towns & Cities
5. Settlement & Environmental Interface

Suggested Readings:

1. Agarwala, S.N., India's Population Problems, Tata McGraw Hill, New Delhi, 1985.
2. Beaujeu Garnier, J., Geography of Population, Longman, London, 1966.
3. Bhende, A. A. and Kanetkar T., Principles of Population Studies, Himalaya Publishing House, Mumbai, 2003.
4. Bhende, A.A. and Kanetkar, T., Principles of Population Studies, Himalayan, 1978.
5. Bose, A. (ed.), Population in India's Development, 1947-2000. Vikas Publications, New Delhi, 2001.
6. Carter, H., The Study of Urban Geography, Edward Arnold, London, 1975.
7. Champion, T. (ed.) Population Matters. Paul Chapman, London, 1993.
8. Chandna, R. C., Geography of Population. Kalyani Publishers., New Delhi, 2006.
9. Chandna, R.C., Geography of Population, Kalyani Publishers, New Delhi, 1986.

10. Clark, J. I., Population Geography. Pergamon Press, Oxford, 1972.
11. Daniel, P., Geography of Settlement. Rawat Publications., Jaipur and New Delhi, 2002.
12. Ehrlich, P.R. and Ehrlich, A.H. , Ecoscience: Population, Resources, Environment. 6th ed. W.H. Freeman and Company, San Francisco, 1996.
13. Eidt, R. C., Singh, K. N. and Singh, Rana, P.B., (eds.), Man, Culture and Settlement. Kalyani Publishers., New Delhi, 1977
14. Garnier, B.J., Geography of Population. 3rd edition. Longman, London, 1993.
15. Ghosh, S., A Geography of Settlements. Orient Longman, Kolkata, 1999.
16. Hassan, M.H., Population Geography, Rawat Publications, New Delhi, 2005.
17. Hudson, F. S., A Geography of Settlements. MacDonald and Evans, New York, 1976.
18. Jones, H. R., Population Geography. 3rd edition. Paul Chapman, London. Pathak, L. P. (ed.) (1998): Population Studies. Rawat Publications., Jaipur and New Delhi, 2000.
19. Mitra, A., Report on House Types and Village Settlement Patterns in India. Publication Division, Govt. o India, New Delhi, 1960.
20. Mosley, M.J., Rural Development: Principles and Practice. Sage Publication, London, 2005.
21. Oliver, P., Dwellings. The House across the World. University of Texas, 1987.
22. Ross, John A., (ed.) International Encyclopaedia of Population. Free Press, New York, 1982.
23. Singh, K.N. and Singh, D.N., (eds.) Population Growth, Environment and Development. EDSC, Varanasi, 1992.
24. Singh, R.Y., Geography of settlements. Rawat Publications., Jaipur and New Delhi, 2003.
25. Srinivasan, K, and Vlassoff, M., Population Development Nexus in India: Challenges for the New Millennium. Tata McGraw Hill, New Delhi, 2001.
26. Trewartha, G.T., A Geography of Population. World Patterns. John Wiley and Sons, New York, 1985.
27. Trewartha, G.T., A Geography of Population- World Patterns, John Wiley, 1969.
28. Woods, R., Population Analysis in Geography, Longman, London, 1979.
29. Zelinsky, W., A Prologue to Population Geography. Prentice Hall, Englewood Cliffs, New Jersey. M.Sc. Geography SE, 1966.

SOCIAL & CULTURAL GEOGRAPHY

GG21402CR

Course Outcome: This course provides a broad overview of the key concepts and approaches in social and cultural geography and examines the contested politics of place-making as a social and cultural practice. This course also enables the students to explore the relations between social identity and the production of geographical space and critically analyze and contribute to contemporary scholarship in social and cultural geography. This course is aimed at making students understand and develop the ability to critically assess the material and symbolic aspects of cultural landscapes.

Credit-I

1. Social & Cultural Geography: Nature & Development
2. Concept of Space & Place, Process & Pattern & their Social Significance
3. Races: Types & Global Distribution
4. Tribes: Habitat, Economy & Society
5. Social Problems in India, Social Exclusion, Social Structure & Processes

Credit – II

1. Gender Discrimination & Empowerment
2. Role of Language, Religion & Tradition in the Formation of Culture Regions
3. Environmental Related Health Problems in Developing Countries
4. Concept of Social Wellbeing & its Measurement: Morris
5. Impact of Modernization on Indian Society & Social Transformation

Credit-III

1. Evolution of Culture
2. Cultural Convergence & Divergence Processes
3. Major Cultural Realms of the World
4. Culture Diffusion: Acculturation & Assimilation
5. Cultural Hearth: Classification & Distribution

Credit – IV

1. Society: Meaning, Types & Characteristics
2. Folk Culture: Folklore Regions
3. Classification of Indian Races: Hutton, Risley & B. S. Guha
4. Cultural Landscape
5. Tribal Areas in India & their Problems

Suggested Readings:

1. Jones Emrys, and Eyles John., An Introduction to Social Geography, Oxford University Press, 1977.
2. Aijazuddin Ahmed., Social Geography, Rawat Publications, New Delhi, 1999.
3. Smith David., Geography - A Welfare Approach, Edward Arnold, 1977.
4. Knox P. L., Social Well-being: A Spatial Perspective, Oxford University Press, London, 1975.
5. Crong Mike., Cultural Geography, Routledge Publications, London, 1998.
6. Jordan and Lester, G., The Human Mosaic Harper Row, New York, 1978.
7. Massey et a., Human Geography today, Polity Press, Cambridge, 1999
8. Mukerjee, A. B. & Aijazuddin Ahmed., India Culture Society's Economy, Inter India Publications, New Delhi, 1985.

BIO-GEOGRAPHY

GG21403CR

Course Outcome: The focus of this paper is to study the intricate relationship between geography and biology. It also broadens the understanding about Biodiversity, its conservation and management. This course also provides a deep understanding about various factors which influence the distribution and dispersal of species. It also enables the students to understand by geographic template and patterns along with biodiversity gradients across the globe.

Credit-I

1. Principles of Biogeography: Biotic Succession
2. Components of Geographic Template: Climate, Soil, Aquatic Environment
3. Evolution of Species: Speciation, Diversification & Extinction
4. Dispersal: Mechanism, Routes & Barriers
5. Bio-geographic Patterns: Cosmopolitanism & Endemism

Credit-II

1. Major Biomes of the World: Forest, Aquatic & Desert
2. Phyto-Geographic Realms
3. Zoo-Geographic Realms
4. Theory of Island Biogeography
5. Biodiversity: Its Gradients (Latitudinal, Elevational & Depth)

Suggested Readings:

1. E.O. Wilson and R. H Macarther., The Theory of Island Biogeography, Princeton University Press, 1976.
2. James Brown., Biogeography – An Ecological and Evolutionary Approach, Sinauer Associates Inc; 3rd edition, 2005.
3. M.V Limolinov, & B. R. Riddle, Biogeography, Sinauer Associates Inc. Massachusetts USA, 2005.

ADVANCED SURVEYING & GPS APPLICATIONS (PRACTICAL) GG21404CR

Course Outcome: The main objectives of this course is aimed at making the students to know about the significance of advanced surveying in field measurements in terms of utility and precision of data collection and to learn on the principles of Electronic distance measurements, Total station, GPS and their accuracy. The course enables the students to know in detail the concepts of coordinate systems, Map projections, GPS, its working principles, data collection, data processing and analysis.

Credit-I

1. Advance Surveying: Concept & Development
2. Fundamental Requirements of Advance Surveying
3. Surveying: Methods & Instruments
4. Map Projections & Types
5. Coordinate System & Transformations

Credit-II

1. Surveying Instruments : Total Station (TS)
2. Total Station: Functions & Characteristics
3. Handling & Setting-up Total Station: Leveling, Centering & Orientation
4. Measuring Angles, Distances & Heights
5. Land Parcel Area Calculation

Credit-III

1. Global Positioning System (GPS)
2. GPS Structure (Segments)
3. Fundamentals of GPS positioning
4. Types of GPS Survey
5. GPS: Errors & Accuracy

Credit-IV

1. GPS Survey: Autonomous, Differential & Real Time Kinematics (RTK)
2. Creating Point, Line & Polygon Data
3. Data Transfer
4. Post Processing of GPS Data
5. Map Layout

Suggested Readings:

1. Kali Charan Sahu., Textbook of Remote Sensing and Geographic Information System, Atlantic Publishers and Distributors, 2008.
2. B.C. Panda., Remote Sensing- Principles and Applications, Viva Books, 2008.
3. Jensen., R Fundamentals of Remote Sensing. Shree Maitree Printech Pvt Limited Noida, 2007.
4. Gopal Singh., Map World and Practical Geography, Vikas Publishing House, 2000.

DISSERTATION (PROJECT WORK)

GG21405DCE

Course Outcome: This is one of the important courses which help out to introduce students with some basic statistical techniques, relevant to geographical research to acquaint students about their potentials & utilization: The knowledge of drawing inferences using the geographical database. To provide students with an understanding and appreciation of the mutual dependence of different techniques and their relevance.

Credits: IV

The students will work on the dissertation in the logical framework given below in the relevant field of geography. The student would compile his/her thesis in consultation with the concern Supervisor/Guide. The dissertation will subsequently be evaluated by External/ Internal Examiners.

Thesis Framework

1. Statement of the Problem
2. Conceptual Framework
3. Objectives
4. Hypothesis/ Research Questions
5. Literature Survey
6. Methodology
7. Data Sources (Based on Primary Sources, Secondary Sources and Laboratory Work)
8. Results and Discussion
9. Conclusion
10. References

Evaluation Process:

I. The evaluation process shall have three components consisting marks distribution as given:

- | | |
|-------------------------|----|
| i. Internal | 20 |
| ii Dissertation | 60 |
| iii. External Viva Voce | 20 |

Note: *The work should be original one and the department will check plagiarism.*

POLITICAL GEOGRAPHY

GG21406DCE

Course Outcome: This course provides students with a comprehensive understanding of the concepts, theories, methods, principles and models of geographic thought appropriate for analyzing politics and political relations. This course enables students to use geography in order to gain an understanding of global political actions, related military, ethnic, or religious conflicts, cultural practices, economic relationships, and resource use decisions with interregional or international implications.

Credit-I

1. Political Geography & Geopolitics: Approaches
2. Major Schools of Thought in Political Geography: German, British & American
3. Global Strategic Views of Heartland & Rim Land Theories
4. State & its Elements: Physical, Social & Economic
5. Concept of Frontiers, Boundaries & Buffer State

Credit-II

1. Geopolitical Significance of SAARC & Indian Ocean
2. International Boundary of India & Related Issues, China-Pakistan Economic Corridor (CPEC): Issues & Concerns
3. Water Sharing Disputes: Kaveri & Indus Water Disputes
4. Regional Groupings & Organization: ASEAN, EU, BRICS
5. Electoral Geography: Spatial Analysis

Suggested Readings:

1. Agnew J., Political Geography: A reader London: Arnold, 1997.
2. Cox KR, Low M. & Robinson J., Handbook of Political Geography, London, 2008.
3. Edward, F., Modern Political Geography, Brown Company Publishers, 1975.
4. Harvey, D., Justice, Nature and the Geography of difference, Oxford Blackwell, 1996.
5. Hussain, M., Political Geography, Anmol Publishers, New Delhi, 1994.
6. John Agnew, Political Geography Reader, Arnold Hodder, 1995.
7. Johnston, R.J., Political, Electoral and Spatial Systems Oxford: Clarendon Press, 1979.
8. Painter, J., Politics, Geography and 'Political Geography': A Critical Perspective London, 1995.
9. Peter, J. Taylor., Political Geography, Long man Group, England, 1985.
10. Spykman, N. J., The Geography of the Peace, New York: Harcourt, Brace and Co.1944.
11. Sutton, I., 'The Political Geography of Indian Country' American Indian Culture and Research Journal, 1991
12. Taylor P.J & Flint C., Political Geography: World-Economy, Nation-state and Locality, Harlow: Pearson Education Limited, 2007

WORLD GEOGRAPHY

GG21407DCE

Course Outcome: This course aims to promote a broad understanding of global distribution of landforms, climate and drainage. It also deals with global distribution of mineral resources and industries. This course has been conceptualized to address the requirements of a large segment of students interested in various competitive examinations.

Credit-I

1. Physiography, Climate & Drainage of North & South America
2. Industrial Regions & Mineral Resources of North America
3. Physiography & Drainage of Europe
4. Industrial Setup & Mineral Resource of Europe
5. Physiography & Climate of Australia

Credit-II

1. Physiography, Climate & Drainage of Africa
2. Natural Vegetation & Mineral Resources of Africa
3. Physiography of Asia
4. Climate & Drainage of Asia
5. Demographic Profile of Asia

Suggested Readings:

1. Clark, Earl & Daniel Rockman Bergsmark., Modern World Geography, J.B. Lippincott Company, 2009.
2. Bradley, John Hudgon., World Geography; Gin & Co.
3. Gautam, Alka., Regional Geography of the World, 2018
4. Khullar, D. R., World Geography, Access Publishing, 2016.
5. Kumar, Mahesh., World Geography, Cosmos Publications, 2020
6. Hussain, Majid: World Geography; Rawat Publication, 2012.
7. Hussein, Majid., Indian and World Geography, 5th Ed. TataMcGraw Hills, New Delhi, 2020
8. Sharma, Vivek and Singh, Deepika, Magbook India and World Geography, Arihant Publications, 2020
9. Simon Adams: Geography of the world; Dorling Kindersly, 2006.

GLACIALOLOGY

GG21408DCE

Course Outcome: This course is a specialized course of Physical Geography wherein students will be introduced to glacial Science. The course has been conceptualized to encourage students to understand the glaciers as repositories of water resources, their importance in shaping various types of landforms, their dynamic nature and behaviour of these glaciers to changing climatic regimes.

Credit-I

1. Glaciers: Origin & Classification
2. Ice Ages: Causes & Evidences
3. Glacial Ice Movement: Basal Flow & Internal Deformation
4. Glacial Erosion Processes & Landforms
5. Glacial Depositional Processes & Landforms

Credit-II

1. Periglacial Processes & Landforms
2. Paleo-climate & Oxygen Isotope Analysis
3. Himalayan Glaciers: Mass Balance & Response to Climate Change
4. Glacio-Geomorphological Case Studies: Gangotari & Kolhai Glacier
5. Hazards in Glacial Environment: Glacial Surges & Glacial Lake Outburst Floods

Suggested Readings:

1. Kaushik Pradeepika., Geomorphological Studies of the Himalayan Glaciers in Brief, Lambat Academic Press, 2013.
2. Naseerudin ahmad and Sarwar, Rais., Himalyan Glaciers, APH Publishing House, 1998.
3. Micheal Hambrey and Jueg Alean., Glaciers (2nd edition), 2004.
4. Doug Benn and David J.A.Evans., Glaciers and Glaciation (2nd ed.), Hodder Arnold Publication, 2010.
5. Ireneo Peter Martui., Geomorphological and Geology, 2001.

GEOGRAPHY OF INDIA

GG21004GE

Course Outcome: The main objectives of this course is aimed at making the students to gain In-depth knowledge of physiography, climate, demography natural vegetation, agriculture and energy resources and industries of India and to Conceptualize the regional approaches and to examine regional differentiation in the study of India.

Credit-I

1. Physiographic Divisions of India
2. Drainage & Water Resources
3. Climate
4. Soil & Vegetation
5. Biodiversity & Wildlife Conservation

Credit-II

1. Demographic Profile of India: Growth, Distribution & Density
2. Racial, Ethnic & Religious Composition of India
3. Mineral & Energy Resource
4. Principal Exports & Imports
5. Emerging Environmental Issues in India: Deforestation, Land Degradation & Pollution

Suggested Readings:

1. Chandra Vijay Purty., Geography of India, ABD Publishers.
2. D. R Khullar., India; A Contemporary Geography- Kalyani Publications New Delhi 2010.
3. Majid Hussain, Geography of India, 2nd Ed. Tata McGraw Hill, 2011.
4. R. L. Singh., India- A Regional Geography, National Geographical Society of India, 2003.
5. Singh, R.L., India, Regional geography, Banarus Hindu University, 1987.
6. Spate, O.H.K., India and Pakistan, Mac Million & Co. 1967.

GEOGRAPHY OF JAMMU & KASHMIR

GG21004OE

Course Outcome: This course introduces the students to the distinct geographical characteristics of the Jammu & Kashmir. It provides the necessary inputs to the students belonging to various disciplines of earth and environment sciences to explore their interests within the broad geographical domain of the UT. This course has been conceptualized to address the requirements of a large segment of students interested in various competitive examinations.

Credit-I

1. Jammu & Kashmir: Space Relationships
2. Physiography
3. Climate
4. Drainage System
5. Soils & Natural Vegetation

Credit-II

1. Population: Distribution, Density & Composition
2. Population Growth & Trends in Urbanization
3. Horticulture of J&K with respect to Apple, Saffron & Walnuts
4. Tourism in Jammu & Kashmir
5. Energy Resources of Jammu & Kashmir: Hydel & Geothermal

Suggested Readings:

1. Drew, F.K., The Territories of India, Kashrnir State. Standard Press London, 1979.
2. Gazetter of Kashmir and Ladakh, 1890.
3. Lawrence, S.W., The Valley of Kashrnir, Oxford University Press, 1895.
4. Raina, A.N., Geography of Jammu and Kashrnir, National Book Trust, New Delhi, 1971.
5. Qazi, S.A., Geography of India with Special Reference to J&K State, APH Publishing Co. 2000.
6. Majid Hussain., Systematic Geography of Jammu and Kashmir, Rawat Publications, 2000.
7. R. L. Singh., India- A Regional Geography, National Geographical Society of India, 2003.