DEPARTMENT OF GEOGRAPHY

NORTH-EASTERN HILL UNIVERSITY

DRAFT M.A./M. Sc. SYLLABUS

(AS PER NEP-2020 FRAMEWORK)

2022

PREFACE

Since its inception in 1976, the Department of Geography, offers M.A./M.Sc., M. Phil and Ph.D. programmes. It has been a sincere endeavour of the Department to revise its syllabus from time to time to keep abreast with the latest development in the field of Geography. The last revision of the syllabus was implemented in the year 2018. In fact, the process of revision of the syllabus was going on not only as per the CBCS system, but also as per the structure sent by the UGC to comply with the NEP 2020 framework. The salient features of the revised syllabus are as follows:

1. The Master degree programme in Geography shall have a total of 88 credits (2200 marks), which includes theory papers, practical, study tour, field work and dissertation.
2. The entire credits to be earned have been spread over four semesters.
3. Credit distribution of the course's ranges between 4 to 20.
4. Course No. 504 in the first semester is multidisciplinary (GEC). Students from other departments can opt this course.
5. Students can earn up to 40% from MOOCS in lieu of DSEC and GEC.
6. In the first, second and third semesters all core papers wherever indicated will have a practical component of 1 (one) unit. In the third semester GEO 603, 604 and 605 are optional special papers. Students can opt one out of the two optional in each paper.
7. In Paper GEO 506 (Geography of India), 3 (three) credits will be dedicated for theory and 1 (one) credit will be based on the report prepared from All India Study Tour, which is mandatory for all the students.
8. In all papers having 4 credits 3 credits will be for written examinations and 1 credit is for sessional assessments.
9. The Course 'GEO 606' is for dissertation/research project. Dissertation is compulsory in the fourth semester and carries 20 credits or 500 marks. Out of 20 credits 16 credits are allotted for the dissertation and 4 credits for viva-voce. Though the dissertation will be evaluated at the end of the 4^{th} semester, it will spread over two semesters, beginning in the 3^{rd} semester with the allotment of supervisors to students and approval of the topics for the dissertation. Field work is an essential component for the preparation of the dissertation.
10. In order to facilitate CBCS system and choices to be exercised by the students of Geography Department, a student advisor is appointed who shall advise the students in choosing their options.
11. Contact hours: For each credit 12 hours

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NORTH-EASTERN HILL UNIVERSITY

DRAFT STRUCTURE OF M. SC. SYLLABUS (AS PER NEP 2020 FRAMEWORK)

Course No.	Title of Course	Credits
FIRST SEMESTER		
GEO-CC-500	Geomorphology	4 (3+1*)
GEO-CC-501	Geographical Thought	4
GEO-DSEC-502A GEO-DSEC-502 B	Political Geography Biogeography	4 4
GEO-DSEC-503 A GEO-DSEC-503 B	Urban Geography Transport Geography	4 (3+1*) 4 (3+1*)
GEO-GEC-504	Environmental Geography	4
	Total	**20**
SECOND SEMESTER		
GEO-CC-505	Climatology	4 (3+1*)
GEO-CC-506	Geography of India	4 (3+1**)
GEO-DSEC-507A GEO-DSEC-507B	Population & Development North East India: Society, Culture & Economy	4 4
GEO-DSEC-508A GEO-DSEC-508 B	Cultural geography Hydrology and Oceanography	4 4
GEO-RM-509	Research Methodology and Techniques in Geography	4
GEO-SEC-510	Remote Sensing & GIS, Data analysis	4 (2+2*)
	Total	**24**
THIRD SEMESTER		
GEO-CC-600	Economic Geography	4 (3+1*)
GEO-CC-601	Regional Development & Planning	4 (3+1*)
GEO-CC-602	Social Geography	4 (3+1*)
GEO-DSEC-603A GEO-DSEC-603B	Tropical Geomorphology Tribal situation in India	4 4
GEO-DSEC-604A GEO-DSEC-604 B	Agricultural Geography Environmental Geomorphology	4
GEO-DSEC-605 A. GEO-DSEC-605 B.	Gender studies in Geography Geography of Tourism	4 4
	Total	**24**
FOURTHE SEMESTER		
GEO–DSEC-606	DISSERTATION	16
	Viva Voce	4
	Total	**20**

CC: Core Course; DSEC: Discipline Specific Elective Course; GEC: General Elective Course (Multidisciplinary), SEC: Skill Enhancement Course

*Stands for Practical

**Stands for All India Study Tour

Credits: 4
Marks: 100

GEO-CC-500
GEOMORPHOLOGY

(Theory: 3 credits, Practical: 1 credit)

Objectives: To understand the concept of geomorphology; scale, systems, models and theories in geomorphology, process-form response and applied geomorphology.

Course outcome: The paper is framed in such a way that the students will understand the modern concepts in Geomorphology, role of tectonic activities of landform and the processes of evolution of different types of landforms.

UNIT - I: CONCEPTS IN GEOMORPHOLOGY

Development of Geomorphic thought: Classical and Modern

Trends in Geomorphology: Cyclic, Process, Quantitative and Contemporary Geomorphology

Scale and related concepts in Geomorphology: Spatial and temporal scale, equilibrium, geomorphic systems, perturbation, feedback and threshold

Models of slope development: Slope decline theory of W. M. Davis, Slope replacement theory by W. Penck, Slope evolution theory by A. Wood, Process-response model of A. Young

UNIT - II: TECTONIC GEOMORPHOLOGY

Geological time scale and related topographic and structural evolution

Isostasy: Airy and Pratt; their critical analysis

Continental drift theory and Plate tectonics

Folds and Faults—origin, types and their topographic expressions

Earthquakes and Tsunamis

Holocene deformation and landscape responses

UNIT - III: PROCESS-FORM RELATION

Behavior strength and resistance of rock, soil and water; Concept of gradation

Process of rock weathering and their effects on landform; Mass movements: its dynamics and classification

Fluvial processes and landforms; Glacial processes and landforms'; fluvio-glacial landforms; Aeolian processes and landforms; fluvio-aeolian processes

Paleogeomorphology: relict, exhumed and buried landforms

UNIT - IV: PRACTICAL

Geological Map: Drawing of cross sections from uniclinal, folded and faulted maps having unconformity and their interpretation

Preparation of altimetric frequency and hypsometric curves of drainage basins

Preparation of landslide/Flood hazard and risk zonation maps.

Preparation of topographical maps and networks using Total Station and GPS

Suggested Readings

Bagnold, R. A. (1973): The Physics of blown sand and desert dunes. *Chapman f!j Hall Ltd*

Benn, D. I., and Evans, D. J. A. (1998). *Glaciers & Glaciation*. Arnold, London

Billings, M. P.: Structural Geology, Prentice-Hall India Pvt. Ltd., New Delhi, 1992

Bloom, A. L. (2002). Geomorphology: A systematic analysis of late Cenozoic landforms. Prentice-Hall of India, New Delhi

Burbank, D. W.and Anderson, R. S.: Tectonic Geomorphology, Wiley-Blackwell, UK, 1988

Butzer, K. W. (1976) : Geomorphology from the Earth. Harper and Row Publishers

Embleton, C. and Thorns, J. (1980): Processes in Geomorphology. Arnold Heinmann, London

Embleton, C., and King, C. A. M (1968). *Glacial and Periglacial Geomorphology*. London: Edward Arnold.

Faniran, A. and Jeje, L. K. (1983): Humid Tropical Geomorphology, Longman, London.

Goudie, A. (1990): Geomorphological techniques. Unwin Hyman Ltd., London

Gregory, K. J. and Goudie, A. S. (2014): The SAGE Handbook of Geomorphology. SAGE Publications Ltd.

Hart, M. G. (1986): Geomorphology: Pure and Applied, Allen and Unwin Ltd.

Kale, V. S. and Gupta, A. (2001): Introduction to Geomorphology, Orient Longman, Calcutta.

McCullagh, P. (1978): Modern Concepts in Geomorphology. Oxford University Press

Melhorn, W. N. (ed) (1981): Theories of Landform Development. George Allen and Unwin Ltd.

Morisawa M. (1985): Rivers: Forms and Processes. Longman, London

Ollier, C. D. (1969): Weathering. American Elsevier, New York

Platt. J. I. (1974). Selected exercises on Geological Map. Murby Publishers, London

Pitty, A. F. (1982): The Nature of Geomorphology. Methun and Co.

Selby, M. J. (1985): Earth's Changing Surface. Oxford University Press

Sharma, V. K (2010) : Introduction to Process Geomorphology. CRC Press, Taylor and Francis.

Small, R. J. (1972): The Study of Landforms. Cambridge University Press

Stoddart, D. R. (ed) (1997): Process and Form in Geomorphology. Routledge, London

Thornbury, W. D. (1986): Principles of Geomorphology. Willey Eastern Limited

Wooldridge, S. W. and Morgan, R. S. (1988): An Outline of Geomorphology. Orient Longman, Kolkata

Young, A. (1972): Slopes. John Wiley

Zaruba, Q. and Mencl, V. (1976): Landslides and their control. Elsevier Science

Credits: 4
Marks: 100

GEO-CC-501
GEOGRAPHICAL THOUGHT

Objective: *To enable the students to a critical appreciation of the history of ideas in their discipline and familiarize with issues in modern and contemporary geography*
Course Outcome: Students will learn

a) The chronology of the epochs and personalities that shaped the contours of geography since the ancient times
b) Development of dichotomies and dualisms in the discipline
c) *Recent developments in critical geography*

UNIT - I: DEVELOPMENT OF GEOGRAPHICAL CONCEPTS AND IDEAS

Historical development: contribution of major proponents in geography in the ancient world (the Greeks, the Romans, the Indians and the Chinese)

Development of geography during the Middle Ages

Geography in the age of discovery

Reformation, age of enlightenment and pre-modern geographies (Varenius and Kant)

UNIT - II: INSITITUTIONALIZATION OF GEOGRAPHY AS A DISCIPLINE

Nineteenth century geographies: Ritter and Humboldt

Growth of Environmental Determinism and Possibilism

Influence of Darwinism on geography

UNIT - III: GEOGRAPHY IN THE 20TH CENTURY

Early 20th century geographies: anarchist thought in geography- Kropotkin and Reclus;

Development of cultural school (Sauer) and regional school (Hartshorne), geography as areal differentiation;

Growth of Dualisms- regional vs. systematic, physical vs. human;

Impact of Positivism, quantitative revolution and logical positivism

UNIT - IV: CRITICAL GEOGRAPHY

Contemporary geography: humanistic geography, radicalism; neo-determinism;

behaviouralism; neo-environmentalism; structuralism and post-structuralism;

post-modernism in geography; the gender question

Suggested Readings

Board, C et.al.: Progress in Geography, Vol 1-8, Edward Arnold, London, 1970

Bunge, W.: Theoretical Geography, The Royal University of Lund, Sweden, 1962

Chorley, R. J. and Haggett, P.: Models in Geography, Methun, London, 1967

Cresswell, Tim: Geographic Thought: A Critical Introduction, Wiley, Blackwell, 2012.

Dikshit, R. D.: The Art and Science of Geography, Prentice Hall India, New Delhi, 1994

Giddens, A.: Central Problem in Social Theory: Action, Structure and Contradiction in Social Analysis, McMillan, London, 1979

Gould, J. R.: An Introduction to Behavioural Geography, Oxford, 1980

Gregory, D.: Geographical Imaginations, Blackwell, Cambridge, Mass, 1994

Hartshrone, R.: The Nature of Geography, AAG, Lancaster, Pennsylvania, 1939

Hartshrone, R.: Perspectives on the Nature of Geography, Rand McNally, Chicago, 1959

Harvey, D.: Explanations in Geography, Edward Arnold, London, 1969

Harvey, D.: The Condition of Post Modernity, Blackwell, Oxford, 1989

Johnston, R. J.: The Future of Geography, Edward Arnold, London, 1988

Kuhn, t. S.: The Structure of Scientific Revolution, Chicago, 1962

Lefebvre, H.: The Production of Space, Blackwell, Oxford, 1991 (French Edition, 1974)

Peet, R. and Thrift, N. (eds.): New Models in Geography, Vol.2, Unwin Hyman, London, 2002

Sauer, C. O.: Land and Life, University of California, Berkley, 1963

Credits: 4
Marks: 100

GEO-DSEC-502 A
POLITICAL GEOGRAPHY

Objectives: to elucidate the strategic importance of geographical pattern in politics at global, national, regional and local levels.

Course outcome: To gain an in-depth knowledge on the fundamentals and modern issues related to Political Geography at the global level and Indian context.

UNIT - I : FUNDAMENTAL CONCEPT OF POLITICAL GEOGRAPHY:

Emergence and development of political geography; basic elements of political geography-territorial base, population, system of governments, economic base, transport and communication

Approaches to study political geography-functional, world system and landscape

UNIT-II: CONCEPTS AND THEORIES

Concept of state; location, size, shape and core areas; concept of organic state-Ratzel Spencer and Schaffle; frontiers and boundaries; marine jurisdiction

Theory of heartland, rimland, and sea power geo-strategy

UNIT-III : GEOGRAPHY OF POLITICAL CHOICE AND WORLD POLITICS

Place of electoral studies in political geography; spatial organization of electoral areas and geography of representation; world political regions; geopolitics since world war II.

UNIT-IV : GEOPOLITICAL PERSPECTIVE IN INDIA

Politico-geographic factors in the rise of Indian ferderalism

India and her neighbours from geopolitical perspective

Geopolitical significance of the Indian ocean as a zone of peace, problems and prospects

North East India from geopolitical perspective

Suggested Readings

Adhikari, S. : Political Geography, Rawat Publ., Jaipur, 1997.

Agnew, J. (ed) : Political Geography: A Reader, Arnold, London, 1997.

Blij, Harm de: Political Geography, London, 1970.

Bergman, E.P. : Modern Political Geography, W.M.C. Brown Co., Publ, Dubuque, 1975.

Busteed, M.A. (ed): Development in Political Geography, Academic Press, London, 1983.

Dikshit, R.D. : Political Geography: A Contemporary Perspective, Tata McGraw, Delhi, 1996.

Dikshit, R.D. : Political Geography-A Century of Progress, Sage Publ., Delhi, 1999.

Fisher, C.A. et al : Changing Map of Asia, Methuen, London, 1968.

Gopalakrishnan, R. : Geography of India, Jawahar, Delhi, 2001.

Hartshorne, R. "The Functional Approach in Political Geography" Annals of Association of American Geographers, 40: 95-131.

House, J and Taylor, P.J. : Political Geography: Recent Rend and Future Direction, London, 1991.

Kasperson, R. and Minghi, J.V. (eds) : The Structure of Political Geography, Aldine Publ., Co., Chicago, 1969.

Mackinder, H.J. : "The Geographical Pivot of History " Geographical Journal, 23.

Mellor, R. : Nation, State and Territory: A Political Geography, Routledge, London, 1989.

Pacione, M. (ed) : Progress in Political Geography, Routledge, London, 1985.

Painter, J. : Politics, Geography and Political Geography: a Critical Perspective, Arnold, London, 1995.

Pond, N. G.J. : Political Geography, McGraw Hills, New York, 1986.

Prescot, J.R.V. : Geography of Frontiers and Boundaries, Aklin, Chicago, 1968.

Singh, C.P. : Contributions to Indian Geography-13, Reading in Political Geography, Heritage Publ., New Delhi, 1994.

Slowe, P. : Geography and Political Power, Routledge, London, 1990.

Taylor, P. : Political Geography, Longman, London, 1995 (revised edition)

Taylor, P.J. and House, J (eds): Political Geography: Recent Advances and Future Directions, Croom Helm, London, 1984.

Credits: 4
Marks: 100

GEO-DSEC-502 B
BIOGEOGRAPHY

Objectives: To evaluate the relationship between the abiotic and biotic phenomena in various parts the world. To familiarize the students with geographical distribution of life forms
Course outcome: The students will be able to understand the different concepts related to biogeography and the causes and factors related to the distribution of both plants and animals.

UNIT - I: CONCEPTS

Meaning, scope and development of biogeography; branches of biogeography; history of biogeography

Biosphere and its nature; classification of plants and animals

Meaning and scope of ecology; basic concepts of ecology; ecology and habitat; ecological niche

UNIT - II: ECOSYSTEM AND ITS FUNCTIONS

Definition and its basic properties; components of ecosystem; types of ecosystems; trophic level; ecological pyramids; food chain; food web; energy flow in an ecosystem

Biogeochemical cycles; environmental controls on the selection of plants and animals; world biomes – types and ecological classifications

UNIT - III: PLANTS AND THEIR ENVIRONMENT

Interaction of ecological factors; climatic factors; physical factors; edaphic factors; biotic factors; anthropogenic factors

Plant adaptation: hydrophytes; mesophytes; xerophytes; halophytes

Plant communities: characteristics of a community; composition, structure and origin and development of a community; ecotone; ecological succession

Plant dispersal: wind dispersal; dispersal by water and ice; dispersal by animals; dispersal by man; mechanical dispersal; distribution of plants; barriers to plant dispersal; Good's floristic regions; floristic regions of India

UNIT - IV: NATURE AND DISPERSAL OF ANIMALS

Environmental adaptations; dispersal of animals; barriers to dispersal; means and carriers of dispersal

Animal distribution: factors controlling distribution; zoogeographical regions;

Wildlife conservation; biosphere reserves; concept of biodiversity; loss of biodiversity

Suggested Readings

Bansereau, B. M. : Bio-geography – An Ecological perspective, Ronald Press, New York, 1957.
Cox Barry, C., et al, : Bio-geography: An Ecological and Evolutionary Approach, Jack Well, Oxford, 1977.
Darlington, P.J. : Zoo-Geography: The Geographical Distribution of Animals, Wiley, New York, 1957.
Froman R.T.T. and Godron, M: Landscape Ecology, John Wiley & Sons, London, 1986.
Gleason, H.A. and Cronquist, A : The Natural Geography of Plants, Columbia Univ. Press, New York, 1964.
Good, R: The Geography of Flowering Plants, Longman, London, 1974.
Groombridge, B: Global Bio-diversity: Status of the Earths Living Resources, Chapman & Hall, 1992.
Hagget, R.J. Fundamentals of Biogeography, Rautledge, USA, 1998.
Illies, J: Introduction to Zoo-geography, Macmillan, London, 1974.
Joy, T. Biogeography: A Study of Plants in the Ecosphere, Oliver & Boyd, Edinburgh, 1977.
Martin, C.: Plants Geography, Methuen, London, 1975.
Mathur H.S.: Essentials of Biogeography, Amy Printers, Jaipur, 1998.
Mc Knight Tom L. : Physical Geography: A Landscape Appreciation, Prentice Hall, 1993.
Meyen, F.J.F. : The Geography of Plants, Aavishkar Publ., Distributors, Jaipur, 1986.
Negi, S.S. : Biodiversity and its conservation in India, Indus Publishing Co., New Delhi, 1993.
Pears N.: Basic Biogeography, Education, Longman, London, 1985.
Robinson, H. : Biogeography, McDonald, London, 1982.
Schimpe, A.F. W.: Plants Geography, Crarner-Weinheim New York, 1964.
Smith G.H.: Conservation of Natural Resources, Wiley & Sons, London, 1962.
Strahler, A.N. & Strahler A.H. : Modern Physical, Geography 2ed., John Wiley & Son, 1983.

Credits: 4
Marks: 100

GEO-DSEC-503 A
URBAN GEOGRAPHY

(Theory: 3 credits, Practical: 1 credit)

Objectives:

to understand the purpose and scope of urban geography;
to comprehend the process of urbanization - origin, growth and classification of cities with relevant theories and models
to examine the changing economic base and structure of the contemporary cities
to relate urbanization processes and the evolution of urban systems and
to examine problems and issues of urban planning and development in the Indian context.

Course Outcome: After the completion of the course the students will be able to -develop their ability to evaluate critically different theories and analytical approaches; interpret the contemporary urban structure in various spaces and times and integrate knowledge with critical thinking on urban morphology and urbanization that is crucial to urban development

UNIT - 1: NATURE & SCOPE

Nature & Scope of Urban Geography, Approaches to the study of urban geography and recent trends in urban geography, nature of cities during ancient, medieval and modern times.

origin and growth of urban settlements: bases and process of urbanization and development; classification of urban settlements on the basis of size and function; urban systems:

UNIT - II: URBAN FUNCTIONS & THEORIES

Urban functions: Basic and Non-Basic; hierarchical patterns of Indian cities; Rank-size rule, Functional classification of towns by C. D. Harris and H. J. Nelson; theories of urban morphology (Hyott, Burgess, Harris and Ulman, Central Place theory); Urban growth and theories: Central Place Theory of Christaller and Losch; Peroux and Boudeville; contributions of Indian scholars to the studies of urban settlements.

UNIT - III: URBAN MORPHOLOGY & URBANIZATION

Organization of urban space: urban morphology and landuse structure(city core, commercial, industrial and residential areas), modern urban landscape;. morphology of urban settlements and its comparison with western urban settlements; urban expansion, umland and periphery

Urbanization in the 21st century and predicament of developing countries, factors of urban growth; trends of urbanization in the World and India.

UNIT - IV: PRACTICAL

Analysis of Spatial Urban Phenomena: Correlation between associated variables and Residual Mapping; Inequality mapping – Gini, Theil and CV, Index of dissimilarity; Quality of Life Index for Urban Residential Areas; Delineation of urban sphere of influence

Mapping the Built Environment (using RS-GIS techniques): Mapping of Urban Land Cover and Land Use; Detection of changes in the Urban Environment: NDVI, Temperature

Zonation; Urban Expansion Mapping; Attribute Data Interfaces – mapping of services (using the Ward as a unit)

Suggested readings

Alam, S.M.: Hyderabad - Secunderabad Twin Cities Asia Publishing House, Bombay, 1964.

Berry, B.J.L. and Horton F.F. Geographic Perspectives on Urban Systems, Prentice Hall, Englewood Cliffs, New Jersey, 1970.

Beanjen-Garnier, J & Chabot, G. (1967): Urban Geography, Jhonwiley, New York

Carter: The Study of Urban Geography, Edward Arnold Publishers, London, 1972.

Chorley, R.J.O., Haggett P. (ed.) : Models in Geography, Methuen, London, 1966.

Dickinson, R.E.: City and Region, Routledge, London, 1964.

Dwyer, D.J. (ed.) The City as a Centre of Change in Asia, University of Hong Kong Press, Hongkong, 1971.

Gibbs J.P.: Urban Research Methods D. Van Nostrand Co. Inc. Princeton, New Jersey, 1961.

Hall P. : Urban and Regional Planning, Routledge, London, 1992.

Hauser, Philip M. and Schnore Leo F. (ed.) : The Study of Urbanisation, Wiley, New York, 1965.

James, P.E. and Jones C.F. (eds.) : American Geography, Inventory and Prospect, Syracuse University Press, Syracuse, 1954.

Johnson J. H. (1966): Urban Geography- An Introductory Analysis, Progamon Press, Oxford, London

Kundu, A. : Urban Development and Urban Research in India, Khanna Publication, 1992. 14. Meyor, H.M. Kohn C.F. (eds.) : Readings in Urban Geography, University of Chicago Press, Chicago, 1955.

Mandel, R. B. (2002) Urban Geography- A Text Book. Concept Publishing Company, New Delhi

Mumford, L : Culture of Cities, McMillan & Co., London, 1958.

Mayer, H. M. & Kohn CF (1967): Urban Geography, Central Depot, Allahabad, India

Nangia, Sudesh Delhi Metropolitan Region: A study in settlement geography, Rajesh Publication, 1976.

Ranan, P. (2001): Handbook on Urban Studies, University of Glasgow, UK. Sage Publications, New Delhi

Rao V.L.S.P. : Urbanisation in India: Spaial Dimensions. Concept Publishing Co. New Delhi Concept, New Delhi. Curriculum Development Committee in Geography 178

Rao VL.S.P.: The Structure of an Indian Metropolis: A study of Bangalore Allied Publishers Bangalore,1979.

Singh K and Steinberg F. (eds.) : Urban India in Crisis, New Age Interns, New Delhi, 1998.

Smailes A.E.: The Geography of Towns, Hutchinnson, London, 1953.

Tewari, Vinod K, Jay A. Weinstein, VLS Prakasa Rao (editors) Indian Cities:Ecological Perspectives Concept 1986.

Credits: 4
Marks: 100

GEO-DSEC-503 B
TRANSPORT GEOGRAPHY

(Theory: 3 credits, Practicals: 1 credit)

Objectives- To acquaint students with the movement of passengers, freights and information by linking the spatial constraints and attributes with the origin, destination and purpose of movement. To assess the role of different modes of transportation in the development of the economy and society.

Course outcome: To acquire in-depth knowledge on the fundamentals and contemporary issues in Transport geography. To enhance skills to represent transport, nodes, networks and interaction in spatial context and its analyses.

UNIT - I: GENERALITIES

Nature, scope and significance of Transport Geography. Evolution of contemporary transport systems and transport modes, technological advances and modernization. Emerging themes and approaches to transport geography, Relevance of Transport geography to planning and development

UNIT - II: THEORIES, MODELS AND GLOBALIZATION

Factors associated with development of transport systems- Physical, social, cultural and institutional. Evolution of transport network. Theories and models of spatial interaction - Ullman, Hurst. Measures and indices of connectivity, accessibility: Spatial flow models, gravity model. Globalization and dynamics of spaces of production and consumption- Time and space convergence and uneven geography of transport accessibility and connectivity- inter-regional and intraregional. Space technology, digitization, internet economy and emergence of e. commerce

UNIT - III: TRANSPORT, IT AND INDIA

Different modes of transport and their complimentary role in regional development of India. National Transport policy and development- National Highways, Golden Quadrilateral and District roads, Pradhan Mantri Gram Sadak Yojna. National Freight corridor. Growing importance of ports on national and foreign trade. Growth of civil Aviation in India. Indian space programme and development of communication and information technology and their impact on economy and society.

UNIT - IV: PRACTICAL

Analysis of the structure and spatial variation of transport network through Alpha, Gama, Beta and pie indices; Application of gravity potential model showing transport interactions. Traffic flow analysis on the basis of flow diagrams. Connectivity and Dtour indices, degree of sinuosity.

Suggested readings

B.S.Vaidya (Edt): Geography of Transport Development in India. Concept. Pub. 2003

Jean -Paul, Claude Comitois & Brain Slack: Geography of Transport System, Routledge 2013

Michael E. Eliot Hurst: Transport Geography: Comments and Reading McGraw Hill 1973

Moonis Raza Yash Aggarwal: Transport Geography of India Commodity Flows and Regional Structure of the Indian Economy, Concept. Pub. 1986

B.S. Hoyle Richard D. Knowles: Modern Transport Geography, Wiley 1993

Ian Docherty, John Shaw & Richard Knowles: Transport Geographer Mobilities, Flows and Spaces, Wiley 2008

B.S. Hoyle& Richard Knowles: Modern Transport Geography, Wiley 2007

John Urry & Margaret Grieco: Mobilities New Perspectives on Transport and Society. Ashgate 2011

Sursheng Zhao Edt.: China's New Global Strategy the Belt Road initiative and Asian infrastructure investment. Routledge 2020

Credits: 4
Marks: 100

GEO-GEC-504
ENVIRONMENTAL GEOGRAPHY

Objectives: To acquaint the students with the role of geography in management of global environmental problems and its relation with development

Course outcome: The paper is intended that students will understand how maintaining of ecosystems by adopting appropriate approaches to sustainable development is important for life on earth.

UNIT - I: BASICS

The relationship of environment, ecosystem and space

Major components of the natural environment: a) lithosphere - composition and movements; b) atmosphere - composition, climate and hydrological cycle; c) biosphere - main life forms and biogeochemical cycles; and d) hydrosphere

Environmental changes: past and present.

UNIT - II: ECOSYSTEM, RESOURCES AND MAN

Interaction of biosphere with the abiotic component

Structure and function of ecosystem; energy, stability, and resilience in ecosystem

Relationship of major types of ecosystems of the earth and ecotones to global climate zones

Global environmental movements

UNIT - III: GLOBAL ENVIRONMENTAL ISSUES RELATED WITH DEVELOPMENT

Transformation and degradation of different ecosystems: deforestation, decline in ecosystem services, biodiversity depletion

Pollution of air, water and soil

Concept of sinks and their effects

Sustainable development and climate change issues

UNIT - IV: ENVIRONMENTAL MANAGEMENT

Conservation and management of ecosystems

Environmental ethics and economics; environmental planning; environmental education and legislation

Environmental impact assessment; environmental auditing and accounting

Environmental hazards and remedial measures

Environmental policies and their relevance

Suggested Readings:

Barrow, C.J.: Environmental Management, Routledge, London, 1999.

Ehrlich, Paul R. and Ehrlich, Anne H: Population Resources, Environment-Issues in Human Ecology, W.H. Freeman & Co., San Francisco, 1972 (II edition).

Gautam, A : Environmental Geography, Sharda Pustak Bhawan, Allahabad, 2007

Lean, G. and Hinrichsen, D: Atlas of the Environment, Helicon Publ., Ltd., Oxford, 1992.

Metcalfe, S. and Derwent, D: Atmospheric Pollution and Environmental Change, Hodder Arnold, London, 2005.

Odum, E.P.: Fundamentals of Ecology, W.B. Sander, Philadelphia, 1971.

Owen L. and Unwin, T: Environmental Management, Blackwell Publ., Oxford, 1997.

Park, Chris C. : Ecology and Environmental Management; A Geographical Perspective, Butterworths, London, 1981.

Ramakrishnan, P.S. Rai, R.K., Katawal, R.P.S and Mehndiratta, S: Traditional Ecological Knowledge for Managing Biosphere Reserves in South and Central Asia, Oxford & IBH Publ., Co. Pvt. New Delhi, 2002.

Saxena, H.M. : Environmental Geography, Rawat Publ., Jaipur, 1999.

Singh, Savindra: Environmental Geography, Prayag Pustak Bhawan, Allahabad, 1997.

Smith, R.L. (ed): The Ecology of Man; An Ecosystem Approach, Harper & Row, New York, 1975 (II edition).

Sundaram, K.V. Moni, M. and Jha, M.M: Natural Resources Management and Livelihood Security, Bhoovigyan Vikas Foundation, New Delhi, 2004.

Zimmermann, Erich, W: World Resources and Industries. A functional Appraisal of the Availability of Agricultural and Industrial Materials, Harper and Row, New York, 1961

Credits: 4
Marks: 100

GEO-CC-505
CLIMATOLOGY

(Theory: 3 credits, Practical: 1 credit)

Objectives: To introduce the students to basic concepts of climatology, climatic types, regional distribution and concept of climate change.

Course outcome: This course is intended to make students understand how each part of the world has a unique climate though there is always an inter-relationship of climate with human activities leading to variable climate responses when other environmental parameters are disturbed.

UNIT - I: BASICS

Nature and scope of climatology and its relationship with meteorology

Atmosphere: composition and structure, insolation, heat balance of the earth and distribution of temperature; humidity, clouds, precipitation and hydrological cycle; stability & instability

General circulation of the atmosphere: types of winds, jet stream, ENSO, ITCZ

Atmospheric disturbances: cyclones and anticyclones; Fronts: frontogenesis and frontolysis

Air masses: source regions, classification, distribution and effects of air masses

UNIT - II: CLIMATE CLASSIFICATION

Classification of world climates according to Koppen, Thornthwaite, and Trewartha

Tropical Climate: Rainforest & Sahara type; Indian Monsoon and its prediction; Rainfall distribution

Temperate Climate: steppes, Mediterranean and China type

Tundra Climate & Highland climates

Extreme events: Meaning and impact

UNIT - III: CLIMATE CHANGE

Climate change: Theories and concept; IPCC; Global Climate Models

Climate change: types, extent, causes, and consequences for human civilization and adaptation strategies

Data acquisition: methods of data acquisition; instrumentation; real time monitoring and limitations of instrumentation; weather forecasting; climate data and society.

Sources of reconstruction of past climates: geologic, geomorphic and paleontological

Urban environment and climate

UNIT - IV: PRACTICAL

Scale and sources of data; processing of data

Construction and interpretation of Trend Graphs for rainfall, temperature, relative humidity and air pressure

Calculation, interpretation and diagrammatic representation of a) Rainfall intensity, b) Rainfall duration c) 24-hour distribution of seasonal rain d) Wind speed and direction

Calculation, interpretation & Representation of data: a) Aridity Index b) PE-TE ratio c) Climograph d) Hythergraph

Suggested Readings

Barry, R.G. and Chorley, R.J.: Atmosphere, Weather and Climate, Routledge, London, 1998.
Blair, T.A.: Climatology General and Regional, Prentice Hall New York, 1942.
Chorley, R.J. :Earth, Water and Man, Methuen and Co., London, 1969
Chorley, R.J. and Barry, R.G.: Atmosphere, Weather and Climate, Methuen, London, 1971.
Chritchfield, H.J.: General Climatology, Prentice Hall of India New Delhi, 1993
Crowe, P.R.: Concept in Climatology, Longmans, London, 1971.
Harely, J.T.: Climate Change: causes, effects and solution, Wiley, Sussex, 2003.
Mayers, J. and Hughes, K.: Understanding Weather: A visual approach, Arnold, London, 2004.
Potter, Thomas D. and Colman Bradley R.: Handbook of Weather, Climate and Water, Wiley- Interscience, New Jersey, 2003.
Robinson P. J. and Henderson S.: Contemporary Climatology, Henlow, 1999.
Robinson P.J. and Petty A. (ed): Applied Climatology – Principles and Practices, Routledge, London, 1997.
Strahler, A: Earth Science, Tokyo, 1972
UNESCO: Hydrological Observation, Regional Centre, New Delhi, 2001

Credits: 4
Marks: 100

GEO-CC-506
GEOGRAPHY OF INDIA

Objectives: To sensitize students to the geography of the Indian Sub- Continent, its physical, historical and cultural factors, present economy and regionalization.

Course outcome: This course conveys an in-depth knowledge on the unity in diversity of India reflected in its physical, cultural and demographic aspects. The paper also highlights on the agricultural and industrial development after Indian Independence in general and the selected regions in particular.

UNIT - I: PHYSICAL BASES OF GEOGRAPHY OF INDIA

India as a geographical unit, Relief, geology, structure and physiographic divisions

Climate and climatic divisions. Drainage system and water resources. Natural vegetation and soils

UNIT - II: HISTORICAL, CULTURAL AND ECONOMIC GEOGRAPHY OF INDIA

Evolution of regions and boundaries since the British period

Languages and religions in India

Population: growth, density, distribution; age-sex structure and population problems

Indian agriculture: Salient features of Indian agriculture, its regional distribution- Agro-climatic zones and Agro ecological zones, Green Revolution and its socio-economic and ecological implications.

Industries- industrial locations and industrial region, New industrial policy (1991), multinationals and liberalization, Special economic Zone and Industrial/ Economic corridor

Transportation systems - Roads, Railways, waterways and airways and their complimentary roles in regional development.

UNIT - III: REGIONAL DIVISIONS OF INDIA AND REGIONAL GEOGRAPHIES

Basis or regionalization of India: OHK Spate, RL Singh, and Ashok Mitra

Selected meso-regions: Himachal region, Upper Ganga Plain and Karnataka Plateau

Micro- regions: Kashmir Valley, Bhuj Region, Kaveri Delta, and Hazaribagh Plateau

UNIT - IV:

All-India study tour shall be undertaken during the winter vacation and the tour report shall be assessed for 25 marks.

Suggested Readings

Ali, S.M: The Geography of Puranas,

Allen, B. C et.al: Gazetteer of Bengal and North East India, Mittal publications New Delhi, 1979.

Centre for Science and Environment. : Status of India's Environment, CSE, New Delhi, 1988.

Datt, Ruddar and Sundaram, K.P.U.: Indian Economy, New Delhi: Chand and Co. Ltd, 2004.

Deshpande, C.D.: India- A Regional Interpretation, ICSSR and Northern Book Centre, New Delhi,1992.

Dikshit K.R, Dikshit J.K.: North East India Land and Economy Springer 2014.

East, W.E., et al., Changing Map of Asia, Methuen London. 1970

Gopalakrishnan, R and Ahmad Ali: Essays in Indian Geography, Regency, Delhi, 2001

Gopalakrishnan, R: North East: From Geographical Expressions to political Accommodation, HarAnand, New Delhi, 1995

Gopalakrishnan, R: Socio- Political framework of North East India, Vikas, New Delhi,1996

Gopalkrishnan, R. Geography of India, Jawahar, Delhi, 2001.

Khullar D.R. India a comprehensive geography, Kalyan Pub. 2011

Khullar, D. India- A comprehensive Geography, Kalyani Publisher New Delhi, 2000.

Mathur, S.M. Physical Geology of India, National Book Trust, New Delhi, 2004.

Mitra Asok: Levels of Regional Development in India, Monograph No.7, Census Commissioner, Govt. of India, New Delhi. 1968.

NORTH-EAST

Pal, Saroj: Physical Geography of India, Orient Longman, Kolkata.

Rai, R.K. et.al: Environment, Resources and Development, GSNEHR, Department of Geography, NEHU, Shillong, 2001

Sen Gupta, P and Sdaysuk , Galina, Economic Regionalization of India Problems approaches, Monograph No.8, Census Commissioner, Govt. of India, New Delhi, 1968.

Singh, R.L. (ed.). India- A Regional Geography, NGSI, Varanasi, 1971.

Spate, O.H.K: India and Pakistan, Methuen, London,1956

Spate, O.H.K. and A.T. Learmonth.: India- A General and Regional Geography, Methuen London,1968.

Taher, M. and Ahmad, A.: Geography North East India, El Dorado Publications, New Delhi,1998.

Tirtha, R. and Gopal Krishnan: Emerging India, Rawat, Jaipur, 1996.

Tiwari, R.C.: Geography of India, PrayagPustakBhawan, Allahabad, 2003.

Credits: 4
Marks: 100

GEO-DSEC-507 A
POPULATION AND DEVELOPMENT

(Theory: 3 credits, Practical: 1 credit)

Objectives: To introduce students to the complex dimensions of demographic attributes
To assess and evaluate the association between demographic and non-demographic phenomena over space and time
Course Outcome: Acquire in depth knowledge on the fundamentals and contemporary issues in Population Geography. Patterns and determinants in the spatio temporal variation in Population dynamics, structure and composition, its role in the process of development and vice-versa. Skill enhancement in representing demographic data spatially and its analyses.

UNIT - I: INTRODUCTION

Nature and scope of Population Geography- definitions, development and significance

Approaches to population geography and its relationship with other social sciences

Sources of population data their level of reliability and associated problems with special reference to India.

UNIT - II: POPULATION GROWTH, DISTRIBUTION AND RE-DISTRIBUTION

Theories and views of Population growth

Concept of over population, under population and optimum population

Demographic transition with special reference to India, demographic dividend and associated challenges, problem of aging

World patterns and determinants of population growth, distribution, density

Population redistribution with special reference to India in Colonial period and after Independence

UNIT - III: POPULATION DYNAMICS AND COMPOSITION

Elements of population dynamics- fertility, mortality, migration

Population composition its measures and determinants - age sex, literacy and level of education, rural urban, occupational structure,

Population policies in India, Population Resource Regions of the world

Human Development Index: concept, components, measurement of its aggregate, distribution pattern, Population vs. environment with reference to climate change and global warming, water resources, food security

UNIT - IV: PRACTICAL

Population: density, distribution-location quotient, projection and age-sex pyramids

Thematic mapping of population data through choropleth technique and representation through cartograms

Suggested Readings

Baily Adrian. Making Population Geography, Routedge 2014
Bose Ashish: Population of India 2001: Census Results and Methodology B.R. Pub. 2001
Chandana R.C. Geography of Population Concepts, determinants and pattern, Kalyan Pub, 2009
Clark John, I. Population Geography, Pergamon Press 1973
George J. Stalnitz : Population and environment, problems, patterns some solution, Indiana Centre on global change and World Peace, 2010
Hasan, M.I. Population Geography, Rawat Pub. 2015
Human Development Report 2016, UN Pub. UNDP 2017
Kosiniski& E.M. Elahi Population Redistribution and Development in SE Asia.Rawat pub. 1991
Motra Ashok India's Population Heading towards a billion B.R. Pub. 1991.
Newboldt Bruce. K. Population geography Tools and issues , Pub. Rowman and Littleford 2017
Pacione Michael - Population Geography: Progress and Prospects, Routledge 2012
Premi M.K. India's Changing population profile National Book Trust 2009
Salkind Neil J. Encyclopedia of Human Development Vol, I, II, III, Sage 2006

Credits: 4
Marks: 100

GEO-DSEC-507 B
N.E. INDIA- SOCIETY, CULTURE & ECONOMY

(Theory: 3 credits, Practical: 1 credit)

Objective: to familiarize the students to the physical, cultural and economic structure of north east region of India.

Course outcome: This paper will build an in -depth idea regarding the significance of people, culture and economy of north east region in the developmental processes of India as a whole

UNIT - I: PHYSICAL & CULTURAL SETTINGS

Physical Structure: physiographic division, climate: regional characteristics, forest types, identification of cultural regions (area of attraction, relative isolation, isolation), centripetal and centrifugal forces in the emergence of a unified culture in Brahmaputra valley and diverse cultures in the hill areas

UNIT - II: THE SOCIETY

Social life of the Mizos, ethnicity and conflict in Manipur, matrilineal society of Meghalaya, Boori Boot festival of Arunachal, Assam and its people.

UNIT - III: ECONOMIC STRUCTURE

Agriculture: socio economic base of agriculture with special reference to jhum cultivation; industrial problems, forests; transport and communication: roads, railways, waterways, airways, regional development (integrated rural development, planning for backward area, hill and tribal area development); levels of development.

UNIT - IV: CONTINUITY AND CHANGE

Demographic dynamics of selected tribal communities – Two case studies on the declining, size, migration, language change, shift and extinction
Modernization and transport network development and associated issues
Border conflict- Internal & international

Suggested Readings

Allen, B. C et al., Gazetteer of Bengal and North East India, Mittal Publications, New Delhi, 1979.

Barua, S.L.: A Comprehensive History of Assam, Munshiram Manoharlal, New Delhi, 1985.

Bhaghabati, A.K., Bora, A. AK and Kar, B.K.: Geography of Assam, Rahjesh Publ., New Delhi, 2002.

Bhattacharjee, K.K.: North- East India: A Study, Cosmo Publ., New Delhi, 1983.

Das, H.P.: Geography of Assam, NBT, New Delhi, 1970.

Das, M.M.: Peasant Agriculture in Assam, Inter- India publ., New Delhi, 1984.

Gopalakrishnan, R and Ahmad Ali: Essays in Indian Geography, Regency, Delhi, 2001

Gopalakrishnan, R.: North East: From Geographical Expressions to Political Accommodation, Har Anand, New Delhi, 1995

Hazarika, J.: Geopolitics of North East India. Gyan Publ., New Delhi, 1996

Medhi, S.B.: Transport System and Economic development in "Assam. Publication Board, Guwahati, 1978.

Spate, O.H.K: India and Pakistan, Methuen, London, 1956

Taher, M. and Ahmad, A: Geography North East India, El Dorado Publications, New Delhi, 1998.

Credits: 4
Marks: 100

GEO-DSEC-508 A
CULTURAL GEOGRAPHY

Objectives: to understand the cultural diversity in the world as well as in India: to comprehend diffusion of various ethnic traits and religions; to understand variations in elements of folk characteristics

Course Outcome: Students will learn

a) *The importance of culture in spatial and regional analysis*
b) *Diversity of culture and its diffusion over space and time*
c) *Patterns and processes in cultural differentiation in India*

UNIT - I: THE NATURE OF CULTURAL GEOGRAPHY

Cultural geography: definition and approaches

Convergence and divergence processes

The cultural geographical past

Cultural concept: perception, behaviouralism and cultural relativism

UNIT - II: CULTURAL REALMS OF THE WORLD

Cultural realm of America, Africa, S.E. Asia with special reference to India Iin respect to historical evolution, race, religion language etc)

UNIT - III: ETHNICITY AND TRIBALISM

Geography of ethnic and tribal groups of the world with reference to diffusion of ethnic traits, landscape and economy; ethnic regions, cultural integration and ethnicity

UNIT - IV: FOLK GEOGRAPHY AND CASE STUDIES

Folk Geography: diffusion in folk geography, cultural landscape and cultural ecology, cultural integration, folk architecture in the cultural landscape

Applying cultural geography: case study approach

Cultural diffusion in India with reference to green revolution

Cultural ecology of desertification: drought in the great plains in India

Cultural geography of drought, famine and conflict: a case study of east Africa.

Suggested Readings

Crang, Mike: Cultural Geography, Routledge Publications, London, 1998.
Furer Haimendorf, C.V. : Tribes of India: The Struggle for Survival, Oxford, New Delhi, 1989.
Gritzer, Charles,k F: The Scope of Cultural Geography, Journal of Geography, 65, 1966.
Hutchinson, and Smith, D: Ethnicity, Oxford University Press, Oxford, 1996.
Johnston, R.J. et al: Dictionary of Human Geography, Blackwell, 1985.
Jordan, and Rowntree, L: The Human Mosaic: A Thematic Introduction to Cultural Geography, Harper Collins Publishers, New York, 1979.
Massey, et al. (eds): Human Geography Today, Polity Press, Cambridge, 1999.
Mitchell, D: Cultural Geography: A Critical Introduction, Blackwell Publisher, 2000.
Mukherjee, A.B. and Ahmad, Aijazuddin: India: Culture, Society and Economy, Inter India, New Delhi, 1985.
Robertson, I. and Richards, P. (eds): Studying Cultural Landscapes, Arnold, London, 2003.
Schwartzberg, J.E: Historical Atlas of South Asia, University of Chicago, 1978.
Spencer J.E. and Thomas, William L. : Cultural Geography, John Wiley & Sons, New York, 1969.
Singh, A.K: Approaches to Tribal Development, Swarup and Sona, New Delhi, 1994.
Sopher, D.E. : Exploration of India: Geographical Perspectives on Society and Culture, Longman, London, 1980.
Wagner, P.L. and Mikesell, M.W. (eds) : Readings in Cultural Geography, Chicago

Credits: 4
Marks 100

GEO-DSEC-508 B
HYDROLOGY AND OCEANOGRAPHY

Objectives: To understand the concept of hydrology, surface and ground water resources, configuration and properties of oceans and marine resources.

Course outcome: From this course students will understand the surface and ground water resources including oceans and their sustainable management

UNIT - I: CONCEPT OF HYDROLOGY AND HYDROGRAPH

Development of hydrology. forms, occurrences and properties of water in earth.

Global hydrological cycle and water balance; measurement and analysis hydrological data

Factors affecting precipitation, run-off, infiltration, evaporation and evapotranspiration, Modern techniques of recording and estimation of these attributes.

Hydrographs: Components, separation, Unit hydrograph and its application, S-curve method

UNIT - II: WATER RESOURCES AND THEIR MANAGEMENT

Perspectives of global and Indian water resources

Surface water: concepts of river basin and watershed, factors affecting surface run-off and sediment yield

Ground water: ground water in hydrological cycle, factors affecting groundwater, vertical distribution of groundwater, formation and types of aquifers

Interaction between surface and groundwater

Principles of integrated river basin management with reference to micro-watershed planning, water conservation

UNIT - III: CONFIGURATIONS OF OCEANS

Characteristics and origin of the major structural and morphological features of the ocean floor

Bottom topography of Indian, Atlantic and Pacific Oceans: characteristics and evolution

Waves and tides: genetic classification and models of formation

Classification and significance of ocean circulation: temperature and salinity of oceans

UNIT - IV: OCEAN PROPERTIES AND RESOURCES

Water mass: origin, evolution, and properties. air-sea interactions

Sea-level change: types, causes and implications

Ocean as a resource: biotic, mineral and energy resources;

Coral reefs, coral bleaching and atoll

Suggested Readings

Davis Rechard J.A. (1986): Oceanography-An Introduction to the Marine Environment. Wm. C. Brown lowa.

Garrison, T. (2001): Oceanography - An Introduction to Marine Science. Books/Cole, Pacific Grove, USA.

Linsley, K., Kohler, M. and Paulhus, J.L. (1975): Applied Hydrology. Tata McGraw Hill, New York.

Meinzer, O.E. (1942): Hydrology. Dover Publication Inc. New York.

Rahgunath, H.M. (1997): Hydrology- Principles, analysis, Design. New Age International Pvt. Ltd, New Delhi

Sharma, R. C. and Vatal, M. (1970). Oceanography for Geographers. Chaitanya Pub. House, Allahabad

Shephard – An introduction to Marine Geography

Sverdrup, H.U. (1942): The Oceans, their Physics, Chemistry and General Biology. Prentice-Hall, New York.

Todd, D.K. (1959): Ground Water Hydrology, John Wiley and Sons, New York

Reddy, P. J. (1989). A textbook of Hydrology. Laxmi Publication, New Delhi

Chow, V. T., Maidment, D. R. and Mays, L. W. (1988). Applied Hydrology. McGraw-Hill Book Company, New Delhi

Grant Gross…

Credits: 4
Marks: 100

GEO-RM-509
RESEARCH METHODOLOGY AND TECHNIQUES IN GEOGRAPHY

Objectives: To introduce the students to meaningful and professional research, its logic and processes and to expose the students to advanced quantitative techniques and their application in geographical studies

Course outcome: Students will learn the concept of research and its components; selection of indicators and data collection; finally some statistical techniques for analyzing the collected data.

UNIT - I: THE PRELIMS

Spatial thinking and geographic questions; Research issues and formulations: Statement of the problem, Literature survey and review, Research questions, Hypothesis and objectives of research

UNIT - II: DATA COLLECTION AND MANAGEMENT

Choice of indicators; nature of geographical data; scales of measurement; data classification and measurement; database organization; data analysis and interpretation in Geography

Field methods in Geography

Writing a research report

UNIT - III: CENTRAL TENDENCIES AND DEVIATION STATISTICAL DATA

Geographical data (Univariate methods): tabular, graphical and numerical

Mean center, median point and point of minimum aggregate distance over given area;

Mean deviation, standard deviation and variance.

UNIT - IV: TECHNIQUES OF BIVARIATE MEASUREMENTS AND SAMPLING

Measures of variability and inequalities: coefficient of variation Lorenz curve, Ginni coefficient;

Geographical data (Bivariate methods): bivariate distribution; scatter diagram; linear regression analysis and its properties; Analysis of variance (ANOVA)

Correlation analysis: Spearman Rank and product moment correlation with significance tests; significance of correlation coefficient; estimation of standard error and coefficient of determinant; multivariate analysis

Sampling theory: meaning and objects; sampling error and bias; type and selection of samples; sampling distribution; probable and standard error.

Suggested Readings

Das, N. G. (2009). Statistical Methods (Volumes I & II). Tata McGraw Hill Education Private Limited, New Delhi

Gregory, S.(1963): Statistical Methods and the Geographers, Longman's, London

Gupta S. (1995): Statistical Methods, Sultan Chand and Sons, New Delhi

Gupta, C.B. (1971): An Introduction to Statistical Methods, Ram Prasad and Sons, Agra.

Hammond, R. and McCullagh, P. (1974): Quantitative Methods in Geography, Clarendon Press, Oxford.

King, L.J. (1969): Statistical Analysis in Geography. Prentice Hall, Englewood Cliffs, N.J.

Mahmood, A (1977): Statistical Techniques in Geography, Rajesh Publ., New Delhi

Mathewa, J.A.(1981): Quantitative and Statistical Approaches to Geography, Rawat, Jaipur.

Pal, S.K. (1999): Statistics for Geoscientists: Techniques and Applications. Concept, New Delhi.

Sarkar, A. (2013): Quantitative Geography. Orient Blackswan Private limited, New Delhi

Taylor Peter, J. (1977): Quantitative Methods in Geography, Houghton Mifflin, Boston.

Credits: 4
Marks: 100

GEO-SEC-510
REMOTE SENSING, GEOGRAPHICAL INFORMATION SYSTEM, DATA ANALYSIS

(Theory: 2 credits, Practical: 2 credits)

Objectives: To introduce the students to the basic principles of Remote Sensing, to understand the methods of visual and digital interpretations of satellite imagery and its application value in Geographic studies.

Course outcomes: This course is to help students work in Remote Sensing (RS) and Geographic Information System (GIS) environment and enhancing their technical skills through digital inputs for spatial analysis.

UNIT - I: REMOTE SENSING FUNDAMENTALS

Introduction to Electromagnetic spectrum; its application in remote sensing
Overview of Remote Sensing: types of satellites, platforms and sensors
Air photo/Photogrammetry: Orientation of photogrammetric instruments: pocket stereoscope, mirror stereoscope, test of stereovision
Elements of image interpretation and identification of objects Differences between a map and an aerial photo Introductory Digital Image
Processing Remote sensing types and products; aerial photographs, satellite imageries

UNIT - II: GIS-FUNDAMENTALS

Introduction to GIS-fundamentals, basic concepts, definition, history, the principles and terminology
Spatial analysis techniques and preparation of thematic layers using GIS Application of GIS in environment and regional development planning
GPS and its application in GIS mapping, UAV

PRACTICAL

UNIT - III: INTERPRETATION & PREPARATION OF MAPS USING REMOTELY SENSED DATA

Interpretation of aerial photographs: Determination scale, height (parallax bar), slope and relief displacement
Interpretation of satellite imageries (LANDSAT, SPOT, IRS, IKONOS, CARTOSAT) and preparation of maps of land use/land cover and fluvial landforms.
Interpretation of Pre-flood and Post-Flood Imageries; Assessment of area under water-logging, sands and activation of paleo-channel.
Calculation of photo scale Interpretation of physical and cultural details from stereo pair of aerial photographs; GPS Survey and its steps for creation of codes and attribute tables.

UNIT - IV: INTERPRETATION & PREPARATION OF MAPS IN GIS ENVIRONMENT

Different layers of spatial information (Point, line and polygon) and their thematic representation.

Making different types of graphs using relevant software (cartograms); Digitization of maps.
Preparation of Thematic maps based on socio-economic and environment data
Thematic mapping: isopleths, choropleth and choro-chromatic mapping; Preparation of three-dimensional geographical data
Mapping of physical, environmental and socio-economic data

Suggested Readings

American Society of Photogrammetry: Manual of Remote Sensing, ASP, Falls Church, V.A., 1983.

Barrett E.C. and L.F. Curtis: Fundamentals of Remote Sensing and Air Photo Interpretation, McMillan, New York, 1992.

Campbell, J.B. : Introduction to Remote Sensing, the Guilford Press, New York, 2002.

Clarke, K.C. Parks, B.O., and Crane, M.P. (eds): Geographic Information Systems and Environmental Modeling, Prentice-Hall of India, New Delhi, 2002..

Demers, Michael, N: Fundamentals of Geographic Information System, New Mexico State University, John Wiley and Sons Inc., (2nd Edition), 2003.

Fraser Taylor, D.R. : Geographic Information Systems, Pergamon Press, Oxford, 1991. Hord R.M:

Digital Image Processing of Remotely Sensed Data, Academic, New York, 1989.

Lillesand T.M. and Keifer, R.W : Remote Sensing and Image Interpretation, John Wiley & Sons, New York, (4th Edition), 1999.

Luder, D: Aerial Photography Interpretation: Principles and Application, McGraw Hill, New York, 1959.

Peuquet D.J. and D.F. Marble: Introductory Reading in Geographic Information System, Taylor& Francis, Washington, 1990.

Rao, D.P. (ed): Remote Sensing for Earth Resources, Association of Exploration Geophysicist, Hyderabad, 1998.

Sabins, Floyd, F. : Remote Sensing Principles and Interpretation (Third Edition), W.H. Freeman and Company, New York, 2000.

Schott, John R: Remote Sensing the Image Chain Approach, Oxford University Press, New York, 1997.

Sickle, Jan Van: Basic GIS Coordinates, CRC Press Boca Raton, London, New York, Washington DC, 2004.

Walford, Nigel: Geographical Data Analysis, John Wiley and Sons, New York, 1995

Credits: 4
Marks: 100

GEO-CC-600
ECONOMIC GEOGRAPHY

(Theory: 3 credits, Practical: 1 credit)

Objective: To acquaint students with the changing nature of economic geography, concept of development and economic organization in space.
Course outcome: Acquire knowledge on the fundamental and modern issues in Economic geography. Gain in-depth knowledge on the pattern and processes of contemporary globalization and uneven economic development. Acquire skill to represent and analyse economic data in spatial and temporal context.

UNIT - I: FUNDAMENTALS

Nature and scope of Economic geography

Approaches to economic geography- -commercial and regional, spatial analysis, Marxist political economy, cultural and institutional perspective

Spaces of production and consumption- Industrialization and geographical expansion of capitalism, (Myrdal's model of cumulative causation), rise and fall of industrial regions over time, de-industrialization and new industrial spaces, spaces of consumption

UNIT - II: CONCEPT OF DEVELOPMENT

Meaning and purpose of development

Theories of development- Rostow's model, Structuralism and dependency theory, Neoliberalism and grass root approach

Patterns of development- global spatial inequalities, patterns of uneven development in India

Current development issues and challenges: trade, debt and aid

UNIT - III: CONCEPT OF GLOBALIZATION AND EMERGENCE OF NEW SERVICE ECONOMY

Perspectives on globalization

Emergence of multinationals and new division of labour

Globalization, uneven development and changing economic relations between people and places and impact of MNCs on host regions. Process of de-industrialization in developed economies and rise of service sector- type and growth of service sector.

UNIT - IV: PRACTICAL

Choropleth maps for mapping distribution of economic data

Cartograms to represent economic data through Line graphs, columnar diagrams, divided circles, bar diagrams

Flow-line maps

Suggested Readings

Alexander J.W. Economic Geography, Printice Hall 1974

Allen J, Hamnett C.: A shrinking world? Global unevenness and inequality, Oxford Univ. Press, 1995

Cryson J. Henry N, Keeble D. and Martin R. - The Economic geography Reader John wiley and sons 2004

Daniels P, Bradshaw M, Shaw D, and Sidaway J: Human geography: Issues for the twenty-first century, Pearson Harlow, 2005

Desai V. and Potter R.: The companion to development studies, Arnold London, 2001

Dicken Peter -Global shift, mapping the changing contours of world economy, Sage -2010

H.M. Saxena, Economic geography Rawat 2013.

Mackinnon Danny - Introduction to Economic Geography- Globalization, Uneven development and place, Routledge 2011

Mackinnon Danny and A. Cumbers- An Introduction to economic geography, globalization, uneven development and place. Pearson education ltd. 2007

Myrdal G: Asian Drama:an inquiry into poverty of nations. Penguin press. London 1972

Neil M. Coe, P.F. Kelley, W.C. Henry and Yeung- Economic Geography- A Contemporary Introduction, Wiley, 2007

Trevor J, Barner, Brett Christopher, Economic geography- a critical introduction Wiley-Blackwell 2018

Wood Andrew and Susan. Economic geography Places, Networks and flows Routledge 2011

Credits: 4
Marks: 100

GEO-CC-601
REGIONAL DEVELOPMENT AND PLANNING

(Theory: 3 credits, Practical: 1 credit)

Objectives: To understand and evaluate the concept of region in geography and its role and relevance in regional planning;

To identify the issues relating to the development of the region through the process of spatial organization of various attributes and their inter relationship.

To identify the causes of regional disparities in development, perspectives and policy imperatives.

Course outcome: Students will acquire knowledge about the concept of region in geography, its interdisciplinary and integration with other disciplines of study; have an overview understanding of regional development and planning in geography and learn the basic concepts of regional development in relation to spatial variation, Spatio-temporal variation, their interaction and organization.

UNIT - I: CONCEPTS

Regional concept in geography, conceptual and theoretical framework, changing concept of the region from an inter-disciplinary view-point, concept of space, area and locational attributes. Types of regions: Formal and functional; uniform and nodal, single purpose and composite region, regional planning in Indian national plans.

UNIT - II: APPROACHES & PRINCIPLES

Approaches to planning: sectoral and spatial, short, medium and perspective planning, muti regional, muti level planning. Approaches to delineation of different types of regions and their utility in planning, Indicators of development and their data sources, measuring levels of regional development and disparities.

UNIT - III: PLANNING PRACTICES IN INDIA

Metropolitan Planning, river valley planning, national capital region planning, resource development planning: special purpose regions-DPAP, Western ghats, hilly regions, tribal regions, regions of drought and floods.

UNIT - IV: PRACTICAL

Sphere of influence by Gravity Model. Measurement of Inequality by Lorenz Curve. Concentration by Location Quotient. Regional Disparity by Sopher's Index.

Rural-urban growth and differentials. Correlation and Spatial correspondence. Weighted Score and Combination analysis

Suggested Readings

Abler, R., et. al.: Spatial Organisation: The Geographer's View of the World, Prentice Hall, Englewood Cliffs, N.J., 1971.

Bhat, L.S.: Regional Planning in India, Statistical Publishing Society, Calcutta, 1973.

Bhat, L.S. et al.: Micro-Level Planning: A Case Study of Karnal Area, Haryana, K.B. Publications, New Delhi, 1976.

Chorley, R.J. and Hagget, P.: Models in Geography, Methuen, London, 1967.

Christaller, W.: Central Places in Southern Germany, Translated by C.W. Baskin, Prentice Hall, Englewood Cliffs, New Jersey, 1966.

Friedmann, J. and Alonso, W.: Regional Development Policy- A Case Study of Venezuela, M.I.T. Press Cambridhge, Mass, 1966.

Friedmann, J. and Alonso, W.: Regional Development and Planning - A Reader, M.I.T. Press, Cambridge, Mass, 1967.

Glikson, Arthur: Regional Planning and Development, Netherlands Universities foundation for International Co-operation, London, 1955.

Gosal, G.S. and Krishan, G.: Regional Disparities in Levels of Socio-Economic Development in Punjab, Vishal Publications, Kurukshetra, 1984.

Government of India, Planning Commission: Third Five Year Plan, Chapter on Regional Imbalances in Development, New Delhi,1961.

Johnson, E.A.J.: The Organisation of Space in Developing Countries, Harvard University Press, Cambridge,1970.

Kuklinski, A.R.(ed.): Growth Poles and Growth Centres in Regional Planning, Mouton, The Hague,1972.

Kundu, A. and Raza, Moonis: Indian Economy- The Regional Dimension, Spectrum Publishers, New Delhi,1982. Curriculum Development Committee in Geography 87

Misra, R.P.: Regional Planning: Concepts, Techniques and Policies, University of Mysore, Mysore, 1969.

Misra, R.P. and Others (editors): Regional Development Planning in India-A Strategy, Institute of Development Studies, Mysore,1974.

Mitra, A.: Levels of Regional Development, Census of India, Vol.I, Part IA(I) and (ii), New Delhi 1965.

Myrdal, G.: Economic Theory and Under-Development Regions, Gerald Duckworth, London,1957.

Nangia Sudesh, Delhi Metropolitan Region Rajesh Publication, Delhi, 1976.

Richardson, H.W.: Regional Economics, Weidenfeld and Nicolson, London, 1969.

Sundaram, K.V.(ed.): Geography and Planning, Essays in Honour of V.L.S. Prakasa Rao, Concept Publishing Co., New Delhi,1985.

Tarlok Singh India's Development Experience, Mc Millan New Delhi, India, 1974.

Raza Moonis (editer) Regional Development Heritage Publishers Delhi. 1988.

Mishra, R.P. et. al. Multi-Level Planning Heritage Publishers, Delhi. 1980.

Credits: 4
Marks: 100

GEO-CC-602
SOCIAL GEOGRAPHY

(Theory: 3 credits, Practical: 1 credit)

Objectives: to expose the students to the spatial patterns of social diversity in India as they have evolved over time; to highlight the significance of social factors and their contribution to the functioning of the Indian polity; to orient the students to the methodology of social geography with a view to initiating her to do socially relevant research.

Course Outcome: Students will learn

a) *About concepts that are crucial to understand the relation between society and space*
b) *About social plurality in India and the importance of regions and regionalism as a defining character of Indian polity*
c) *Formation of social identities in their regional manifestation with special reference to the marginalized sections*
d) *Methods and techniques in handling social data*

UNIT - I: DEFINITION AND CONCEPTS

Delineating the field of social geography and development of the subject

Concepts: Society and environment, Social Structure, Segregation, Social Area Analysis, Social Space, Social wellbeing

UNIT - II: SOCIAL DIFFERENTIATION AND REGION FORMATION IN INDIA

Transcontinental migration, Evolution of perennial nuclear regions, areas of attraction and isolation

Early Regional Structure: *Mahajanapadas*

Regional structure during the *Moguls*

The British ascendancy and its impact on the regional structure

UNIT - III: COMPONENTS OF SOCIAL IDENTITY IN INDIA

Tribes: tribal social formation; spatial distribution of the scheduled tribes

Caste: origins, caste and morphology of settlements, distribution of Scheduled Castes

Language: India as a linguistic area, geographic patterning of languages, historical process of language diffusion, language domains, Language in tribal areas

Religion: spatial distribution of religious groups.

UNIT - IV: PRACTICAL

Measuring and mapping disparity, inequity, inequality, and burden: Gini Coefficient, Lorenz curve, Disparity indices (Sopher's and modified Sopher's index), Social Deprivation Index, Mapping Gender discrimination, health and education disparity.

Suggested Readings

Ahmad, Aijazuddin: Social Geography, Rawat Publication, New Delhi, 1999.
Dubey, S.C. : Indian Society, National Book Trust, New Delhi, 1991.
Gregory, D. and J. Larry (eds); Social Relations and Spatial Structures, McMillan, 1985.
Maloney, Clarence: People of South Asia, Winton, New York, 1974.
Planning Commission, Government of India: Report on Development of Tribal Area, 1981
Rao, M.S.A. : Urban Sociology in India, Orient Longman, 1970
RazaMoonis& A. Ahmad: An Atlas of Tribal India, Concept, New Delhi, 1990.
Schwartzberg Joseph: An Historical Atlas of South Asia, University of Chicago Press, 1978.
Sen, Amartya&Dreze jean, : Indian Development: Selected Regional Perspectives, Oxford, 1996.
Singh, K.S. : Tribal Situation in India, IIAS, Shimla, 1972.
Sopher, David: An Exploration of India, Cornell University Press, 1980.
Srinivas, M.N. : Caste in Modern India and Other Essays, Asia Publ, House, Bombay, 1962.
Srinivas, M.N: India: Social Structure, Hindustan, Delhi, 1986.
Subba Rao: Personality of India: Pre and Proto Historic Foundation of India and Pakistan, M.S. University Baroda, Vadodara, 1958.
Thapar, Romila: A History of India, Vol. 1, Penguin, Hammondsworth, 1997.

Credits: 4
Marks: 100

GEO-DSEC-603A
TROPICAL GEOMORPHOLOGY

Objectives: To understand landform development under tropical conditions and the significance of the tropical environment in enhancing or retarding the geomorphic processes

Course outcomes: It is expected that this course will help students understand better about tropical areas and geomorphic processes operating in such environment while relating to the climatic conditions keeping in view the current demand of resources in the tropics.

UNIT - I: SCOPE AND SIGNIFICANCE OF TROPICAL GEOMORPHOLOGY

Understanding tropical environment and its extent; climatic elements and its effects;

Geology in the tropics; character of rocks and its importance

Natural vegetation; classification and its relevance

UNIT - II: GEOMORPHIC PROCESSES & LANDFORM EVOLUTION

Weathering - Weathering profile and depth of weathering, duricrust and laterite - structure, morphology, profile, distribution and origin (special reference to India)

Denudation - mechanical and chemical, mass movement, slope wash and stream erosion; landform development and stability

Tropical terrain: relief, drainage and their characteristics.

Erosional and Depositional process and forms

UNIT - III: DEVELOPMENT IN THE TROPICS

Human activities in tropical areas: impact of human activities, destruction of tropical forests, role of tropical agricultural systems.

Developmental efforts in tropical regions and its impact, strategies of conservation of tropical ecosystem

Problems of development in the tropics

UNIT - IV: ISSUES IN NORTH EAST INDIA

Tropical characteristics: Relevance of Climate & Climate extremes with geomorphological processes

Micro tropical landforms, environment and their utility; Inter-montane valleys, Sub-terranean streams, Abandoned channels

Weathering, Erosion, Transportation & Deposition in selected watersheds; Rocks and their extent of weathering, Drainage lines, River bed description and analysis of bed material.

Suggested Readings

Dikshit, K.R., Kale V.5., Kaul M.N.: India Geomorphological Diversities, Rawat, Jaipur,1994.

Douglas, I. & Spencer, T (eds): Environmental Changes & Tropical Geomorphology, George Allen & Unwin, London, 1985.

Faniran, A. K.: Humid Tropical Geomorphology, Longman Group Jije L.K. Ltd., New York, 1983.

Garner. H.F.: Origin of Landscape - A Synthesis in Geomorphology, Oxford University, Press, New York, 1974.

Gupta, A.: Tropical Geomorphology, Cambridge University Press, UK, 2011

Kellman, A. and R.Tackaberry: Tropical Environments, Route-ledge, London, 1997.

Nag. P & Saha G.N. : Geomorphological Mapping: Prepectives& Dimensions, NATMO, Kolkata, India, 1986

OIlier, C.D.: Weathering, Longman, London, 1975.

Saxena K.G. et. al (Ed) : Shifting Agriculture in Asia: Implications for Environmental

Conservation & Sustainable Livelihood, Bishen Singh M.P. Singh Publishers, Dehradun, India,2007

Thomas M.F : Geomorphology in the Tropics: A Study of Weathering & Denudation in Low Latitudes, John Wiley, London, 1994

Thomas, Michael: Tropical Geomorphology - A Study of Weathering and Landform

Development in Warm Climates, Macmillan, London, 1974.

Thorns, M.: Geomorphology in the Tropics, 1984.

Tricart, I & A.Cailleux: Introduction to Climatic Geomorphology, Longman Green, London, 1972.

Tricart, J.: The Landforms of the Humid Tropics, Forests and Savannas, Longmans, London, 1972.

Twidale C.R.: Analysis of Landform, John Wiley, London, 1976

Credits: 4
Marks: 100

GEO-DSEC-603 B
TRIBAL SITUATION IN INDIA

Objective: *to get deeper insights into issues confronting tribal communities of India in diverse geographical and ecological settings with special reference to their distribution, habitat transformation; impacts of the regional development processes; challenges, and aspirations in modern India.*

Course Outcome: Students will learn

a) *the spatial and ecological context of isolation, marginalization and imporiveshment of tribal communities in India*
b) *the adverse impacts of regional development policies adopted since the colonial times*
c) *Their demographic dilemma and problems of culture loss and alienation of various kinds*

UNIT I GENERALITIES

Tribal Social Formation, Nomenclature. Heterogeneity of tribal communities: ethnic, demographic and socio-economic, Tribal Habitats and economy, Tribal regions of India and their distinguishing characteristics: Mid-Indian tribal belt, the North East, the southern plateau, deserts and the islands.

UNIT - II SPATIAL DISTRIBUTION AND DEMOGRAPHY

Concentration and Clustering, Dominance and Dispersion, Dominance and State Formation, Rural urban distribution; Distribution of major tribal communities: Gonds, Bhils, Santals, Garo Khasi and Jaintias. Tribal Cores and Peripheries: habitat fragmentation, Tribe-Caste Continuum, Demographic dilemma of declining size: Case studies of Particularly Vulnerable Tribes

UNIT - III REGIONAL DEVELOPMENT POLICIES

Construction of 'Tribes' in colonial period, Resource exploitation and colonial policies of isolation and segregation. Regional development policies in post Independence period: mining and industrial development (Chotnagpur), river valley projects (Hirakud) and settlement of refugees in tribal areas (Dandakaranya). Consequences: Land alienation, access to forest resources, Changes in workforce, redistribution and forced migration. Tea Tribes of Assam.

UNIT - IV CHANGE AND TRANSFORMATION

Processes of assimilation and acculturation, Tribal languages: Language retention, change and shift, Indigenous tribal religions. Plans for tribal development: Tribal sub-plan, sixth schedule provisions, tribal area development; Tribal education and problems of educability, Livelihood changes, Shifting-Cultivation, Forest Rights and Unemployment, Alienation; Tribal movement and resistance.

Suggested Readings

Ahmad A Social Geography, Rawat, Jaipur, 1999

Bandyopadhyay, M. 'Demographic consequences of non-tribal incursion in Chotanagpur region during colonial period (18~0-1950)', in Social Change, Vol. 29, Nos 3 and 4, Sept.-Dec. 1999.

Bharadwaj Ruby and Charu Kala, Tribes of India: Realities and Representations, Vitasta, New Delhi, 2022

Chaudhuri, B. (ed.), Tribal Transformation in India, Vols. I-V, Inter-India Publications, New Delhi, 1992.

Das Gupta, P.K. Impact of Industrialization on a Tribe in South Bihar, Anthropological Survey of India, Calcutta, 1978.

Dubey S.N. and Ratna Murdia (ed.), Land Alienation and Restoration in Tribal Communities in India, Himalaya Publishing House, Bombay, 1977.

Elwin, V. The Religion of Indian Tribe, Oxford University Press, Bombay, 1955.

Elwin, V. India's North-East Frontier in the Nineteenth Century, Oxford University Press, Bombay, 1959.

Furer-Haimendorf von C. Tribes of India: The Struggle for Survival, University of California Press, Berkeley, 1982.

Gadgil Madhav and Ramachandra Guha This Fissured Land: An Ecological History of India, Oxford, New Delhi, 2012

Ghurye, GS. The Scheduled Tribes (originally published in 1959), Popular Prakashari, Bombay, 1963.

Guha, Ranajit, Elementary Aspects of Peasant Insurgency in Colonial India, Oxford University Press, New Delhi, 1983.

Majumdar, D.N, Races and Culture of India, Asia Publishing House, Bombay, 1961.

Prasad, N. and Arun Sahay, Impact of Industrialization on Bihar Tribes, A Report, Bihar Tribal Welfare Research Institute, Ranchi, 1961.

Raza, M. and A. Ahmad, An Atlas of Tribal India, Concept Publishing Company, New Delhi, 1990.

Radhakrishna, M. Dishonoured by History: 'Criminal Tribes' and British Colonial Policy, Orient Longman, Hyderabad, 2001.

Sinha, S. 'Tribe-Caste and Tribe-Peasant Continua in Central India', Man in India, Vol. 45, No.1, 1965.

Singh K.S. (ed.), Tribal Situation in India, Indian Institute of Advanced Studies, Simla, 1972.

Singh K.S. (ed.), Economies of the Tribes and Their Transformation, Concept Publishing Company, New Delhi, 1982.

Vidyarthi, L.P. Social Implication of Industrialization in Tribal Bihar, Planning Commission, New Delhi, 1968.

Credits: 4
Marks: 100

GEO-DSEC-604 A
AGRICULTURAL GEOGRAPHY

Objectives: To expose the students to studies of physical conditions of agriculture in relation to its pattern, regional dimensions, socio-economic factors and changing landscapes.

Course outcome: The students would be able to understand the different the different determinants of agricultural patterns and practices. They will also be acquainted with the various agricultural systems of the world and northeast India in particular.

UNIT - I: ORIGIN AND DEVELOPMENT

Nature, scope and significance of agricultural geography

Origin and development of agriculture, gene centers, diffusion, adoption of crops and animals

Spread of agricultural technology

Approaches in agricultural geography: commodity, regional and systematic.

UNIT - II: DETERMINANTS OF AGRICULTURAL PATTERNS

Physical, socio-economic and technological development in agricultural practices

Measurements of agricultural productivity, crop combinational analysis, crop diversification analysis
Measurement of regional disparities in agricultural production

Issues and policies in modern agriculture: Impact of green revolution, GM Crops and agricultural hazards, food security, agricultural policies and their implication

UNIT - III: AGRICULTURAL SYSTEMS IN THE WORLD

Whitley's classification of agricultural regions and recent changes

Von Thunen's theory of agricultural location and recent modifications

Landuse and land capability classifications

UNIT - IV: AGRICULTURAL SYSTEMS IN NORTH EAST INDIA

Changes to agricultural landscape in NE Region

Shifting Cultivation in NE Region

Plantation Agriculture- Tea plantation in Assam, small tea cultivation in Assam, rubber plantation in Tripura

Commercialization of agriculture- cash crops, food security in NE region

Suggested Readings

Basu, D. Kulirani, B. F. and Ray, B.D: Agriculture, Food Security, Nutrition and Health in North East India. New Delhi; Mittal Publication, 2006.

Brown, M. E.: Food Security, Food Price and Climate Variability. Oxford (UK): Taylor & Francis Group Ltd, 2014.

Chriostoplos, I and Pain, A: New Challenges to Food Security: From Climate Change to Fragile States. Oxford (UK): Taylor & Francis Group Ltd, 2014.

Clark, C. and Haswell, M: The Economics of Subsistence Agriculture, St. Martin, London, 1964.

FAO UN Report: Climate Change, Agriculture and Food Security, 2016.

Gobind, Nalini: Regional Perspective and Agricultural Development, Concept, Delhi, 1986

Gregor, H.P: Geography of Agriculture: Themes in Research, Prentice Hall New York, 1970.

Grigg, D,B: The Agricultural Systems of the World, Cambridge Univ. Press N.Y, 1974.

Hussain, M: Systematic Agricultural Geography, Rawat Publ., New Delhi, 1996

Mannion, A. M: Agriculture and Environment Change, John Wiley, London, 1995.

Morgan, W.B and Norton, R.J.C: Agricultural Geography, Methuen, London, 1971.

Sauer, Carl: Agricultural Origins & Dispersals, American Geographical Society (Bowman Memorial Lectures), New York, 1952.

Saxena, A: Climate Change, Agriculture and Food Security, Write and Print Publications, New Delhi, 2016.

Singh, J and Dhillon S.S: Agricultural Geography, Tata McGraw Hill, New York, 1994.

Symons, L: Agricultural Geography, G. Bells and Sons, London, 1967.

Tarrant, JR: Agricultural Geography, Daqvid& Charles, Newton, 1974.

Whealer, K.E., Ladley A.M. and Leong, F.G: Studies to Agricultural Geography, Bland Educational, London, 1970.

Credits: 4
Marks: 100

GEO-DSEC-604 B
ENVIRONMENTAL GEOMORPHOLOGY

Objectives: To acquaint students with the role of human and the physical environment on geomorphological changes, extraction of geomorphological resources and their impact and management of geomorphological hazards.

Outcome: From this paper students will understand the impact of the extraction of geomorphological resources from different geomorphic areas on augmenting geomorphological hazards and their management.

UNIT - I: FUNDAMENTALS OF ENVIRONMENTAL GEOMORPHOLOGY

Introduction to Environmental Geomorphology: Geomorphology vs. Environmental geomorphology; Environmental impacts on Geomorphological processes.

Geology and Geomorphology*:* Lithology and landforms; structure and landforms.

Hydrology and Geomorphology*:* Hydrology vs. landform development;

Climatic Geomorphology: Geomorphological processes and climatic control, climate change and geomorphology, morphogenetic regions

Anthropogenic Geomorphology: Meaning and concept, human impact on geomorphological and geohydrological processes

UNIT - II: GEOMORPHOLOGICAL RESOURCES

Geomorphological resources*:* Geomorphological raw materials; contribution of geomorphology in the search for other natural resources.

Terrain evaluation and management

Hydrological resources: Environmental conditions governing precipitation, evaporation, runoff and hydrological cycle and management, river health

Soil resources: development, soil forming processes, fertility and productivity

UNIT - III: GEOMORPHOLOGICAL HAZARDS

Landslide hazard: mechanism, types and causes of landslides, methods for landslide investigation, landslide hazard assessment

Fluvial hazard: river bank erosion - causes, mechanism; river instability.

Flood hazard: causes, impact and assessment of floods

Coastal hazard: Mechanism and control of coastal erosion; Sea level rise and its impacts on coastal geomorphology; tsunami.

Soil erosion: Physical bases and types of erosion: water erosion, aeolian erosion.

Geomorphology and Seismic hazard

UNIT - IV: ASSESSMENT AND MANAGEMENT OF GEOMORPHIC HAZARDS

Geomorphology and Environmental Impact Assessment: concepts, methods, types of projects; investigation phases, mapping and indicators

Hazard Zonation Techniques: flood, landslide, river bank erosion, soil erosion, coastal hazards

Vulnerability and geomorphological risks: vulnerability, prediction and forecasting

Mitigation and management of geomorphological hazards

Suggested Readings

Bandyopadhyay, S. and De, s. K. (2017): Human Interference on River Health: A Study on the Haora River, Tripura River, India. Springer

Bloom, A. L. (2002). Geomorphology: A systematic analysis of late Cenozoic landforms. Prentice-Hall of India, New Delhi

Bryant, E (2005): Natural Hazards. Cambridge University Press.

Bull, William B. (1991): Geomorphic Responses to Climate Change. The Blackburn Press.

Coats, Donald, R. (1972): Environmental Geomorphology and Landscapte Conservation. Vol I & II.Dowden, Hutchinson & Ross, Inc, Strondsburg.

Cooke, R. U. and Doorncamp, J. C. (1993): Geomorphology and Environmental Management – A New Introduction. Clarendon Press, London.

Faniran, A. and Jeje, L. K. (1983): Humid Tropical Geomorphology, Longman, London.

Goudie, A. (1990): Geomorphological techniques. Unwin Hyman Ltd., London

Gutierrez Elorza, M., (2005): Climatic Geomorphology, Elsevier

Kale, V. S. and Gupta, A. (2001): Introduction to Geomorphology, Orient Longman, Calcutta.

Ollier, C. D. : Weathering

Panizza, M. (2002): Environmental Geomorphology, Elsevier

Raghunath, H.M. (2006) : Hydrology. New Age International Ltd.

Singh, S, Starkel, L. and Syiemlieh, H. J. (2008): Environmental Changes and Geomorphic Hazards. Bookwell

Singh, S., Sharma, H. S. and De, S. K. (2004): Geomorphology and Environment. Acb Publications, Kolkata

Thomas, M. F. (1994): Geomorphology in the Tropics: A study of weathering and denudation in low latitudes. John Wiley and Sons, Chichester.

Thornbury, W. D. (1986): Principles of Geomorphology. Willey Eastern Limited

Tripathi, R. P. and Singh, H.P. (1993): Soil Erosion and Conservation. Willey Eastern Limited

Zaruba, Q. and Mencl, V. (1976): Landslides and their control. Elsevier Science

Credits: 4
Marks: 100

GEO-DSEC-605 A
GENDER STUDIES IN GEOGRAPHY

Objective: The course seeks to explore the relationship between gender and space. Through a range of theoretical debates and empirical examples, the students will investigate the nature and importance of gender difference within key areas of Human Geography.

Course Outcome: Students will learn

a) *the concepts and theories that are crucial to understand the gender relations*
b) *The role of patriarchal social practices in construction of gendered spaces responsible for subordination of female sex and reproduction of unequal relations*
c) *Application of qualitative methods to understand gender relations*

UNIT - I: CHALLENGING GEOGRAPHY'S EXISTING ORTHODOXIES

Social construction of gender, Gender issues in Geography: 'gender-neutral' theories in geography, like Marxism, Humanism, Structuration theory, masculinist geographical knowledge, Gender and space: private and public spaces, Gendered environments, gendered experience of space

UNIT - II: GENDER DISCRIMINATION AND INEQUALITIES

Patriarchy, Matriarchy, Matriliny and Matrilocality, role and importance of gender as a basis for inequality, and social stratification, Social space and gender, creation of gendered space and reproduction of gendered space.

UNIT - III: GENDER DISPARITIES

Application of a gender perspective to various aspects of geographical research and understanding: occupations and employment, social assignments of work and work preferences, Crime against women (home and work environment), Health and Education: Global pattern and the Indian situation, representation in media.

UNIT - IV: RESEARCHING GENDER GEOGRAPHY

Characteristics of gendered research,
Choosing research topics and research objectives: the stakeholders, Research question formulation, Designing gender indicators
Choosing methods: Quantitative (surveys) and Qualitative (Open-ended interviews, Oral/Life histories, Focus Group Discussion, Participant Observation)
Analysing Data: Conducting gender Analysis
Communicating Results
Reflexivity

Suggested Readings

Datta Anindita (2021) Gender, Space and Agency in India: Exploring Regional Genderscapes, Routledge, India

McDowell Linda, Joanne Sharp (1997) Space, Gender, Knowledge: Feminist Readings, Routledge

McDowell Linda (1999**)** Gender, Identity, and Place: Understanding Feminist Geographies, University of Minnesota Press

Massey Doreen (1994) Space, Place, and Gender; University of Minnesota Press

Monk J, Drooglever F, Raleigh C (2004) The representation of women in Academic geography: Contexts, Climate and Curricula, Journal of Geography in Higher Education vol 28, number 1, pp 83-90

Monk, J. (1994). Place Matters: Comparative International Perspectives on Feminist Geography. Professional Geographer, 46, 3, p. 277-288. Oberhauser Ann M. , Jennifer L. Fluri, Risa Whitson, Sharlene Mollett, (2018) Feminist Spaces: Gender and Geography in a Global Context, Routledge.

Oberhauser Ann, Ibipo Johnston-Anumonwo (2020) Global Perspectives on Gender and Space: Engaging Feminism and Development, Routledge

Raju, S. (2008) 'Gender differentials in access to Higher Education', University Grants Commission, 79-102.

Raju Saraswati, Kuntala Lahiri-Dutt (ed.) (2011) Doing Gender, Doing Geography: Emerging Research in India, Routledge, India.

Raju Saraswati, Santosh Jatrana (2016) Women Workers in Urban India, Cambridge University Press

Credits: 4
Marks: 100

GEO-DSEC-605 B
GEOGRAPHY OF TOURISM

Objectives: to familiarize students about the importance of geography on tourism development

Course outcome: The students will be acquainted with the nature and the various impact of tourism and recreation. They will also know the different tourist activities in urban and rural setups and understand tourism planning and management.

UNIT - I: INTRODUCTION

Definition and scope of tourism; tourist motivation; tourism typologies; the nature of the tourist experience; geography and the study of tourism; tourism as a recreation and leisure; components and relationship between tourism and recreation; development and the status of the geography of tourism and recreation; physical and human factors and their relationship to tourism

UNIT - II: IMPACTS OF TOURISM AND RECREATION

The environmental effects of tourism; physical impact; economic impact; socio-cultural impact

UNIT - III: URBAN AND RURAL RECREATION

Urban tourism in a changing world: the urban context; the tourist city; demand and supply of urban tourism; urban images and aesthetics; social and cultural heterogeneity; fantasy cities

Rural tourism: understanding rural tourism; managing tourism in the countryside;

Ecotourism: history of ecotourism; ecotourism and cultural attractions; business of ecotourism; local community participation in ecotourism; ecotourism and sustainability; ecotourism and pro-poor tourism

UNIT - IV: TOURISM PLANNING AND DEVELOPMENT

Tourism planning and planning processes; general model of planning process; types of plan and planning approaches; tourism planning at national, regional and local level; concept of sustainable tourism; managing tourism and environmental change; visitor management; concept of carrying capacity

Suggested Readings

Bhatia, A. K. : International Tourism Management, Sterling, New Delhi, 2001.
Chandra, R: Wildlife and Ecotourism: Trends, Issues and Challenges, Akansha, New Delhi, 2005.
Erlet, C. and Lowman, G.: Ecotourism: A Sustainable Options?, John Wiley, New York, 1994.
Hall, C. M. and S. J. Page: The Geography of Tourism and Recreation: Environment, Place and Space, Routledge, London, 1999.
Honey, M.: Ecotourism and Sustainable Development: Who owns Paradise, Island Press, Washington, 1999.
Kumar, A: Tourism Management, Commonwealth Publishers, New Delhi, 1997.
Micheal Hall, C. and Stephen Page: Tourism in South and Southeast Asia: Issues and Cases, Butterworth-Heinemann, Oxford, 2000.
Milton, D. R.: A Geography of World Tourism, Prentice Hall, New Jersey, 1993
Pran, N. S.: Successful Tourism Management Volume I: Fundamentals of Tourism, Sterling Publishers, New Delhi, 1997
Sharma, K. K.: Tourism in India, Classic Publishing House, Jaipur, 1991.
Sharma, U.: Panorama of Tourism in India, Printwell, Jaipur, 1996
Stephen, W. and Neil, J.: ecotourism: Impacts, Potentials and Possibilities, Butterworth-Heinemann, London, 1999.
Weaver, D. B.: The Encyclopedia of Ecotourism, CABI Publishing, New York, 2001.
Williams, S.: Tourism Geography: A new synthesis (Second edition), Routledge, London, 2009.

Credits: 20
Marks: 500

GEO–DSEC-606

DISSERTATION*	16
Viva Voce	4
Total	**20**

*Dissertation topic should be determined based on the specializations chosen from 603, 604 and 605 and it will be finalized in consultation with the respective supervisors.