FOUR YEARS UNDER GRADUATE (FYUG) PROGRAMME UNDER NEW EDUCATION POLICY, 2020

7th & 8th Semester Syllabus

Date of Approval by the AC: May 21, 2025

SEMESTER-VII

GEO-400: RESEARCH METHODOLOGY AND PROPOSAL WRITING (MAJOR)

(Contact Hours: 60, Credits: 4)

Learning 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 acquire spatial thinking and research formulation skills, conduct literature reviews and master hypothesis formulation, data collection, analysis and interpretation techniques. They will understand research components, stages and ethical considerations and gain proficiency in field methods, research report writing, cartography, statistics and remote sensing/GIS techniques for spatial data analysis and visualization.

(In the End Semester Examination, students are to answer 5 questions out of 8 selecting at least ONE from each unit. The questions will be of equal value).

Theory **Credits 4** **External: 75 Marks**
Internal: 25 Marks

Unit- I: Introduction

(i) Spatial thinking and research questions, research issues and formulations
(ii) Statement of the problem, literature survey and review
(iii) Hypothesis and objectives of research

Unit- II: Data Collection and Analysis

(i) Choice of indicators, nature of geographical data, scales of measurement.
(ii) Data classification and measurement, database organization, data analysis and interpretation.
(iii) Field methods in geography, writing a research report.

Unit -III: Research in geography

(i) Research components: objectives, proposal, types, strategy, methods, questions, topic, design
(ii) Stages of research
(iii) Ethics of research

Unit -IV: Techniques in geographical research

(i) Cartography: graphs, diagrams and maps

(ii) Statistics: multi- variate correlation, sampling, student's t – test
(iii) RS and GIS: visualisation and analysis

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.

SEMESTER-VII

GEO-401: GEOMORPHOLOGY

(Contact Hours: 75, Credits: 3+1)

Learning 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.

Part A - Theory **Credits 3** **External: 56 Marks**
Internal: 19 Marks

(In the End Semester Examination, students are to answer 4 questions out of 6 selecting at least ONE from each unit. The questions will be of equal value).

Unit - I: Concepts in Geomorphology

(i) Development of Geomorphic thought: classical and modern
(ii) Trends in Geomorphology: cyclic, process
(iii) Scale and related concepts in geomorphology: spatial and temporal scale, equilibrium, geomorphic systems
(iv) Models of slope development: slope decline theory of W. M. Davis, slope replacement theory by W. Penck, Slope evolution theory by A. Wood

Unit - II: Tectonic Geomorphology

(i) Geological time scale and related topographic and structural evolution
(ii) Isostasy: Airy and Pratt; their critical analysis
(iii) Continental drift theory and Plate tectonics
(iv) Folds and faults: origin, types and their topographic expressions
(v) Earthquakes and tsunamis

Unit - III: Process - Form relation

(i) Process of rock weathering and their effects on landform; mass movements: its dynamics and classification
(ii) Fluvial processes and landforms; glacial processes and landforms'; fluvio-glacial landforms; aeolian processes and landforms; fluvio-aeolian processes
(iii) Periglacial geomorphology: mechanism of periglacial processes: congelifraction, frost heaving and congelifluction), periglacial landforms

Part B – Practical **Credits 1** **External: 19 Marks**
Internal: 06 Marks

(In the End Semester Examination, students are to attempt 2 questions out of 3, question will carry 7 marks each. Practical notebook will carry 3 marks and viva voce will carry 2 marks)

(i) Geological Map: Drawing of cross sections from uniclinal, folded and faulted maps having unconformity and their interpretation
(ii) Preparation of altimetric frequency and hypsometric curves of drainage basins
(iii) Preparation of landslide/Flood hazard and risk zonation maps.
(iv) Preparation of topographical maps and networks using Theodolite 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

SEMESTER VII

GEO- 402: BIO-GEOGRAPHY

(Major)

(Contact Hours: 60, Credits: 4)

Learning Objective: To enable students in understanding the linkages between landscape form and processes, the factors that influence the earth's climate and the relationship between biotic and abiotic components.

Course outcome: Students will be able to explain the basic principles of the development of landforms through time. It also explains how the physical system plays a role in supporting life forms on the earth.

Theory **Credits 4** **External: 75 Marks**
Internal: 25 Marks

(In the End Semester Examination, students are to answer 5 questions out of 8 selecting at least ONE from each unit. The questions will be of equal value).

Unit-I: Introduction

(i) Nature, scope and significance of biogeography
(ii) History of biogeography
(iii) Ecology: meaning and scope; basic concepts
(iv) Concept of biosphere

Unit-III: Ecosystem

(i) Definition and components of ecosystem
(ii) Trophic level, food chain, food web and energy flow
(iii) Types of ecosystems: terrestrial (forest and desert ecosystem) and aquatic (wetland and marine ecosystem)
(iv) Biochemical cycles (carbon and nitrogen cycles)

Unit-II: Distribution of plants and animals

(i) Factors influencing the distribution of plants and animals (physical, biotic and anthropogenic)
(ii) Plant adaptation (hydrophytes, mesophytes, xerophytes, halophytes) and their geographical distribution.
(iii) Animal adaptation (migration, hibernation and camouflage) and their geographical distribution.
(iv) Phyto-geographic and zoo-geographic regions of the world.

Unit-IV: Biodiversity and its conservation

(i) Concept and significance of biodiversity
(ii) Biodiversity 'hot spots' of the world
(iii) Biodiversity loss and its conservation
(iv) Wildlife conservation and Biosphere reserves.

Suggested Readings

Bansereau, M. (1957): Biogeography-An Ecological Perspective, Ronald Press, New York.
Bhattacharya, N.N. (2007): Biogeography, Eastern Book House, Guwahati.
Cox Barry, C. et al. (1977): Biogeography: An Ecological and Evolutionary Approach, Cox Blackwell, Oxford.
Hagget, R. J. (1995): Geography: An Evolutionary Approach, Routledge, London.
Hagget, R.J. (1995): Fundamentals of Biogeography, Routledge, London.
Joy, T. (1993): Biogeography: A Study of Plants in the Ecosphere, Longman, London.
Mani, M.S. (ed.) (1972): Biogeography of India, Springer, The Hague.
Mathur, H.S. (1998): Essentials of Biogeography, Amy Printers, Jaipur.
Martin, C. (1975): Plant Geography, Methuen, London.
Phillip, J. (1957): Zoogeography: The Geographical Distribution of Animals, John Wiley, New York.
Robinson, H. (1982): Biogeography, Mc Donald and Evans, London.
Seddon, B. (1971): Biogeography, Duckworth, London.
Spellberg, I.F. and Sawyer, J. W.D. (1999): An Introduction to Applied Biogeography, Cambridge University Press, Cambridge.
World Resource Institute, (2001): People and Ecosystems: World Resources Institute, Washington

SEMESTER VII

GE- 403: URBAN GEOGRAPHY

(MAJOR)

(Contact Hours: 75, Credits: 3+1)

Learning Objective: To provide students with a comprehensive understanding of urban geography, including its concepts, theories, and practical applications, to analyze and address urbanization challenges effectively.

Course outcome: By the end of the course, students will be able to evaluate urban phenomena, apply theoretical frameworks to analyze urban issues, utilize spatial analysis techniques, and propose solutions for sustainable urban development.

Part A - Theory **Credits 3** **External: 56 Marks**
Internal: 19 Marks

(In the End Semester Examination, students are to answer 4 questions out of 6 selecting at least ONE from each unit. The questions will be of equal value).

Unit 1: Basic concepts

(i) Definition, nature, scope and recent trends in urban geography
(ii) Development of urban geography: Contributions of Europeans, Anglo-American scholars, urban geography in India
(iii) Approaches to urban geography.
(iv) Basic concepts in urban geography: urban areas (town and cities), rural-urban hierarchy, rural-urban fringe, city-region (umland), primate city.

Unit 2: Origin of urbanization and urban morphology

(i) Origin of urbanization: ancient, medieval and modern
(ii) Types and of towns and cities: towns, cities, metropolis, megalopolis, conurbation
(iii) Functional classification of towns and cities (qualitative and quantitative classification)
(iv) Urban morphology (concentric zone, sector model and multiple nuclei model)
(v) Models of urban land use (Christaller and Losch)

Unit 3: Issues of urbanization

(i) Concept of urban growth and urbanisation
(ii) Urban growth and urbanization (trends and patterns; global and India)
(iii) Urban problems with special reference to developing countries (poverty, slums, housing, traffic, crime, waste management, water scarcity)
(iv) Urban planning, urban renewal, smart-cities

Part B – Practical **Credits 1** **External: 19 Marks**
Internal: 06 Marks

(In the End Semester Examination, students are to attempt 2 questions out of 3, question will carry 7 marks each. Practical notebook will carry 3 marks and viva voce will carry 2 marks)

(i) Mapping of urban land cover and land-use (Using RS/GIS techniques)

(ii) Flow diagram (rural-urban migration; traffic flow)

(iii) Quality of life index for urban residential areas (using any statistical techniques)

(iv) Gravity model

Suggested Readings:

Clark, David. Urban Geography; An introductory guide. 1982(ed) Cosmo Publications, New Delhi

Carter, Harold. (1995) The Study of Urban Geography, 4th edition, London.

Dickenson, R. E. (1947) City Region and Regionalism. London

Geddes, P. Cities in Evolution

Johnson, J.H. (1967) Urban Geography, Pergamon London

Johnston, R. J. Urban Geography: City Structures, Progress in Human Geography

Mumford. L. The Culture of Cities. Seeker & Warburg 1938

Murphy. R.E. (1966) The American City: An Urban Geography. McGraw

Mayer, H.M & Kohn, C.F. (1959) Readings in Urban Geography, Chicago University

Rao, V.L.S Prakasa. (1983) Urbanisation in India: Spatial Dimension. Concept Publication New Delhi,

Ramachandran, R. (1999) Urbanisation and Urban Systems in India, Oxford New Delhi.

Singh,S & Saroha,J, (2021) Urban Geography, Pearson Education

Verma, L.N. (2015) Urban Geography, Rawat Publication

SEMESTER-VII

GEO-404: GEOGRAPHY AND ENVIRONMENT

(MINOR)

(Contact Hours: 60, Credits: 4)

Learning Objective: To understand the various themes and issues in Environmental Geography and to understand the anthropogenic interventions and resultant impacts on various ecosystems

Course outcome: Students will develop a comprehensive understanding of ecosystems, encompassing their components, interactions and functions, while also acquiring in-depth knowledge of various anthropogenic interventions and their impacts. Additionally, they will explore conservation strategies and environmental planning practices aimed at mitigating adverse effects and promoting sustainability.

Theory **Credits 4** **External: 75 Marks**
Internal: 25 Marks

(In the End Semester Examination, students are to answer 5 questions out of 8 selecting at least ONE from each unit. The questions will be of equal value).

Unit I – Environment and ecosystem

(i) Definition and concept of environment
(ii) Components of the environment
(iii) Structure and functions of ecosystem

Unit II –Types of ecosystems (their characteristics and threats)

(i) Forest
(ii) Grassland (Temperate)
(iii) Desert
(iv) Mountain

Unit III – Environmental pollution and hazards: causes, effects, consequences and management

(i) Water pollution
(ii) Air pollution
(iii) Noise pollution
(iv) Floods
(v) Earthquake
(vi) Cyclone

Unit IV – Environmental conservation measures

(i) Disaster management and mitigation measures
(ii) Pollution control strategies
(iii) Role of information technology in environmental conservation

Suggested Readings:

David R. (2012): **Frank Environmental Education**, Frank Bros. &Co. (Publishers) Ltd, B-41, Sector-4 Noida, 201301 Gautam Budh Nagar

Bharucha E (2008) for University Grants Commission: **A Textbook of Environmental Studies for Undergraduate courses**, Universities Press (India) Pvt. Ltd. Himayatnagar, Hyderabad-500029 Andhra Pradesh

Goswami P and Mandal J (2023): **Environmental Science** (Value Added Course), Global Net Publication, New Delhi-110002

Singh S.: **Environmental Geography**, Prayag Pustak Bhawan, Allahabad, India

Chandna R. C. (2002): **Environmental Geography**, Kalyani, Ludhiana 25

Cunninghum W. P. and Cunninghum M. A., (2004): **Principles of Environmental Science:** Inquiry andApplications, Tata McGraw Hill, New Delhi

Gautam, Alka (2007): **Environmental Geography,** Sharda Pustak Bhawan Publication, New Delhi Goudie A., (2001): The Nature of the Environment, Blackwell, Oxford

Singh, R.B. (Eds.) (2009) **Biogeography and Biodiversity**, Rawat Publication, Jaipur

Miller G. T. (2004): **Environmental Science: Working with the Earth**, Thomson BrooksCole, Singapore MoEF, (2006): National Environmental Policy-2006, Ministry of Environment and Forests, Government of India

Odum, E. P. et al, (2005): **Fundamentals of Ecology**, Thomson Brooks/Cole Singh S., (1997): Environmental Geography, Prayag Pustak Bhawan, Allahabad.

UNEP (2007): **Global Environment Outlook**: GEO4: **Environment for Development**, United Nations Environment Programme

Singh, R.B. (1998): **Ecological Techniques and Approaches to Vulnerable Environment**, Oxford & IBH Publication, New Delhi

Singh, R.B. and Hietala, R. (Eds.) (2014): **Livelihood security in North-western Himalaya: Case studies from changing socio-economic environments in Himachal Pradesh, India, Advances in Geographical and Environmental Studies**, Springer

Saxena H. M. (1999): **Environmental Geography**, Rawat Publications, Jaipur and New Delhi

Singh R. B. (ed) (2006): **Natural Hazards and Disaster Management: Vulnerability and Mitigation**, Rawat Publications, New Delhi

SEMESTER VIII

GEO-450: CULTURAL GEOGRAPHY

(Major Course for both Honours & Honours with Research)

(Contact Hours: 60, Credits: 4)

Learning 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 about the significance of culture in spatial and regional analysis. They will explore the diversity of culture and its diffusion over space and time, examining how cultural traits spread and evolve. Additionally, students will analyse patterns and processes in cultural differentiation within India, gaining insights into the complexities of cultural dynamics at a regional scale.

Theory **Credits 4** **External: 75 Marks**

Internal: 25 Marks

(In the End Semester Examination, students are to answer 5 questions out of 8 selecting at least ONE from each unit. The questions will be of equal value).

Unit - I: The nature of cultural geography

(i) Cultural geography: definition and approaches
(ii) Convergence and divergence processes
(iii) The cultural geographical past
(iv) 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 in respect to historical evolution, race, religion and language

Unit - III: Ethnicity and tribalism

(i) Geography of ethnic and tribal groups of the world with reference to diffusion of ethnic traits, landscape and economy
(ii) Ethnic regions, cultural integration and ethnicity

Unit - IV: Cultural geography and case studies

(i) Applying cultural geography: case study approach
(ii) Cultural diffusion in India with reference to green revolution
(iii) Cultural ecology of desertification: drought in the great plains in India
(iv) 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

SEMESTER-VIII

GEO-451: GEOGRAPHY AND ENVIRONMENT

(Minor Course: for both Honours and Honours with Research)

(Contact Hours: 60, Credits: 4)

Learning Objective: To understand the various themes and issues in Environmental Geography To understand the anthropogenic interventions and resultant impacts on various ecosystems

Course outcome: Students will understand the complex relationship between humans and the environment, recognize anthropogenic interventions and their impacts, and gain insight into environmental ethics, movements, and policies, empowering them to address pressing environmental challenges.

Theory	**Credits 4**	**External: 75 Marks**
		Internal: 25 Marks

(In the End Semester Examination, students are to answer 5 questions out of 8 selecting at least ONE from each unit. The questions will be of equal value).

Unit I – Man-Environment relationships

(i) Approaches: environmental deterministic, possibilistic, and ecological
(ii) Man's interaction with the environment (historical perspective): period of plant and animal domestication; period of science, technology and industrialization

Unit II – Impact of human activities on the environment: causes and consequences

(i) Agriculture: shifting/jhum cultivation
(ii) Forestry: lumbering
(iii) Mining: coal
(iv) Industrialization: ferro-alloy
(v) Urbanisation: transport

Unit III – Environmental ethics and movements

(i) Importance, types and principles of environmental ethics
(ii) Chipko movement
(iii) Narmada Bachao Andholan
(iv) Save the rain forest movement

Unit IV - Environmental programmes and policies

(i) United Nation Environmental Programme
(ii) Kyoto Protocol
(iii) Environment Protection Act 1986
(iv) National Green Tribunal

Suggested Readings:

David R. (2012): **Frank Environmental Education**, Frank Bros. &Co. (Publishers) Ltd, B-41,

Sector-4 Noida, 201301 Gautam Budh Nagar
Bharucha E (2008) for University Grants Commission: **A Textbook of Environmental Studies for Undergraduate courses**, Universities Press (India) Pvt. Ltd. Himayatnagar, Hyderabad-500029 Andhra Pradesh
Goswami P and Mandal J (2023): **Environmental Science** (Value Added Course), Global Net Publication, New Delhi-110002
Singh S.: Environmental **Geography**, Prayag Pustak Bhawan, Allahabad, India
Chandna R. C.,(2002): **Environmental Geography**, Kalyani, Ludhiana 25
Cunninghum W. P. and Cunninghum M. A., (2004): **Principles of Environmental Science:** Inquiry andApplications, Tata McGraw Hill, New Delhi
Gautam, Alka (2007): **Environmental Geography,** Sharda Pustak Bhawan Publication, New Delhi Goudie A., (2001): The Nature of the Environment, Blackwell, Oxford
Singh, R.B. (Eds.) (2009) **Biogeography and Biodiversity**, Rawat Publication, Jaipur
Miller G. T. (2004): **Environmental Science: Working with the Earth**, Thomson BrooksCole, Singapore MoEF, (2006): National Environmental Policy-2006, Ministry of Environment and Forests, Government of India
Odum, E. P. et al, (2005): **Fundamentals of Ecology**, Thomson Brooks/Cole Singh S., (1997): Environmental Geography, Prayag Pustak Bhawan, Allahabad.
UNEP (2007): **Global Environment Outlook**: GEO4: **Environment for Development**, United Nations Environment Programme
Singh, R.B. (1998): **Ecological Techniques and Approaches to Vulnerable Environment**, Oxford & IBH Publication, New Delhi
Singh, R.B. and Hietala, R. (Eds.) (2014): **Livelihood security in North-western Himalaya: Case studies from changing socio-economic environments in Himachal Pradesh, India, Advances in Geographical and Environmental Studies**, Springer
Saxena H. M. (1999): **Environmental Geography**, Rawat Publications, Jaipur and New Delhi
Singh R. B. (ed) (2006): **Natural Hazards and Disaster Management: Vulnerability and Mitigation**, Rawat Publications, New Delhi

SEMESTER-VIII

GEO-452: RESEARCH PROJECT/ DISSERTATION
(For Honours with Research only)

	Credits
Identification of research gap, objective and research question	1
Literature review	1
Synopsis	2
Field survey and data collection	2
Dissertation writing	4
Viva voce	2
Total	**12**

SEMESTER VIII

GE-453: POPULATION AND DEVELOPMENT

(Major/Advance Course for Honours Only)

(Contact Hours: 75, Credits: 3+1)

Learning Objective: To equip students with a comprehensive understanding of the interrelation between population dynamics and development, focusing on theoretical frameworks, demographic transitions and environmental implications

Course outcome: By the end of the course, students will be able to analyse population trends and patterns, evaluate theories of population growth, demographic transitions, and their impact on development and the environment. They will also develop practical skills in representing population data and interpreting demographic indicators to inform policy-making and sustainable development strategies.

Part A - Theory **Credits 3** **External: 56 Marks**
Internal: 19 Marks

(In the End Semester Examination, students are to answer 4 questions out of 6 selecting at least ONE from each unit. The questions will be of equal value).

Unit I- Conceptual background

(i) Relationship of Population geography with demography, economics and sociology
(ii) Approaches to population geography
(iii) Development of population geography in India
(iv) Concept of population, development and resource

Unit II -Theories of population and application

(i) Classical views: Malthus, Spencer, Ricardo and Marx
(ii) Concept of overpopulation, under population and optimum population
(iii) Demographic dividend and associated challenges with special reference to India
(iv) Population ageing

Unit III- Population and environment

(i) Population growth and human well-being
(ii) Population growth and resource utilization
(iii) Population, resource consumption and environmental degradation, debate on climate change mitigation, impact of environmental degradation, food, health, poverty, local environment

Part B – Practical **Credits 1** **External: 19 Marks**
Internal: 06 Marks

(In the End Semester Examination, students are to attempt 2 questions out of 3, question will carry 7 marks each. Practical notebook will carry 3 marks and viva voce will carry 2 marks)

(i) Representation of population growth
(ii) Distribution: multiple dots method, circle and sphere methods
(iii) Density: agricultural density and geographical density
(iv) Population composition: age - sex diagram, literacy

Suggested Readings:

Akerman, E.A (1970) Population, Natural Resources and Technology in Population Geography a Reader edited by Demko G, J and others McGraw Hill
Beaujeu-Garnier, J. (1966) Geography of Population, Longman London
Clark, J.I (1965) Population Geography, Pergamon Press Oxford
Davis, K. & Bernstam, M. Ed Resources, Environment and Population
Gosal, G.S. (1984) Population Geography in India
H.I, Mohammad: Population Geography; a Systematic Exposition. Routledge 2020
Mitra, A. (1996) Resource Studies, Sreedhar Publishers, Kolkata
Meadows et al Limits to Growth, 1972
R.C. Chandana; (1986) Geography of Population, Concepts, Determinants & Patterns. Kalyani Publishers
Robinson, W.C (1964) The Development of Modern Population Theory in American Journal of Economics and Sociology Vol 23 No.4
Trewartha, G.T. (1969) A Geography of Population, World Pattern. John Willey, New York
UNPD Proceedings of the United Nations Expert Group Meeting on Population, Environment and Development (1994)
World Development Reports
Zelinsky,W (1966) A Prologue to Population Geography, Prentice Hall, NJ.

SEMESTER VIII

GEO-454: CLIMATOLOGY

(Major/Advance Course for Honours Only)

(Contact Hours: 75, Credits: 3+1)

Learning 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.

Part A - Theory **Credits 3** **External: 56 Marks**
Internal: 19 Marks

(In the End Semester Examination, students are to answer 4 questions out of 6 selecting at least ONE from each unit. The questions will be of equal value).

Unit - I: Basics

(i) Nature and scope of climatology and its relationship with meteorology
(ii) Atmosphere: composition and structure, insolation, heat balance of the earth and distribution of temperature; humidity, clouds, precipitation and hydrological cycle; stability & instability
(iii) General circulation of the atmosphere: types of winds, jet stream, ENSO, ITCZ
(iv) Air masses: source regions, classification, distribution and effects of air masses

Unit - II: Climate Classification

(i) Classification of world climates according to Thornthwaite and Trewartha
(ii) Tropical Climate: Rainforest & Sahara type; Indian Monsoon and its prediction; Rainfall distribution
(iii) Temperate Climate: steppes, Mediterranean and China type
(iv) Tundra Climate & Highland climates
(v) Extreme events: Meaning and impact

Unit - III: Climate Change

(i) Climate change: Theories and concept; IPCC; Global Climate Models
(ii) Climate change: types, extent, causes, and consequences for human civilization and adaptation strategies
(iii) Data acquisition: methods of data acquisition; instrumentation; real time monitoring and limitations of instrumentation; weather forecasting; climate data and society.
(iv) Sources of reconstruction of past climates: geologic, geomorphic and paleontological
(v) Urban environment and climate

Part B – Practical **Credits 1** **External: 19 Marks**
Internal: 06 Marks

(In the End Semester Examination, students are to attempt 2 questions out of 3, question will carry 7 marks each. Practical notebook will carry 3 marks and viva voce will carry 2 marks)

(i) Processing of meteorological data: Excel based
(ii) Construction and interpretation of Trend Graphs for rainfall, temperature, relative humidity and air pressure
(iii) Interpretation & Representation of data: a) Climograph b) Hythergraph c) Aridity Index d) PE-TE ratio

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

SEMESTER VIII

GEO-455: N.E. INDIA- SOCIETY, CULTURE & ECONOMY

(Major/Advance Course for Honours Only)

(Contact Hours: 60, Credits: 4)

Learning 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

Theory **Credits 4** **External: 75 Marks**
Internal: 25 Marks

(In the End Semester Examination, students are to answer 5 questions out of 8 selecting at least ONE from each unit. The questions will be of equal value).

Unit - I: Physical & cultural settings

(i) Physical Structure: physiographic division
(ii) Climate: regional characteristics
(iii) Forest types
(iv) Identification of cultural regions (area of attraction, relative isolation, isolation)
(v) Centripetal and centrifugal forces in the emergence of a unified culture in the valleys and diverse cultures in the hill areas

Unit - II: The Society

(i) Chapchar Kut of the Mizos
(ii) Ethnicity in Manipur
(iii) Matrilineal society of Meghalaya
(iv) Nyokum festival of Arunachal
(v) Bihu festival of Assam
(vi) Hornbill festival of Nagaland
(vii) Kharchi festival of Tripura.

Unit - III: Economic structure

(i) Agriculture: socio economic base of agriculture with special reference to jhum cultivation
(ii) Industrial problems
(iii) Forests
(iv) Transport and communication: roads, railways, waterways, airways
(v) Regional development (integrated rural development, planning for backward area, hill and tribal area development); levels of development.

Unit - IV: Continuity and change

(i) Demographic dynamics of selected tribal communities – Two case studies on the declining, size, migration, language change, shift and extinction

(ii) Modernization and transport network development and associated issues
(iii) 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.