

Department of Geography

Faculty of Natural Sciences

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NEW DELHI – 110 025

(A Central University by an Act of Parliament)



Ph.D Programme-Geography

Syllabus (w.e.f..2019-2020)

Course Structure of PhD Programme (Semester-I)

	Theory Papers Credits
(Compulsory)	
PAPER I: GGD-201 Research Methodology	4
PAPER II: Remote Sensing and GIS	2
(Any one of the following)	
PAPER III: GGD-202: Environmental studies	4
PAPER IV: GGD-203 Population, Social and Gender Geography	4
PAPER V: GGD-204 Urban geography and Environment	4
PAPER VI: GGD-205 Agricultural Geography	4
PAPER VII: GGD-206 Geography of Health and Well-Being	4

PAPER-I

RESEARCH METHODOLOGY

Unit 1: INTRODUCTION

Epistemology: science as the way of knowing; Reality: Objective and subjective; Basic concepts: abstraction, observations and measurements; Rationality: limits of human mind ; Natural and social laws ; Objectivity and verifiability ; Induction and deduction ; Hypothesis , models and theory in research

Unit 2: SCIENTIFIC METHODS

Socratic (classical) methods vs. conventional scientific method; Steps in conventional scientific method; Evaluation theory: criteria and characteristics; Critical thinking

Unit 3: METHODS AND DATA COLLECTION

Sample design and sampling techniques; Instrumental measurements; Collection and preservation of samples from natural environment; Schedule, questionnaires, and interviews: purpose ,types and essentials; Agent base information, oral tradition, memoire, diaries, newspaper and texts.

Unit 4: METHODS AND DATA ANALYSIS

Empiricism and logical positivism; Statistical and mathematical induction and determinism (cause and effect analysis); Models and analogies: statistical and mathematical models, simulation and analogies in physical and human geography

Books recommended :

1. Andres, A.C. (1987) : The Analogy Theme in Geography; *Journal of Geography* 86 (55) : 194-197
2. Campbell, D.T. eds. And Overman, E.S.(1988): *Methodology and Epistemology for Social Science: Chicago: The University of Chicago Press*
3. Crano, W.D. and Brewer, M.B. (2002) : *Principles and Methods of Social Research*; New York : Routledge
4. Czaja, R. and Blair, J. (1996) : *Designing Surveys*; Thousand Oaks : Pine Forge Press
5. Denzin, N.K. and Lincoln, Y.S. eds. (1994) : *Handsood of Qualitative Research*; Thousand Oaks : Sage
6. Fowler, F.J. (1995) : *Improving Survey Questions*; Thousand Oaks : Sage
7. Gomez, B and J Jones III J.P. eds. (2010) : *Research Methods in Geography: A critical Introduction*; West Sussex : Wiley-Blackwell

8. Hay, I. ed. (2000) : *Qualitative Research Methods in Human Geography*; Oxford : Oxford University Press
9. Hemper, C.G. ed. (1983): *Methodology, Epistemology, and Philosophy of Science*; New York : Springer
10. Limb, M. and Dwyer, C. eds. (2001) : *Qualitative Methodologies for Geography*; London : Arnold.
11. Livingstone, D.N., and Withers, C.W. (2005) : *Geography and Revolution*; Chicago : The University of Chicago Press
12. Montello, D.R., and Suttor, P.C. (2006): *An Introduction to Scientific Research Methods in Geography*; New Delhi : Sage Publications India Pvt. Ltd.,
13. Rahman, S., Symon, J, and Gabby D.M. Van Bendogem, J.P.eds. (2009): *Logic Epistemology and the University of Science*; New York: Springer
14. Scim, S. and ed. (2005) *The Routledge Companion to Postmodernism*; New York: Routledge
15. Valentine, G. and Chifford, N. eds. (2010) : *Key Methods in Geography*; New Delhi: Sage Publications Pvt. Ltd.

PAPER-II RESEARCH METHODOLOGY
REMOTE SENSING AND GIS

Unit 1: Research Methodology

History of Research; Principle of Parsimony; Paradigm And Paradigm Shift; Postmodernism; Ethnographic Research; Plagiarism

Unit 2: Remote Sensing

Introduction: Stages of Remote Sensing; Types of Orbital Characteristics and Types Of Sensors; Physics of Remote Sensing And EMR; Satellites and Its Resolution (Spatial, Temporal, Radiometric, Spectral); Digital Data Formats; Image Restoration: Geometric and Radiometric Correction; Filtering; Band Combination; Image Classification: Supervised and Unsupervised; Applications of Remote Sensing in Geosciences, Urban, Agriculture, Forest, Ecology.

Unit 3: Geographical Information System

Definition and Scope of GIS; Functional Requirements of GIS; GIS Components; Recent Trends and Applications of GIS; Open Source GIS; Geographical Data: Spatial and Non-Spatial; Data Models: Raster and Vector; Database Management Systems (DBMS) Spatial Analysis, Overlay; Network Analysis and Proximity Analysis; 3d Models, GPS Fundamentals

Unit 4: Statistical Methods and Application

Hypothesis Formulation and Test of Significance: T-Test, F-Test, and Chi-Square Test; Correction; Correction and Regression: Bi-Variate and Multiple Correction and Regression; Principal Component Analysis

PAPER III: GGD-202
ENVIRONMENTAL STUDIES

UNIT-1: INTRODUCTION

Earth as a complex system: Components and their interrelations; Environment as resource field and sink; Environmental crisis: Causes and manifestations; Environmentalism and green movements; Major global environmental issues.

UNIT-2: ENVIRONMENT AND DEVELOPMENT

Conventional and ecological economics; Production and consumption spiral; Impacts on ecosystems; Sustainable development: Is sustainability an impossibility theorem?

UNIT-3: ENVIRONMENTAL RISK ASSESSMENT

Perception, assessment and evaluation of environmental risks; Environmental impact assessment (EIA) and uncertainty; EIA practices around the world; EIA procedure in India; Adaptation to global environmental change.

UNIT-4: ENVIRONMENTAL MANAGEMENT

Agenda 21; Globalization and environment; Political economy of resource use and environmental management; Environmental management strategies at sub-national level: Integrated watershed and eco-region management; Management at local level: Municipal water supply management; Conservation and restoration of forest cover and organic farming at panchayats level.

Books recommended:

1. Bailey, R.G. (2002) : *Ecoregions : Design for Sustainability*; New York: Springer Science & Business.
2. Bailey, R.G. and Ropes, L. (2007): *Ecoregions : The Ecosystem in Geography of the Oceans and Continents*; New York : Springer
3. Chiras, D.D. (2010): *Environmental Science*; London: Jones and Bartlett Publishers International
4. Common, M.S. and A Stage, S. (2005): *Ecological Economics: An Introduction*; Cambridge: Cambridge University Press.
5. Daly, H. E. ad Farley, J. (2004) : *Ecological Economics : Principles and Applications*; Washington, D.C.: Island Press
6. Dupont R., Baxter, T.E. and Theodore, L. (1998): *Environmental Management: Problems and Solutions*; Florida : CRC Press

7. Edwards A.R.: (2005): *The Sustainability Revolution : Portrait of a Paradigm Shift*; Gabrio Island (Canada) : New Society Publishers
8. Enger, E.D. and Smith, B. (2009): *Environmental Science : A study of Interrelationships*; New York: McGraw-Hill
9. Heathcote, I.W, (2009): *Integrated Watershed Management: Principles and Practice*; New Jersey : John Wilsey & Sons Inc.
10. Krishnamurthy, B. (2005): *Environmental Management*; New Delhi : Prentice Hall of India Pvt. Ltd.
11. Kump, L.R., Kasting, J.M., and Crane, R.G. (2009): *The Earth System*; New Jersey: Prentice Hall
12. McKinney, M.L., Schoch, R.M. and Yonavjak, L.(2007): *Environmental Science: Systems ad Solutions*; London: Jones and Barclatt Publishers International
13. Naiman, R.J. ed, (1994): *Watershed Management: Balancing Sustainability and Environmental Change*; New York: Springer
14. Randle, T.O. (2007): *Watershed Management: Issues and Approaches*; London: IWA Publishing
15. Russo, M.V. (2008): *Environmental Management: Reading and Cases*; Thousand Oaks: Sage

PAPER IV: GGD-203
Population, Social and Gender Geography
Credit: 4

Unit – I

Population Geography as a sub discipline of Geography and distinct from population studies and demography; Sources of population data; Measures of population growth and world patterns of population growth; Geographical factors of population growth; Population dynamics and population theories.

Unit – II

Social Geography as a sub discipline of Geography and its relationship with other social sciences; Concept of social space, territorial space and social landscape; Socio-economic and environment problems of developing and developed nations; S.C., S.T. and OBCs in India : Issues and challenges; Regional variations in literacy, health and crimes in India.

Unit – III

Growth and development of gender geography; Approaches : Behavioural, Radical, Humanistic and Welfare; Status of women in developing and developed countries; Crimes against women and bridging the gender gap; Women empowerment and role of women in environmental management.

Unit – IV

Population problems of India : Population Planning and Human Resource Management; Population dynamics and its changing paradigms; Unifying elements in cultural diversity; Centre state relationship and growth of regionalism; Women participation in economic activities.

Books recommended:

1. Boserup, E. 1989, Women's Role in Economic Development, Earthscan, London.
2. Dankelman, I & Davidson, J., 1989. Women and Environment in the Third World, Earthscan, London.
3. Deblig, H.J., 1996, Human Geography-Culture, Society and Space (5th ed.), John Wiley, New York.
4. Johnston, R.J. et. Al (eds), 1996. The Health of Women – A Global Perspective, Westview press, Boulder.
5. Momsen, J.H. & Townsend, J. (eds.), 1987. Geography of Gender in the Third World, Albany, New York.
6. & Hunt, Dubuque, Iowa.
7. Sowell, T. 1994. Race and Culture – A World View, Basic Books, New York.
8. UNICEF, 1990. The Lesser Child – the Girl in India, United Nations, Geneva.
9. United Nations, 1991. The World's Women, 1970-1990, United Nations, New York.
10. United Nations, 1995, World Resources 1994-1995, Chapter 3 : Women and Sustainable Development, United Nations, New York.
11. Abuzar, M., 1988. Socio-economic Aspects of Population Structure, Rawat Pub., Jaipur.
12. Agarwal, S.N., 1972. India's Population Problems, Tata McGraw Hill, New Delhi.
13. Beajeu-Garneir, J., 1979, Geography of Population, Longman, New York.
14. Bogue, D.J., 1969, Principles of Demography, John Wiley, New York.
15. Chandna, R.C., 2000 Geography of Population : Concept, Determinants and Patterns, Kalyani Publishers, New Delhi.
16. Clarke, J.I., 1973, Population Geography, Pregamon Press, Oxford.

17. Coontz, S.H., 1957, Population Theories and the Economic Interpretation, Roulledge & Kegan Paul.
18. Daugherty, H.G. Kenneth, C.W. Kammeyir, 1988. An Introduction to Population (Second edition), The Gulford Press, London.
19. Jones, H.R., 1981. A Population Geography, Harper & Row, London.
20. Ahmad, A., 1999. Social Geography, Rawat Publications Jaipur.
21. Dube, S.C. 1991. Indian Societies, National Book Trust of India, New Delhi.
22. Dube, S.C. Tribal Heritage of India, Vikas Publishing Co., New Delhi.
23. Churye, G.S., 1963. The Scheduled Tribes, Popular Prakashan, Bombay.
24. Jones, E., & J. Eyles, 1977. An Introduction to Social Geography, Oxford University Press, Oxford.
25. Jones, E., 1976. An Introduction to Social Geography, Oxford University Press, Oxford.
26. Majumdar, D.N., 1958, Races and Culture of India, Asia Publishing House, Bombay.
27. Mukherjee, R., 1975, Social Indicators, McMillan, Delhi.
28. Pacione, M., 1987. Social Geography : Progress and Prospects, Croom Helm, London.
29. Smith, D., 1977. Geography : A Welfare Approach, Edward Arnold, London.
30. Gregory, D. and J. Larry (eds.) 1985. Social Relations and Spatial Structures, McMillan.

PAPER V: GGD-204
URBAN GEOGRAPHY AND ENVIRONMENT
Credit: 4

Unit- I Basic Concept and Approaches

Basic Concepts of Urban/Urbanization; Approaches to the study of Urban Geography; Urban Environment: Concept, Components and Levels of Analysis; Approaches to the study of Urban Environment.

Unit- II Emerging Issues and Research Trends

Trends and Patterns of Urbanization in India: Post Independence Period; Functional Classification of Towns; Urban Problems and Environmental Degradation in India; Micro Climate of Cities; Urban Pollution (Air, Water and Noise) and Health Impacts.

Unit- III Urban and Environmental Planning

Techniques of Town Planning: Delhi or Chandigarh; Urban Transport Planning; Basis of EIA ; Concept of Urban Sustainability and Urban Environmental Conservation Strategies: International and National Conventions.

Unit- IV Research Methodology

Models for Internal Structure, Hierarchy and Spacing of Cities; Urban Sprawl; Urban Poverty and Slums ; Use of Remote Sensing Data for Urban Land uses and Change Detection; GPS and GIS for Urban Mapping; Socio-economic and Environmental Surveys for Urban Themes.

Books Recommended:

1. Carter, H., 1972. The Study of Urban Geography, Edward Arnold, London.
2. Choley, R.J.O. and Haggett, P. 1966. Models in Geography, Methuen, London.
3. Gibbs, J.P. 1961, Urban Research Methods, Princeton, New Jersey.
4. Nangia, S., 1976. Delhi Metropolitan Region: A Study in Settlement Geography, Rajesh Publications.
5. Hall, P., 1992. Urban and Regional Planning, Routledge, London.
6. Burgess, R., Marisa C., and Thed K., 1977. The Challenge of Sustainable Cities, Zed Books, New Jersey.
7. Canter, L.W., 1996. Environment Impact Assessment , Mc Graw Hill Inc. New York.
8. Gilbert, and Joseph G., Cities, Poverty and Development-Urbanization in the 3rd World, Oxford University Press, Oxford.
9. Knox, P., 1994. Urban Social Geography-An Introduction, Longman, U.K.
10. Goudie, A., 1993. The Human Impact on Natural Environment, Blackwell, USA.

PAPER VI-GGD-205
AGRICULTURAL GEOGRAPHY
Credit: 4

UNIT-I CONCEPTS AND TECHNIQUES

Approaches to Agricultural Geography; Agricultural regionalization; Agro-climatic regions; New Agricultural technology; Models of agricultural location and their critical evaluation. ; Land Capability Classification.

UNIT-II AGRICULTURE AND REGIONAL DEVELOPMENT

Strategies in agricultural planning and development in India ; Agricultural policy and politics of agriculture; Liberalization, privatization and globalization; WTO agreements; Role of IMF and World Bank in agricultural policies; Rural employment; Rural finance and its instruments.

UNIT-III AGRICULTURE WITHIN THE FOOD SUPPLY SYSTEM

Food security and its components; Early warning system for food security; Monitoring factors affecting food security: weather, prices, inputs, infrastructure, storage, transportation, public distribution system, stocks, diseases, pests, droughts. Poverty and malnutrition and governmental efforts to address poverty.

UNIT -IV RESEARCH METHODOLOGY IN AGRICULTURE

Role of remote sensing, GIS and GPS in agricultural studies; Land Information System Measurement of regional disparities in agriculture and its indicators; Quantification Techniques: Indices of Growth Rates of Agriculture, Crop Combination Regions, Crop Diversification Index, Agricultural Productivity; Crop monitoring using remote sensing data; Forewarning system for pests and diseases; Drought monitoring.

Books Recommended:

1. George W. Norton, Jeffrey Alwang, William A. Masters (2006) The Economics of Agricultural Development
2. John B. Penson Jr., Oral Capps Jr., C. Parr Rosson, Richard Woodward (2009) Introduction to Agricultural Economics
3. Kym Anderson, Will Martin (Eds.) (2005) Agricultural Trade Reform and the Doha Development Agenda
4. Clapp, J., (2009) Corporate Power in Global Agrifood Governance
5. Ashok Gulati, Tim Kelly (2000) Trade Liberalization and Indian Agriculture
6. Mahbub UL Haq (2003) Human Development in South Asia 2002: Agriculture and Rural Development
7. Finney, D.J., An Introduction to Statistical Science in Agriculture : Axis Books, 2010
8. Bajpai, S., Survey on Indian Agriculture : Cyber Tech Pub, 2009,
9. Khanduri, V.P.(Eds.), Advances in Agricultural Research in India : Vol. XV-XVI, 2001, Jan-Dec. 2001, (Annual Journal) : International Book Distributors, 2001
10. Qazi, S.A. and Qazi, N. S., Population Geography : , A.P.H, 2010,
11. Kothari, S., Agricultural Landuse and Population : A Geographical Analysis : Udaipur, 1999,
12. Ramachandrudu, G., and Rao, M. P, Census 2001 and Human Development in India : Serials Pub, 2004.
13. Baylis Smith, T.P., 1987, The Ecology of Agriculture,
14. Berry, B.J.L., 1976, The Geography of Economic System, Printice Hall, N.Y.
15. Brown, L.R., 1990, The Changing World Food Prospects-The Nineties and Beyond, World Watch Institute, Washington, D. C.

16. Dayson, T., 1996, Population and Food-Global Trends and Future Prospects, Routledge, London.
17. Gregory, H.F., 1970, Geography of Agriculture, Printice Hall, Englewood Cliff, N.Jersey.
18. Hussain, M., 1999, Agricultural Geography, Rawat Publications, Jaipur.
19. Jasbir, S. and Dhillon, S.S., 1988, Agricultural Geography, Tata McGraw Hill, N. Delhi
- Mannion, A.M., 1995, Agriculture and Environment Change, John Wiley, London.
20. Shafi, M., 1983, Agricultural Productivity and Regional Imbalances in Uttar Pradesh, Concept Publications Co. New Delhi.
21. Shafi, M., 2007, Agricultural Geography, Persons Publication, New Delhi

PAPER VII-GGD-206
GEOGRAPHY OF HEALTH AND WELL BEING
Credit: 4

UNIT-I CONCEPTS AND APPROACHES

Health and wellbeing: Concept, Indicators, Approaches; Burden of disease: Mortality and Morbidity; Organization of Health Services.

UNIT-II DISEASES AND HEALTH DISORDERS

General classification of Diseases; Ecology, Etiology and Epidemiology of Diseases: Communicable (TB, Malaria, HIV/AIDS) and Non Communicable (Cancer, Diabetes and other life style related health disorders) .

UNIT-III DRIVERS OF HEALTH DISORDERS

Poverty; Hunger; Food Insecurity; Population: Crowding, Congestion, Density ,Age and Sex Structure; Literacy and educational levels; Social and Economic Security; Hygiene ; Basic Facilities and Amenities; Health infrastructure.

UNIT-IV MEASUREMENT OF HEALTH AND HEALTH DISORDERS

Poverty and Hunger; Hunger Index, SNU and ICMR scale of nutrition , Morbidity, Mortality, BMI, WBI, , HDI; Burden of Disease; Health GIS.

Suggested readings:

1. Cliff, A. & Haggett, P. (1989). Atlas of Disease Distribution, Basil Blackwell, Oxford.
2. Digby, A., & Stewart, L. (eds.) (1996). Gender, Health and Welfare, Routledge, New York.
3. Hazara, J.(ed) (1997). Health care planning in Developing Countries, University of Calcutta, Kolkata.
4. Learmonth, A.T.A.(1978). Patterns of Disease and Hunger, A Study in Medical Geography, Davis and Charles, Victoria.
5. May, J.M. (1961). Studies in Disease Ecology, Hafner Pub., New York.
6. May, J.M. (1959). Ecology of Human Diseases, M.D. Pub., New York.
7. Narayan, K.V. (1997). Health and Development: Inter-sectoral linkages in India, Rawat Pub., Jaipur.
8. Phillips, D.R.(1990). Health and Health Care in the Third World, Lingman, London.
9. Pyle, G. (1979). Applied Medical Geography, Winston Halsted Press, Silver Spring, USA.
10. Rais, A. and Learmonth, A.T.A., (1985). Geographical Aspects of Health and Diseases in India, Concept, New Delhi.
11. Shannon, G.M. et. Al, (1987). The Geography of AIDS, Guilford Press, New York.
12. Smith, D. (1997). Human Geography-A Welfare Approach, Arnold Heinemann, London.
13. Izhar, N. (2004). Geography and Health; A study in Medical Geography, Saujanya Books, Delhi.
14. Peter, A. and Hazen, H. (2011). An Introduction to the Geography of Health, Routledge, New York.
15. Takehito, T. (ed.) (2003). Health Cities and Urban Policy Research, Routledge, New York.
16. Wilbert, M.G. & Robin, A.K. (2001). Culture/ Place/ Health, Routledge, New York.
17. http://en.wikipedia.org/wiki/Health_geography
18. <http://www.esri.com/industries/health/geomedicine/index.html>