

Department of Geography

Ph.D. Programme

Proposed Course Work Syllabus

w.e.f. Session: 2020-21



(Established vide Act No. 25 (2009) of Parliament)
Government of India

School of Basic Sciences
Central University of Haryana
Mahendergarh-123031

**Course Work Scheme
Ph.D. Programme
Department of Geography**

S.N.	Course Code	Course title	Credit	Core/Elective
Core Course (Compulsory)				
1.	SBS GEO 02 01 01 C 3104	Research Methodology	4	Core
2.	SBS GEO 02 01 02 C 3104	Advanced Spatial Techniques in Geography	4	Core
3.	SBS GEO 02 01 03 C 2002	Research and Publication Ethics	2	Core
Elective Course (Choose any one of the following)				
4.	SBS GEO 02 01 01 E 3104	Spatial Information Technology	4	Elective
5.	SBS GEO 02 01 02 E 3104	Urban Geography	4	Elective
6.	SBS GEO 02 01 03 E 3104	Regional Development and Planning	4	Elective
		Total Credit	14	

Total Credits of Course Work for Ph.D., Geography: 4+4+2+4 = 14 Credits

Course Title: Research Methodology (Core)

Course Code: SBS GEO 02 01 01 C 3104

Course Outline

Credit-4

Unit-I

Research Methods

Definition, Approaches and Types of Research; Scientific Methods of Research in Geography: Inductive and Deductive Methods; Fundamental Research Concepts: Literature Review, Formulating a Research Problem, Developing Research Questions-Identifying Variables, Constructing Hypotheses; Use of Information Technology and Paradigm Shifts in Research

Unit-II

Research Design and Data Collection:

Principles of Research Design; Types and Stages of Research Design; Sampling Design; Data Collection: Construction of Questionnaire, Schedule and Interview, Conducting Interview and Survey.

Unit-III

Data Management, Field Survey and Observation

Data Processing: Tabulation, Diagrammatic Representation and Analysis; Reliability and Validity of Data; Concept and Types of Field Survey; Concept and Types of Observation.

Unit-IV

Research Writing

Structure and Components of Scientific Reports; Writing of Research Proposal, Thesis, Research Paper; References and Bibliography

Suggested Readings:

1. Ahuja, R. (2001). *Research Methods*. Jaipur: Rawat Publications.
2. Bhattacharyya, D. K. (2005). *Research Methodology*. New Delhi: Excel Books.
3. Blaxter, L., Hughes, C. and Tight, M. (1996). *How to Research*. Buckingham: Open University Press.
4. Creswell, J.W. and Creswell, J.D. (2017). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. London: Sage Publications.
5. Flick, U. (2020). *Introducing Research Methodology: Thinking Your Way through Your Research Project*. 3rd Ed. London: Sage Publications.
6. Gomez, B. and Jones, J.P. (2010). *Research Methods in Geography: A Critical Introduction*. New York: John Wiley.
7. Henn, M., Mark, W. and Nick, F. (2006). *A Short Introduction to Social Research*. New Delhi: Vistaar Publications.

8. Kitchin, R. and Fuller, D. (2003). *The Academic's Guide to Publishing*. New Delhi: Vistaar Publications.
9. Kothari, C.R. (2012). *Research Methodology, Methods and Techniques*. New Delhi: New Age International Publishers.
10. Krishan, G. and Singh, N. (2017). *Researching Geography: The Indian Context*. Oxford: Routledge (South Asian Edition).
11. Locharoenrat, K. (2017). *Research Methodologies for Beginners*. Singapore: Pan Stanford Publishing.
12. Mikkelsen, B. (2005). *Methods for Development Work and Research: A New Guide for Practitioners*. London: Sage Publications.
13. Montello, D. and Sutton, P. (2013). *An Introduction to Scientific Research Methods in Geography and Environmental Studies*. London: Sage Publications.

Course: Title- Advanced Spatial Techniques in Geography (Core)

Course Code: SBS GEO 02 01 02 C 3104

Course Outline

Credit-4

Unit-I

Data Processing and Descriptive Data Analysis

Data Input, Editing, Coding and Tabulation; Graphical Presentation of Data; Concentration and Dispersions Measures; Sample: Size and Determination

Unit-II

Quantitative and Qualitative Data Analysis

Hypothesis Testing; Analysis of Variance and Covariance; Correlation Analysis; Regression Analysis; Z-Score Method; Principal Component Analysis; Methods of Qualitative Data Analysis; Use of SPSS Software.

Unit-III

Database Creation in GIS

Data Source and Exploration; Spatial and Non-Spatial Data Creation and Thematic Mapping; Data Query

Unit-IV

Spatial Analysis using Geospatial Techniques

Multi-Criteria Evaluation Techniques; Terrain Analysis; GIS Models and Modelling; Image Classification; Mapping with GPS and Drone mapping.

Suggested Readings:

1. Bart, J. E. and Gerald, M. B. (1996). *Elementary Statistics for Geographers*. London: The Guilford Press.
2. Bruce, L. B. and Lune, H. (2017). *Qualitative Research Methods for the Social Sciences*. 9th Ed. New York: Pearson Publication.
3. Chang, K-t. (2017). *Introduction to Geographic Information Systems*. 4th Ed. New Delhi: McGraw Hill Education.
4. Chuveico, E. (2016). *Fundamentals of Satellite Remote Sensing — An Environmental Approach*. 2nd ed. Boca Raton: CRC Press.
5. Cressie, N.A.C. (1991). *Statistics for Spatial Analysis*. New York: Wiley Publications.
6. Denzin, N.K. and Lincoln, Y.S. (2000). *Handbook of Qualitative Research*. London: Sage Publications.
7. Eldon, D. (1983). *Statistics in Geography: A Practical Approach*. London: Blackwell.
8. Emery, W. and Camps, A. (2017). *Introduction to Satellite Remote Sensing*. Amsterdam: Elsevier.
9. Fotheringham, A.S.; Brunson, C. and Charlton, M. (2004). *Quantitative geography: Perspectives on Spatial Data Analysis*. London: Sage Publications.

10. Fotheringham, A.S. and Peter, A.R. (2009). *The Sage Handbook of Spatial Analysis*. London: Sage Publications.
11. Gregory, S. (1978). *Statistical Methods and the Geographer*. 4th Ed. London: Longman Publishers.
12. Gupta, R.P. (2018). *Remote Sensing Geology*. 3rd Ed. Verlag: Springer Publications.
13. Limb, M. (2001). *Qualitative Methodologies for Geographers: Issues and Debates*. London: Edward Arnold.
14. Longley, P.; Goodchild, M.F.; Maguire, D. and Rhind, D. (1999). *Geographic Information Systems: Principles, Techniques, Management, Applications*. New York: John Wiley.
15. Peter, B. and Bruce, A. (2017). *Practical Statistics for Data Scientists*. Sebastopol: O'Reilly Publications.
16. Rogerson, P. (2014). *Statistical Methods for Geography*. 4th Ed. London: Sage Publications.
17. Rogerson, P. and Yamada, I. (2008). *Statistical Detection and Surveillance of Geographic Clusters*. Boca Raton: CRC Press.

Course Title: Research and Publication Ethics (Core)

Course Code: SBS GEO 02 01 03 C 2002

Course Outline

Credit-2

Unit-I: Philosophy and Scientific Conduct

Introduction to Philosophy: Definition, Nature and Scope, Concept, Branches; Ethics: Definition, Moral Philosophy, Nature of Moral Judgments and Reactions.

Scientific Conduct: Ethics with respect to Science and Research, Intellectual Honesty and Research Integrity, Scientific Misconducts: Falsification, Fabrication and Plagiarism; Redundant Publications; Duplicate and Overlapping Publications, Salami Slicing; Selective Reporting and Misrepresentation of Data

Unit-II: Publication- Ethics and Misconduct

Publication Ethics: Definition and Importance, Best Practices and Guidelines: COPE, WAME; Conflicts of Interest.

Publication Misconduct: Definition, Concept, Problems that lead to Unethical Behavior and Vice Versa; Violation of Publication Ethics, Authorship and Contributionship; Identification of Publication Misconduct, Complaints and Appeals; Predatory Publishers and Journals

Unit-III: Publication- Policy

Open Publications and Initiatives; SHERPA/RoMEO Online Resource to Check Publisher Copyright and Self Archiving Policies; Software Tool to Identify Predatory Publications Developed by SPPU; Journal Finder/Journal Suggestion Tools Viz. JANE, Elsevier Journal Finder, Springer Journal Suggester, Etc.; Use Of Plagiarism Software Like Turnitin, Urkund and Other Open Software Tools.

Unit-IV: Data Base and Research Metrics

Data Base: Indexing Database; Citation Database: Web Science, Scopus Etc.;

Research Metrics: Impact Factor of Journal as Per Journal Citation Report, SNIP, SJR, IPP, Cite Score; Metrics: H-Index, G Index, I10 Index, Altmetrics.

Suggested Readings:

1. CEHAT. (2000). *Ethical Guidelines for Social Science Research in Health, National Committee for Ethics in Social Science Research in Health (NCESSRH)*. Mumbai: Centre for Enquiry into Health and Allied Themes.
2. Comstock, G. (2012). *Research Ethics: A Philosophical Guide to the Responsible Conduct of Research*. Cambridge: Cambridge University Press.
3. Gregory, I. (2003). *Ethics in Research*. London: Continuum.
4. Hames, I. (2007). *Peer Review and Manuscript Management in Scientific Journals: Guidelines for Good Practice*. Malden: Blackwell Publishing.
5. Iphofen, R. (2020). *Handbook of Research Ethics and Scientific Integrity*. Switzerland: Springer Nature.

6. Iphofen, R. (2017). *Finding Common Ground: Consensus in Research Ethics across the Social Sciences*. Bingley: Emerald Publishing.
7. Iphofen, R. and Tolich, M. (2018). *The Sage Handbook of Qualitative Research Ethics*. London: Sage Publications.
8. Kara, H. (2018). *Research Ethics in the Real World*. Bristol: Policy Press.
9. Lakhotia, S.C. and Chandrasekaran, S. (2019). *Ethics in Science Education, Research and Governance*. New Delhi: Indian National Science Academy.
10. Oliver, P. (2010). *The Student's Guide to Research Ethics*. 2nd Ed. Philadelphia: Open University Press.
11. Sana, L. (2002). *Textbook of Research Ethics: Theory and Practice*. New York: Kluwer Academic Publishers.
12. Shamoo, A.E. and Resnik, D.B. (2003). *Responsible Conduct of Research Contributors*. New York: Oxford University Press.

Course Title: Spatial Information Technology (Elective)

Course Code: SBS GEO 02 01 01 E 3104

Course Outline

Credit-4

Unit-I

Introduction to Spatial Information Technology (SIT)

Definitions and Component of SIT; Historical Development of Components; Integration of Remote Sensing, GIS and GNSS Technologies; Application of SIT.

Unit-II

Remote Sensing and Digital Image Processing

Spectral Reflectance Curve- Vegetation, Soil and Water; Digital Image Processing- Radiometric and Geometric Corrections, Image Enhancements: Image Histogram, Filtering and Band Ratio.

Unit-III

Geographical Information System

GIS Data Models; Database Management System; Database- Relationship Perspective of Database, Types of Database; Database Models- Relational Model; Types and Methods of Overlay; Buffering; Mobile GIS; Drone GIS.

Unit IV

Global Navigation Satellite System (GNSS)

Comparison of Different GNSS Systems; Principle of GPS Operation; Sources of Errors of GPS; Differential GPS; Accuracy of DGPS and Sources of Error

Suggested Readings:

1. Burrough, P.A. and McDonnell, R.A. (1998). *Principles of Geographic Information Systems*. Oxford: Oxford University Press.
2. Chang, K-t. (2006). *Introduction to Geographic Information Systems*. New Delhi: Tata McGraw Hills.
3. Chuveico, E. (2016). *Fundamentals of Satellite Remote Sensing — An Environmental Approach*. 2nd Ed. Boca Raton: CRC Press.
4. DeMers, M. (2009). *Fundamentals of Geographic Information Systems*. 4th Ed. New Jersey: John Wiley.
5. Emery, W. and Camps, A. (2017). *Introduction to Satellite Remote Sensing*. Amsterdam: Elsevier.
6. Gupta, R.P. (2018). *Remote Sensing Geology*. 3rd Ed. Switzerland: Springer Nature.
7. Heywood, I.; Cornelius, S. and Carver, S. (2011). *An Introduction to Geographic Information Systems*. 4th Ed. New Delhi: Pearson Education.

8. Jensen, J.R. (2009). *Remote Sensing of the Environment: An Earth Resource Perspective*. 2nd Ed. New Delhi: Pearson Education.
9. Joseph, G. (2005). *Fundamentals of Remote Sensing*. Hyderabad: Orient Blackswan.
10. Kron, G. (2017). *Global Navigation Satellite Systems: Signal, Theory & Applications*. Wilmington: Scitus Academics.
11. Kumar, D.; Singh, R.B. and Kaur, R. (2019). *Spatial Information Technology for Sustainable Development Goals*. Switzerland: Springer Nature.
12. Lillesand, T.M.; Kiefer, R.W. and Chipman, J.W. (2004). *Remote Sensing and Image Interpretation*. 5th Ed. New Delhi: John Wiley India.
13. Longley, P.A.; Goodchild, M.; Maguire, D.J. and Rhind, D.W. (2010). *Geographic Information Systems and Science*. 3rd Ed. New Jersey: John Wiley.
14. Peter, J.G., Teunissen and Oliver, M. (Eds.) (2019). *Springer Handbook of Global Navigation Satellite Systems*. Switzerland: Springer Nature.
15. Sabins, F.F. (2007). *Remote Sensing: Principles and Interpretation*. 3rd Ed. Long Grove: Waveland Press.
16. Scott, M. (2015). *Global Navigation Satellite Systems and Their Applications*. New York: Springer.

Course Title- Urban Geography (Elective)

Course code: SBS GEO 02 01 02 E 3104

Course Outline

Credit-4

Unit I

Concepts

Definition and Classification of Urban Places; Approaches to Study Urban Geography; Spatial Limits of Urban Areas; Sources of Data and Issues in Comparability.

Unit II

Process and the Problems of Urbanization in India

Colonial Legacy; The Post-Independence Characteristics; The Origins and Growth of Cities in India; Urban Pollution and Health Issues; Rural-Urban Migration; Urban Slums; Housing and Poverty; Urban Flooding; Urban Heat Island.

Unit III

Urban Planning, Policies and Governance

Urban Planning and Silent Features in India; Urban E-Governance; Urban Development Programmes- Smart Cities, AMRUT, HARIDAY, JNNURM, Satellite Towns; Implication Of 74th CAA on Urban Governance.

Unit IV

Research Methods in Urban Geography

Models for Internal Structure; Hierarchy and Spacing of Cities; Urban Sprawl; Application of Geospatial Techniques in Urban Planning and Management.

Suggested readings:

1. Bhatta, B. (2010). *Analysis of Urban Growth and Sprawl from Remote Sensing Data*. Verlag: Springer Science & Business Media.
2. Carter, H. (1972). *The Study of Urban Geography*. London: Edward Arnold.
3. Choley, R.J. and Haggett, P. (1966). *Models in Geography*. London: Methuen.
4. Fyfe, N. and Kenny, J. (Eds.) (2005). *The Urban Geography Reader*. London: Routledge.
5. Gilbert and Joseph G. (1982). *Cities, Poverty and Development-Urbanization in the 3rd World*. Oxford: Oxford University Press.
6. Gibbs, J.P. (1961). *Urban Research Methods*. New Jersey: Princeton University Press.
7. Hall, P. (1992). *Urban and Regional Planning*. London: Routledge.
8. Pacione, M. (2009). *Urban Geography: A Global Perspective*. Oxford: Routledge.
9. Ramachandran, R. (2005). *Urbanization and Urban Systems in India*. Oxford University Press.
10. Schwanen, T. and Van Kempen, R. (Eds.) (2019). *Handbook of urban geography*. Cheltenham: Edward Elgar Publishing.
11. Shen, Z. (2012). *Geospatial Techniques in Urban Planning*. Verlag: Springer Science & Business Media.

12. Short, J.R. (2017). *An Introduction to Urban Geography*. Oxford: Routledge.
13. Siddhartha, K. and Mukherjee, S. (2016). *Cities, Urbanisation and Urban Systems*. New Delhi: Kitab Mahal Publisher.
14. Thakur, R.R.; Dutt, A. K.; Thakur, S.K., and Pomeroy, G.M. (2020). *Urban and Regional Planning and Development*. Switzerland: Springer Nature.

Course Title- Regional Development and Planning (Elective)

Course Code: SBS GEO 02 01 03 E 3104

Course Outline

Credit-4

Unit I

Concepts and Models

Concept of Development; Growth; Regional Development; Sustainable Development; Theories of Regional Development- Theories by Myrdal, Hirschman and Friedman; Diversion-Conversion Hypothesis; Stage Theory of Regional Development; World System Approach

Unit II

Approaches, Techniques and Measurements

Alternate Approaches to Regionalization; Concept of Levels of Development and Disparities; Indicators and Construction of Indices; Classification and Grouping; Measures of Diversity and Disparity.

Unit III

Regional Development and Planning in India

Pre-Colonial and Colonial Regional Structure; Five-Years Plans and Regional Development; Agriculture, Industry, Infrastructure and Services and Regional Development; Globalization, Structural change and Regional Development; Emerging Economic Regionalization in India; Planning Agencies- Planning Commission, NITI Aayog and State Planning Board.

Unit IV

Regional Planning and Case Studies

Approaches to Development Plan- Sectoral, Regional and Integrated; Desert Development Plan; Integrated Coastal Zone Management; Hill Area Development Plan; Integrated Tribal Area Development Plan; Metropolitan Development Plan with special Reference to NCR.

Suggested Readings:

1. Ahmad, A. (2009). *Geography of the South Asian Subcontinent: A Critical Approach*. New Delhi: Concept Publishing Company.
2. Chand, M. and Puri, V.K. (1983). *Regional Planning*. New Delhi: Allied Publisher.
3. Gore, C. (1984). *Regions in Question: Space, Development Theory and Regional Policy*. London: Methuen & Co.
4. Kristensen, I., Alexandre D., Jukka T. (Eds.) (2018). *Strategic Approaches to Regional Development: Smart Experimentation in Less-Favoured Regions*. Oxford: Routledge.
5. Mishra, R.P. (Ed) (1992). *Regional Planning: Concepts, Techniques, Policies and Case Studies*. New Delhi: Concept Publishing Company.
6. Nath, V. and Aggarwal, S.K. (2009). *Regional Development Planning in India*. New Delhi: Concept Publishing Company.
7. Noble, A.G.; Frank J.C.; Ashok K.D. and Robert B.K. (Eds.) (2018). *Regional Development and Planning for the 21st Century*. Oxford: Routledge.

8. Papola, T.S.; Verma, H.S.; Joshi, B.K. and Sinha, R.C. (Eds) (1983). *Development of Hill Areas: Issues and Approach*. Bombay: Himalaya Publishing House.
9. Pike, A.; Andrés Rodríguez-Pose and John T. (Eds.) (2010). *Handbook of Local and Regional Development*. Oxford: Routledge.
10. Raychoudhy, J. (2001). *An Introduction to Development and Regional Planning: With Special Reference to India*. Kolkata: Orient Blackswan.
11. Raza, M. (Ed.) (1988) *Regional Development, Contribution to Indian Geography*. New Delhi: Heritage Publishers.
12. Thakur, B.; Sharma, H.S. and Misra, S. (2017). *Regional Development Theory & Practice*. New Delhi: Concept Publishing Company.
13. Thakur, R.R. et al. (Eds.) (2020). *Urban and Regional Planning and Development, 20th Century Forms and 21st Century Transformations*. Switzerland: Springer International Publishing.