

**Syllabus Prescribed for M.A. Third Year PG Programme
Programme: M.A. Geography**

Semester III Paper – I

Code of the Course/Subject	Title of the Course/Subject	(Total Number of Periods)
DSC-1.3 TGR	Contemporary Applied Technological Advancements In Geography Research	60 Periods of 1 hours

COs

1. Understand the principles and applications of Geographic Information Systems (GIS).
2. Explore remote sensing technologies and their geographical applications.
3. Learn about spatial data analysis and modeling.
4. Examine the use of drones and UAVs in geographic research.
5. Investigate the role of big data and machine learning in geography.
6. Analyze case studies of applied technological advancements in various geographical contexts.

Unit	Content
Unit I	Introduction to Contemporary Geography Research: Introduction to use of Technology in Geography Research : Nature, Characteristics, Significance, Historical context of technology in geography, Trends and challenges in contemporary geography research (12periods)
Unit II	Use of ICT in Geography Research: Use of ICT for scheduling, planning, time management and accelerating progress of research Various issues with respect to the internet material other than ‘literary work’ and its use for the purpose of research (12periods))
Unit III	Big Data and Geospatial Analytics: Introduction to big data in geography research, Tools and techniques for big data analysis in geography, Geospatial analytics techniques for large-scale datasets (12periods)
Unit IV	Emerging Technologies in Geography: Internet of Things (IoT) and its geographic applications. Use of computer for data management and data manipulation. Various software helpful for data presentation, tabulation and arrangement in accordance with variable (12periods)
Unit V	The use of technology for fieldwork in Research: Using mobile technology in the field Using smart phone applications .Reading: case studies, Using technology for management and analysis of fieldwork data ,Virtual fieldwork , Reading about virtual fieldwork. (12periods)

Reference:

1. Bailly A and L J Gibson (2013), *Applied Geography: A World Perspective*, Springer Science and Business Media
2. Ingle P.O. (2012) *Scientific and Technical Report Writing*.
3. [Jerzy Bański](#) [Michael Meadows](#) (Editor) (2023): *Research directions, challenges and achievements of modern geography*, Springer Verlag, Singapore Edition 1st ed. Publication
4. Kothari C. R. (2004) *Research Methodology : Methods and Techniques*, New Age International (P) lmt
5. [Lex Comber](#) and [Chris Brunsdon](#) (2021): *Geographical Data Science and Spatial Data Analysis* Sage India Publication
6. [Mishra](#) H. N.(2017) : *Research Methodology in Geography*, Rawat Publication
7. Osman BT.(2006): *Geography In formation Systems, GIS* Khartoum, Sudan Open University Pacione, Michael (1999), *Applied Geography: Principles and Practice*, Psychology Press

8. Rifaat Abdalla (2024): Geographic Information Systems - Data Science Approach
9. Susan J. Smith, (2023),: Research Handbooks in Geography series, Edward Elgar Publication
10. Stanley D. Brunn • Susan L. Cutter • J.W. Harrington, Jr. (Eds) (2023), : Geography and Technology, Kluwer Academic Publisher

Syllabus Prescribed for M.A. Third Year PG Programme
Programme: M.A. Geography
Semester III Paper – II

Code of the Course/Subject	Title of the Course/Subject	(Total Number of Periods)
DSC-II.3/ HGT	History of Geographical Thought	60 Periods of 1 hours

Course Outcomes:

1. Students will understand the philosophical and methodological foundations of the subject and its place in the world of knowledge.
2. Student Familiarities with the major landmarks in development of geographic thoughts of different periods of time

Unit	Content
Unit I	Geographical knowledge of the ancient world: Contribution of Greek and Roman geographers, Dark Age, Geography of medieval period: Contribution by Arab geographers, Contributions of explorers: Marco Polo, Christopher Columbus, Vasco- da -Gama, Ferdinand Magellan, Captain James Cook (12 periods)
Unit II	Founders of modern geographical thoughts 1) Alexander Von Humboldt, 2) Carl Ritter, 3) Friedrich Ratzel, 4) Vidal de la Blache, 5) Ellen Churchill Semple, 6) Richard Hartshone (12 periods)
Unit III	Dichotomy and dualism: Environmental determinism, Cultural OR Social determinism, Dualism in Geography : Physical and Human Geography, Systematic and Regional Geography (12 periods)
Unit IV	Conceptual development: Aerial differentiation, Spatial analysis, Locational analysis, System analysis, Models in Geography : Significance and need of models in Geography, Types of models, Explanations in Geography (12 periods)
Unit V	Modern approaches in Geography: Positivism, Radicalism, Behaviouralism, Humanism and Postmodernism, Paradigms in Geography, Recent trends in Geography (12 periods)

Course Material/Learning Resources

Text books:

Reference Books :

- 1) Arild H.J. (1999) : 'Geography : History and Concept, SAGE Publication, London.
- 2) Alber, Ronald, (1971) Adams, John S. Gould, Peter: 'Spatial Organization : The geographer's view of the world, Prentice Hall, New Jersey.
- 3) Amedeo, Douglas (1971): 'An Introduction to scientific reasoning in Geography, John Wiley, U.S.A.
- 4) Graithwaite E.B. (1960) : 'Scientific Explanation, Harper Torch Book, New York.
- 5) Chorley, R.J. (Ed) : 'Directions in Geography, Matheun and Co., London.
- 6) Dickinson, R.E. (1969) : 'The Makers of Modern Geography,' Prentice Hall of India, New Delhi
- 7) Dixit R.D. (1997) : 'Geographical Thought ; Contextual History of Ideas, Prentice Hall, New Delhi.
- 8) Dixit R.D. (ed) (1994) : 'The Art and Science of Geography - Integrated readings,' Prentice Hall of India, New Delhi.
- 9) Freeman T.W. (1965) : 'Geography as Social Science,' Harper and Row Publishers New York.
- 10) Harvey. D. (1969) : 'Explanation in Geography,' Edward Arnold, London.
- 11) Hartshorne, R. (1959) : 'Perspectives of Nature of Geography, Rand McNally & Co.
- 12) Husain M (2001) : 'Evolution of Geographic Thought,' Rawat Publication, Jaipur, New Delhi.
- 13) Johnston, R.J. (1983) : 'Philosophy and Human Geography,' Edward Arnold, London.
- 14) Johnston R.J. (1988) : 'The future of Geography,' Methuen, London.
- 15) Kaushik, S.D. : 'Bhugolik Vichardharayeavam Vidhitantra' (Hindi)
- 16) Minshull R. (1970) : 'The Changing Nature of Geography,' Hutchinson University Library, London.
- 17) Richard, P. (1998) : 'Modern Geographical Thought,' Blackwell, Singapore.
- 18) Shrivastava V.K. (2002) : 'Bhugolik Chintan Ke Aadhar (Hindi)

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Programme: M.A. Geography
Semester III Paper – III

Code of the Course/Subject	Title of the Course/Subject	(Total Number of Periods)
DSC-III.3 / PG	Population Geography	45 Periods of 1 hours

Course Outcomes:

1. Analyze the types of data of population Geography.
2. Describe the distribution and density of population.
3. Apply the theories of population in arriving at solutions to the issues.
4. Investigate Current Issues and Problems in India.

Unit	Content
Unit I	Meaning, nature, scope and significance of population Geography, Relationship with other disciplines, Approaches and Methodology, Sources of Population data and their level of reliability. (9 periods)
Unit II	World Population : Growth, Distribution and density, Factors Influencing Population growth, distribution and density, Theories of population growth Malthus, Neo-Malthusian, Marx, Demographic Transition Theory (9 periods).
Unit III	Components of population change: Fertility – measures and methods of estimation, spatiotemporal variations, Mortality – Measures and methods of estimation and spatiotemporal variations, Migration –Direct and indirect measures, Types of migration, Determinants of migration, Migration theories: Ravenstein and Everett Lee, Epidemiological Transition (9 periods)
Unit IV	Population Composition: Sex composition, Age composition, Occupational composition, Religion composition, Literacy composition and their determinants (9 periods)
Unit V	Population in India – Growth, distribution and density, their pattern, Composition of population in India – Sex, Age, Occupation, Religion, Literacy, Rural-Urban Composition, Changing nature of Indian Population Policies. (9 periods)

Course Material/Learning Resources

Text books:

Reference Books :

- 1) Agarwal J.C. (2004) : 'Population Education,' Shirpa Publication, Delhi.
- 2) Agarwal S.N. (1974) : 'India's Population Problems,' Mcgraw Hill Publishing Co.,Ltd., New Delhi.
- 3) Barrett H.R. (1992) : 'Population Geography,' Oliver and Boyd, Longman House, Harlow.
- 4) Bhend, A., (2011) Kanitkar, T.: 'Principles of Population Studies,' Himalaya Publishing House, Mumbai.
- 5) Birdsell N., (2003) Kelley A.C., Sinding S.,: 'Population Matters : Demographic change, Economic growth and poverty in developing Countries,' Oxford University Press Oxford.
- 6) Brue New Bold, N.(2010): 'Population Geography : Tools and Issues,' Rowman & Littlefield Publishers, Inc, U.K.
- 7) Bogue, D.J. (1969) : 'Principles in Demography,' John Wiley, New York.
- 8) Bose Ashish et al (1974): 'Population in India's Development (1947-2000);' Vikas Publishing House, New Delhi.
- 9) Berelson, B. (1974) : 'Population Policy in Developed Countries,' Macmillan London
- 10) Chandana R.C. (2013) : 'Population Geography,' Kalyani Publishers, Ludhiana, Delhi.
- 11) Clark J.I. (1972) : 'Population Geography,' Pergamon Press, Oxford.
- 12) Crispin, J. (2000) Jegede J.: 'Population, Resource and Development,' Harper Collins, Education 2nd edition.
- 13) Crook, Nigel (1997) : 'Principles of Population and Development,' Pergamon Press, New York.
- 14) Coale, A.J. (1958) and Hoover, E.M.: 'Population Growth and Economic Development in Low Income countries,' Amit Publishers, New Delhi.

- 15) Daugherty, (1998)Helen Gin, KennethC.W. Kammeyir: ‘An Introduction to Population,’ (2nd edition), The Guilford Press, New York, London.
- 16) Davis, K. (1951) : ‘Population of India and Pakistan,’ Princeton University Press,Princeton.
- 17) Desoza, A.A. (1983) : ‘Indian Population Problems in Perspective and Social Action,’ Concept Publications, New Delhi.
- 18) Dyson T. (2010) : ‘Population and Development : Demographic Transition, 2ndBooks Ltd.
- 19) Ehrlich, P.R. (1996)and Ehrlich, A.H.: ‘Eco-science : Population, Resources, Environment (6th edition) W.H. Freeman and Company, San Francisco.
- 20) Garnier, B.J. (1970) : ‘Geography of Population, Longman, London.
- 21) Gould WTS (2009) : ‘Population and Development : Perspective on Development,Routledge.
- 22) Hazel B.R. (1994) : ‘Population Geography,’ Singapore Publishers Pvt. Ltd.,Singapore.
- 23) Hausier, Philip M.(1959)&Duncon (Eds): ‘The Study of Population,’ Universtiy Press, Chicago.
- 24) Mamoria, C.B. (1981) : ‘India’s Population Problems’
- 25) PandeyHimanshu (1993): ‘Population Growth and Migration Models,’ RadhaPublications, New Delhi.
- 26) Premi, M.K. (1991) : ‘India’s Population : Heading Towards a Billon, B.R.Publishing Corporation.
- 27) Shrinivasan, K. (1998) : ‘Basic Demographic Techniques and Applications,’ SagePublications, New Delhi.
- 28) Sundaram K.V. (1986)andSudeshNangia (ed): ‘Population Geography, Heritage Publication, Delhi.
- 29) Woods, R. (1979) : Population Analysis in Geography, Logman, London.
- 30) Zelinsky Wilber (1966) : ‘A Prologue to population Geography,’ Prentice Hall

Syllabus Prescribed for M.A. Third Year PG Programme
Programme: M.A. Geography
Semester III Paper – IV (Elective)

Code of the Course/Subject	Title of the Course/Subject	(Total Number of Periods)
DSE-III / U.G	Urban Geography (Elective)	45 Periods of 1 hours

Course Outcomes: At the end of the course, the student shall be able to:

- 1 Analyze the theories of urban evolution and growth, Hierarchy of urban settlements
- 2 Understand the various aspects of urban place : location, site and situation; Rank-size rule and Law of primate city
- 3 Understand the concept of urban hierarchies
- 4 Understand the patterns of urbanization in developed and developing countries
- 5 Understand the ecological processes of urban growth; urban fringe; city-region
- 6•Analyze the models on city structure

Unit	Content
Unit I	The scope, status and significance of Urban Geography, Approaches to the study of urban Geography, Geography and urbanism, Origin and growth of urban places: bases and process of urbanization from ancient, medieval and modern period.. (12 periods)
Unit II	Urban functions : Definition and classification, Determinants of Urban functions, and geographical situation, Classification of Urban settlement on the basis of size and functions Methods of functional, Classification of towns – Empirical method, Empirical-cum Statistical Method and pure statistical method (9 periods)
Unit III	Urban Morphology – Factors influencing on Urban morphology, Process of development of Urban morphology. Theories of urban land use : Concentric Zone theory, Sector theory, Multiple Nuclei Theory, Concept and characteristics of C.B.D., Conurbation, Urban Agglomeration (9 periods)
Unit IV	Concept of City region, Umaland, Hinterland and Sphere of influence area, Methods of delimitation, Rural-urban fringe, Concept of Megalopolis and Metropolitan region. (9 periods)
Unit V	Urban hierarchies and central place concepts – Rank size rule, central place theory of Christaller and Losch, Theory of parroux and Boudeville, Urbanization in India – Trends of Urbanization in India, Urban problems, Urban planning and policies in India. (9 periods)

Course Material/Learning Resources

Text books:

Reference Books:

- 1) Berry, B.J.L. (1970) and Horton F.F.: 'Geographic Perspectives on Urban System,' Prentice Hall, Englewood Cliff, New Jersey.
- 2) Bansal (1990)Sureshchandra: 'NagriyaBhugol' (Hindi) MinakshiPrakashan, Meerut, New Delhi.
- 3) Bose, A (1980) : 'India's Urbanization, Tata McGraw Hill, New Delhi.
- 4) Carter H (1979) : 'The Study of Urban Geography, Arnold Heinemann, London.
- 5) Chorely R.J.O., (1966)Haggett P (ed): 'Models in Geography, Methuen, London.
- 6) Dickinson, R.E. (1964) : 'City and Region,' Routledge, London.
- 7) Everson, J.A. &Fitz Gerald B.P.: 'Concepts in Geography, 3-Inside the city,' Longman, London.
- 8) GarnierBeaujen J.(1967) & Chabot G: 'Urban Geography,' Longman, London.
- 9) Gibbs J.P. (1961) : 'Urban Research Methods D. Von Nostrand C. Inc. Princeton,New Jersey.
- 10) Hall, T. (2006) : 'Urban Geography, Routledge, London.
- 11) Johnston J.H. (1974) : 'Urban Geography, Pergoman Press, Oxford.
- 12) King L.J., (1978)Golledge R.G.: 'Cities, Space and Behaviour,' Prentice Hall, Englewood Cliff, New Jersey.

- 13) Kundu A. (1992) : 'Urban Development and Urban Research in India,' KhannaPublication.
- 14) Mandal R.B. (2000) : 'Urban Geography,' Concept Publishing Company, NewDelhi.
- 15) Mayer Harold M(1967)& Kohn Clyde : 'Reading in Urban Geography,' Central Book Depot. Allahabad.
- 16) Northam Ray M.(1975): 'Urban Geography John Kliley and Sons, Inc, New York
- 17) Prakasa RaoVLS(1983): 'Urbanization in India – Spatial dimensions,' Concept Publishing Company, New Delhi.
- 18) Putnam G. Robert,(1970) Taylor F.J.,Kettle P.G. : 'A Geography of Urban Places – Selected Readings,' Methuen, London.
- 19) Ramchandran, R.(1994): 'Urbanization and Urban Systems in India,' Oxford University Press, New Delhi.

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Semester III Paper – V (Elective)

Code of the Course/Subject	Title of the Course/Subject	(Total Number of Periods/week)
DSE-III /POG	Political Geography	45 Periods of 1 hours

Cos

- 1) The students are fully aware about the Political geography as a fundamental branch of Human Geography.
- 2) The students are familiarized with the basics and fundamental concepts and theories of Political Geography.
- 3) The students are aware about resource conflicts and politics of displacement
- 4) Understand the different dimensions of electoral geography and resource conflicts.
- 5) The students are aware about Geopolitical importance of SAARC region

Unit	Content
Unit I	Definition, Nature , Scope and Significance of Political Geography – Recent Developments in Political Geography – Approaches to the study of Political Geography . (9 periods)
Unit II	Themes in Political Geography - State, Nation – Nation Building - Frontiers and Boundaries – Colonialism - De-Colonialism - Neo-Colonialism - Federalism and other forms of Governance - The Changing Pattern of World Powers - Perspectives on Core-Periphery Concept . (9 periods)
Unit III	Electoral Studies in Political Geography – Geography of Voting, Geographic Influences on Voting pattern, Geography of Representation. (9 periods)
Unit IV	Geopolitics & its origin:-Heart land Rim land theories ,Evolution of state-origin of state and Nation, Types of Boundries & Frontiers, Boundary Problem in India. (9 periods)
Unit V	Geopolitical significance of Indian oceans , Geopolitical importance of SAARC region in modern world. The changing political map of India, conflict resolutions insurgency in Frontal States. (9 periods)

Reference-

1. Adhikari, S. (1997): Political Geography, Rawat Publications, Jaipur
2. Colin Flint : Introduction to Geopolitics, Routledge, 2011
3. Cox, K. (2002): Political Geography: Territory, State and Society, Wiley-Blackwell
4. Dikshit, R. D. (1994): Political Geography, Tata McGraw Hill Publication, New Delhi
5. Glassner, M. L., De Blij, H. J. and Yacher, L. (1980): Systematic Political Geography, John Wiley
6. John, R. S. (2002): An introduction to Political Geography, Taylor & Francis
7. Martin Jones, Rhys Jones, Michael Woods : Introduction to Political Geography – Space, Place and Political, Routledge, 2004.
8. Kevin R Cox, Murray Low and Jennifer Robinson, The Sage Handbook of Political Geography, Sage Publishers, 2008.
9. Taylor Peter : Political Geography, Longman, London,1985
10. Verma M K (2004): Development, Displacement and Resettlement, Rawat Publications, Delhi
11. Hodder Dick, Sarah J Llyod and Keith S McLachlan (1998), Land Locked States of Africa and Asia (vo.2), Frank Cass
12. राजकीय भूगोल- [Dr. Vitthal Gharpure](#)
13. राजनीतिक भूगोल- .Dr..Sunita Singh. Publisher: K. K. Publications, Delhi.

Syllabus Prescribed for M.A. Second Year PG Programme

Programme: M.A. Geography

Semester- III

DSC- I.3 Lab Practical Paper –I

Code of the Course/Subject	Title of the Course/Subject (Laboratory/Practical/practicum/hands-on/Activity)	(No. of Periods/Week)
DSC-I.3	Lab Practical-I	2 Periods of 2hours / Week/ Batch

COs.

1. Understand the various Techniques of Spatial Analysis to Represent population data- population Density, components of population change,
2. Represent the population data – Located Diagram, Spatial distribution Map, Population Projection, Dependency Ratio, Growth Rate.
3. Techniques of Spatial Analysis to understand the Urban and Rural Settlement

*** List of Practical/Laboratory Experiments/Activities etc.**

Unit	Content	
Unit I	Techniques of Spatial Analysis : Population data. a) Population Density : i) Arithmetic Density. ii) Economic Density iii) Agricultural Density iv) Critical Density b) Components of population change. i) Crude Birth Rate ii) Age specific Birth Rate iii) General fertility Rate iv) Crude Death Rate v) Age specific Mortality vi) Infant Mortality Rate vii) Net Migration viii) Migration Index.	Marks 20
Unit-II	Techniques of Spatial Analysis : Population Data – A) Located Diagrams. i) Proportional Squares ii) Proportional Circles iii) Proportional Spheres iv) Proportional Cubes v) Divided Circles vi) Block Diagrams vii) Age and Sex Pyramids : Compound, Superimposed Pyramid. B) Spatial Distribution Maps. i) Dot Maps – Population Distribution. ii) Choropleth Maps – Sex and Age distribution, Occupational Structure, iii) Isopleth Maps : Population Density, Population Potentials. C) Population Projection, Dependency Ratio, Growth Rate.	Marks 20
Unit III	A) Techniques of Spatial Analysis – Urban Settlement i) Basic measures of urbanization. ii) Index of Centrality iii) Nearest Neighbor Analysis iv) Shop-rent Index. v) K3, K4 and K7 value computation. vi) Rank size Rule.	Marks 20
Unit-IV	Techniques of spatial Analysis : Rural Settlement	Marks 20

	i) Methods of Dispersion and Concentration of Rural Settlements. ii) Measurement of Shape (Pattern) of Rural Settlements. iii) Distance Decay Graph. iv) Density of Housing. v) Distance Decay Graph.
Unit- V	Viva Voce and Practical Record Book. Marks20

References :

- 1) Aggarwal J.C. (2004) : 'Population Education' Shipra Publications Delhi.
- 2) Bhende A.A. (1993) And Kanitkar: 'Principles of Population Studies,' Himalaya Publishing House, Bombay.
- 3) Dube Kamala (1994) and Singh M.B. : 'Jansankhya Bhugol,' Rawat Publications, Jaipur
- 4) Haggett P. (1965) : 'Locational Analysis in Human Geography,' Edward Arnold, London.
- 5) Hall, T. (2006) : 'Urban Geography,' Routledge, London.
- 6) Khullar Dr. (1997) : 'Practical Geography,' King Books, Delhi.
- 7) Lawrence, G.R.P. : 'Cartographic Methods,' Mathur Co. London.
- 8) Mandal R.B. (2001) : 'Introduction to Rural Settlements,' Concept Publishing Company, New Delhi.
- 9) Mishra R.P. (1986) and Ramesh A. : 'Fundamental of Cartography'
- 10) Monkhouse, FJR (1971) and Wilkinson H.R.: 'Maps and Diagrams,' Methuen, London.
- 11) Negi B.S. (1995) : 'Practical Geography' 3rd Edn, Kedar Nath Ram Nath, Meerut and Delhi.
- 12) Pacione, M. (2009) : 'Urban Geography - Global Perspective,' Routledge, London.
- 13) Pathak, K.B. (2013) and Ram, F. : 'Techniques of Demographic Analysis,' Himalaya Publishing House, Mumbai.
- 14) Ramchandran R. (1997) : 'Urbanization and Urban System in India,' Oxford University Press, Delhi.
- 15) Robinson, A.H. (1995) : 'Elements of Cartography,' John Wiley & Sons, U.S.A.
- 16) Sanant S.B. (1994) and Athavale : 'Population Geography,' Mehta Publishing House, Pune.
- 17) Sarkar A.K. (1977) : 'Practical Geography: A Systematic Approach,' Orient Longman, Kolkata.
- 18) Siddharth, K. (2013) and Mukherjee, S. : 'Cities, Urbanization and Urban System,' Kosalaya Publishing Pvt. Ltd., New Delhi.
- 19) Singh and Kanojia (1972) : 'Map Work and Practical Geography,' Central Book Depot, Allahabad.
- 20) Singh Gopal (2001) 'Map Works and Practical Geography,' Vikas Publishing House Pvt. Ltd.
- 21) Singh R.L. (2004) and Singh R.B. : 'Elements of Practical Geography,' Kalyani Publishers, New Delhi, Ludhiana
- 22) Singh R.L. (2011) : 'Fundamentals of Practical Geography,' Sharda Pustak Bhavan, Allahabad.

M. A./M.Sc. Part-II (CBCS)

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Programme: M.A. Geography

Semester- III

DSC- II.3 Lab Practical Paper –II

Code of the Course/Subject	Title of the Course/Subject (Laboratory/Practical/practicum/hands-on/Activity)	(No. of Periods/Week)
DSC-II.3	Lab Practical-II	2 Periods of 2 hours / Week/ Batch

COs-

1. Understand meaning and use of statistics and its application in Geography
2. Measures of central Tendencies using group and Un group data
3. Know the various methods of to analyse Geographical data
4. Correlation Analysis- various types of correlation method, significance of T, test

*** List of Practical/Laboratory Experiments/Activities etc.**

Unit	Content	
Unit I	Statistical Techniques: Definitions of Statistics, Types of Statistical tools, Importance and Uses of Statistics, Limitations of Statistics, Fallacies in Statistics, Importance and Uses of Statistical Techniques in Geography. Presentation of Statistical Data – Frequency Distribution / Frequency Graph : Histogram, Frequency Polygon, Frequency Curve, Ogive Curve.	Marks 20
Unit-II	Measures of Central Tendencies: Calculation of mean, Median, Mode, Quartile, for grouped and ungrouped data, Measures of Dispersion : Absolute Measurements : Mean Deviation, Quartile deviation and Standard Deviation.	Marks 20
Unit III	Relative Measurements: Coefficient of Mean Deviation, Co-efficient of Quartile Deviation, Coefficient of Variations, Skewness: Karl Pearson's Method, Bowley's Method, Comparison between Dispersion and Skewness.	Marks20
Unit-IV	Correlation Analysis: Definitions of Correlation, Types of Correlations, Methods of Studying Correlation, Karl Pearson's Co-efficient of Correlation, Merits and Limitations, Probable error, Spearman's Rank Correlation Co-efficient, Significance of 't' Test for Correlation Coefficients, Time Series Analysis : Moving averages, Least square Method and drawing of line of best fit, Logistic curve.	Marks 20
Unit- V	Viva Voce and Practical Records Book.	Marks 20

References :

- 1) Baily, T.C. (1995) and Gatrell, A.C.: 'Interactive Spatial Data Analysis,' Prentice Hall, London.
- 2) Cole, J.P. & (1968) C. A. M. 'Quantitative Techniques in Geography' John Wiley & Sons, Inc. New Delhi.
- 3) David Unwin (1981) : 'Introductory Spatial Analysis, Methuen, London.
- 4) Dickinson, G.C. (1977) : 'Statistical Mapping, and the Presentation of Statistics,' Edward Arnold Ltd., London.
- 5) Ebdon, D. (1977) : 'Statistics in Geography' Basil Blackwell, Oxford.
- 6) Fotheringham, A.S.(2000) Bunsdon, C., Charlton, M.: 'Quantitative Geography : Perspectives on Spatial Data Analysis,' Sage Publication Ltd., London.
- 7) Frank, H and (1994) Althoen S,C,: 'Statistics: Concepts and Applications,' Cambridge University Press, Cambridge.
- 8) Gregory, S. (1978) : 'Statistical Methods for Geographers,' Longman, London
- 9) Griffith, D.A., (2002)Layne, L.J.: 'A Case Book for Spatial Statistical Data Analysis: A Compilation of Analyses of Different Thematic Data sets.
- 10) Gupta, C.B. (1978) : 'An Introduction to statistical Methods, Vikas Publication House, New Delhi.
- 11) Gupta, S.P. (2000) : 'Statistical Methods,' Sultan Chand and Sons, New Delhi.
- 12) Hammond, R. (1991)and McCullagh, P.: 'Quantitative Techniques in Geography,' Clarendon Press, Oxford.
- 13) Hoel P.G. : 'Elementary Statistics,' Wiley, New York.
- 14) Johnston R.J. (1973) : 'Multivariate Statistical Analysis in Geography,' Longman,London.
- 15) Karlekar Shrikant (2013)and Kale Mohan: 'Statistical Analysis of Geographical Data,' Diamond Publication, Pune.

- 16) Khullar Dr. (1997) : 'Practical Geography,' King books, Delhi.
- 17) Mahmmod Aslam(1977): 'Statistical Methods in Geographical Studies,' Rajesh Publication, New Delhi.
- 18) Mann, P.S. (2007) : 'Introductory Statistics,' John Wiley and Sons, New Delhi.'
- 19) Maurice Yeat (1974) : 'An Introduction to Quantitative Analysis in Human Geography,' McGraw Hill, New York,
- 20) Rogerson, P.A. (2010) : 'Statistical Methods for Geography,' Sage Publication, London.
- 21) Shukl U and (2001) Kulkarni S.T.:Sankhiki Tatvaaani Vyawhar, Pimplapure And Company Publishers, Nagpur (Marathi)
- 22) Singh R.L. (1990) : 'Elements of Practical Geography,' Kalyani Publishers, New Delhi.
- 23) Taylor P.J. (1977) : 'Quantitative Methods in Geography,' Houghton, Mifflin, Boston.

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Programme: M.A. Geography

Semester- III

Research project Phase I

Code of the Course/Subject	Title of the Course/Subject (Laboratory/Practical/practicum/ hands-on/Activity)	(No. of Periods/Week)
Research Project (RP 1)	Research Project Phase -I	2 Periods Theory of 1 hours & 2 Periods Practical of 2 hours /Week

COs

- Demonstrate the ability to choose methods appropriate to research aims and objectives
- Choose the appropriate research design and develop appropriate research hypothesis for a research project
- Develop the ability to apply the methods while working on a research project work
- Understand the limitations of particular research methods
- Develop skills in qualitative and quantitative data analysis and presentation
- Describe the appropriate statistical methods required for a particular research design
- Develop advanced critical thinking skills
- Demonstrate enhanced writing skills

Project Components:

1) Research and Planning:

- Identify the key geographical concepts and topics .
- Select a suitable study area that exemplifies these concepts (e.g., urban area,rural area river basin, etc.).
- Conduct background research on the chosen area to understand its geography, history, and relevant issues.

2) Data Collection:

- Use a combination of primary and secondary data collection methods:
- Primary data: Field observations, surveys, interviews, and measurements.
- Secondary data: Maps, satellite imagery, census data, government reports, etc.
- Gather information on elements like landforms, climate, population, land use, economic activities, etc.

3) Literature Review

- Purpose of a literature review
- Finding and evaluating sources
- Annotated bibliographies

4) Research Questions and Hypotheses

- Formulating research questions
- Developing hypotheses
- Importance of clarity and focus

5) Research Design and Methodology

- Overview of research designs (experimental, correlational, etc.)
- Selecting an appropriate methodology
- Ethical considerations in research

Topics to Explore:

- Urbanization and its impact on the environment and society.
- Climate change and its effects on local ecosystems.
- Human migration patterns and factors influencing them.
- Economic activities and their spatial distribution.
- Analysis of local vegetation and biodiversity.
- Socio Economic Status of Rural / Urban Population
- Impact of Urban center on Rural Population
- Spatio Temporal Analysis of cropping pattern
- Rainfall Trends and Variability
- Socio -Economic study of any rural area.
- Environment issues in rural settlement
- Empirical study of transport net work
- Agricultural productivity
- Any subject related to Geography

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