

Rayat Shikshan Sanstha's
SADAGURU GADAGE MAHARAJ COLLEGE KARAD
Accredited By NAAC with 'A+' Grade
An Autonomous College
Department of Geography



[Affiliated to Shivaji University, Kolhapur]



Revised Syllabus of
M.A. / M.Sc. Geography Part - I
(CHOICE BASED CREDIT SYSTEM)

Implemented from July 2022



Programme and Course Guidelines (for CGPA Courses):

1. Title of the Course: M.A./M.Sc. in Geography

2. Year of Implementation: Revised syllabus will be implemented from academic year 2022.

3. Programme Duration: The M.A./M.Sc programme duration is of two years comprising of four semesters. Each semester spanning for 6 months of minimum 120 working days (minimum 90 teaching days).

4. Scheme of Examination:

Paper Type	CCE	SEE	Total Marks	Credit per Paper	No. of Paper	Total Credits
Theory	20	80	100	4	16	64
Practical / Project	20	80	100	4	08	32

5. Course Structure (CBCS):

Paper No.	Paper Code	Title of Paper	Credits
M.A./M.Sc. Geography Sem. I			
1		Fundamentals of Geomorphology	4
2		Principles of Climatology	4
3		Economic Geography	4
4		Geography of Population and Human Resource Development	4
Practical 1		Practical's in Geomorphology and Surveying	4
Practical 2		Analysis of Socio-economic and Climatic Data	4
M.A./M.Sc. Geography Sem. II			
7		Applied Geomorphology	4
8		Applied Climatology and Climate Change	4
9		Advanced Cartography and Surveying	4
10		Social and Cultural Geography	4
Practical 3		Computer Applications And Quantitative Techniques In Geography	4
Practical 4		Statistical Techniques in Geography	4



6.A. Nature of Theory Question Paper:

Question No.	Type of Question	Number of Questions to be Asked	Number of Questions to be Answered	Marks per Question	Total Marks
Q1.	Objective type (MCQ)	08	08	02	16
Q2.	Short Answer (Definition type)	04	04	04	16
Q3.	Short Notes (Descriptive type)	03	02	08	16
Q4.	Long Answer/ Essay type	02	01	16	16
Q5.	Long Answer/ Essay type	02	01	16	16
Total					80

6. B. Nature of Practical Question Paper:

Question No.	Type of Question	Number of Questions to be Asked	Marks per Question	Total Marks
Q1.	Practical/ Lab Assessment	2	15	15
Q2.	Practical/ Lab Assessment	2	15	15
Q3.	Practical/ Lab Assessment	2	15	15
Q4.	Practical/ Lab Assessment	2	15	15
Q5.	Journal & Viva	-	20	20
Total				80

7. Internal Evaluation (CCE):

Sr. No.	Type of Question	Total Marks
1.	Class Test	10
2.	Online Test/ Home Assignment	10
Total		20



8. Program Educational Objectives (PEOs):

1. To enhance students' ability to apply their specialized knowledge in the geographical domain.
2. To develop employability skills and competencies to serve the job requirements in the society.
3. Inspire students to develop the abilities among them to offer services in the entrepreneurial environment.
4. To cultivate the interest among students to conduct research activities in the discipline of Geography.

9. Programme Outcomes (POs):

1. Students will have comprehensive knowledge in the discipline of Geography.
2. They will have ability of making comprehensive analysis, interpret spatial problems, and suggest proper solutions by using theoretical, methodological, and instrumental knowledge of Geography.
3. Good employability skills as per current need of the society to compete in the competitive world.
4. They will have good understanding about proper utilization of natural resources through geographical knowledge.
5. Aware about the regional and national environmental issues, recent trends, and technological advancements in the discipline of Geography.
6. Develop research interest to solve critical and emerging societal issues related to geography and the surrounding environment.



M.A./M.Sc. I Sem. - I

FUNDAMENTALS OF GEOMORPHOLOGY

(Teaching Hours – 60, Credit – 04)

Course Outcomes (COs):

1. To understand the development of geomorphic thought throughout the time with a review of fundamental concepts of geomorphology.
2. To look into the evolution of continents and ocean basins with continental drift theory.
3. To know the endogenetic and exogenetic forces controlling landform development with special reference to the denudational processes.
4. To see the mountain building activities through different theories.

Module - I: Introduction to Geomorphology

- 1.1 Definition, Nature & Scope of Geomorphology
- 1.2 Fundamental Concepts in Geomorphology: Principle of Uniformitarianism.
- 1.3 Development of Geomorphic Thought
- 1.4 Recent Geomorphology

Module - II: Evolution of Continents and ocean

- 2.1 Characteristics of Land and water distribution
- 2.2 Continental drift theory of Wegener
- 2.3 Theory of Plate Tectonics
- 2.4 Theory of Sea floor spreading

Module - III: Factors controlling landform development

- 3.1 Classification of Endogenetic forces
- 3.2 Classification of Exogenetic forces
- 3.3 Denudational processes: Weathering
- 3.4 Denudational processes: Erosion and Mass movement

Module IV: Denudational Agents

Dynamic agencies of denudation and their work:

- 4.1 Fluvial
- 4.2 Glacial
- 4.3 Coastal
- 4.4 Aeolian.



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1. Allaby, Michael (2008): Oxford Dictionary of Earth Science, Oxford University Press, New York.
2. Bloom, A.L. (1991): Geomorphology, 2nd Ed Englewood Cliffs, M.J. Prentice Hall.
3. Chorley, R.J. Schumm, S.A. & Sugden, D.E. (1985): Geomorphology, Methuen & Co. Ltd., London, New York.
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5. Christopherson, R.W. (1995): Elemental Geosystems: A Foundation in Physical Geography, Prentice Hall Englewood Cliffs, New Jersey.
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18. Thornbury, W.D. (1969): Principles of Geomorphology, Wiley Eastern Ltd. New Delhi.
19. Wadia, D.N. (1993): Geology of India, Tata McGraw Hill Edition, New Delhi.
20. Worcester, P. G. (1948): Textbook of Geomorphology, Princeton, D. Van, Norstrand



M.A./M.Sc. I Sem. - I

PRINCIPLES OF CLIMATOLOGY

(Teaching Hours – 60, Credit – 04)

Course Outcomes (COs):

1. To distinguish the weather and climate with an understanding of structure and composition of Atmosphere
2. To understand the variations of weather systems in terms of Stability and Instability of atmosphere
3. To enable the students to understand the vertical and horizontal distribution of atmospheric air
4. To get complete information about Atmospheric Disturbances in terms of cyclones and anti-cyclones
5. To know the significance of synoptic Climatology in pollution studies and navigation

Module - I: Introduction to Climatology

- 1.1 Meaning, definition and Significance
- 1.2 Development of Modern Climatology
- 1.3 Structure and Composition of Atmosphere
- 1.4 Insolation, Heat Budget of Earth, Temperature distribution

Module - II: Atmosphere

- 2.1 Atmospheric Pressure
- 2.2 Winds: Types
- 2.3 Indian Monsoon: Mechanism & modern concept
- 2.4 Concept of El Nino, ENSO and La Nina

Module - III: Atmospheric Moisture

- 3.1 Humidity: types and measurements
- 3.2 Stability and Instability
- 3.3 Forms of Condensation
- 3.4 Precipitation: processes, types and forms.

Module - IV: Atmospheric Circulation

- 4.1 Air Masses: Classification and modifications
- 4.2 Fronts: characteristics and types
- 4.3 Meteorological Hazards and Disasters: Tropical Cyclones, Anticyclones, Thunderstorms, Tornadoes, Hurricanes
- 4.4 Future climate changes: risks and impacts with special reference to India



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2. Barry, R.G., and Chorley, R.J. (2010): Atmosphere, Weather and Climate, Routledge, London, 516pp.
3. Byers R.H. (1974): General Meteorology, McGraw Hill BKCo New York.
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8. Lal, D.S.: Climatology. Prayag pustak Bhavan, Allahabad.
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10. Mather J. R. (1975): Climatology : Fundamentals & Applications. Mc Graw Hills Book Co., New York.
11. Miller A., et, al. (1983); Elements of Meteorology, Merrill, Columbus.
12. Oliver J. E. (1973): Climate & Mans Environment, John Wiley & Sons; New york.
13. Robert V. Rohli, Anthony J. Vega, (2017): Climatology, Jones & Bartlett Learning; 4 edition, 418 pp.
14. Savindra Singh, (2006): Climatology, Prayag Pustak Bhavan, Allahabad.
15. Trewartha G.T, (1968): An Introduction to climate, McGraw Hill BK Co. New York.
16. Williams Sellers, (2014): Physical Climatology, New India Publishing Agency, 280 pp.



M.A./M.Sc. I Sem. - I

ECONOMIC GEOGRAPHY

(Teaching Hours – 60, Credit – 04)

Course Outcomes (COs):

1. To understand the concepts and basis of economic processes
2. To get acquainted with theories and models in economic geography
3. To get comprehensive knowledge of World energy resources, situation and distribution
4. To know about the Nature, scope and Principles of Industrial Geography
5. To understand transport and Trade policies of country
6. To get detail knowledge of economic power determinants of country and able to analyze the economic development of country.

Module - I: Introduction to Economic Geography

- 1.1 Nature, scope and branches of Economic Geography.
- 1.2 Approaches to the study of Economic Geography.
- 1.3 Basis of economic processes: Production, exchange & consumption,
- 1.4 Special Economic Zones

Module - II: Industrial Location Theory

- 2.1 Concept of Industrial Location
- 2.2 Factors of Industrial Location
- 2.3 Theory of Industrial location A. Weber
- 2.4 Theory of Industrial location A. Losch

Module - III: Power Resources

- 3.1 Resources: Concept & Classification
- 3.2 Sources of Power Resources: Conventional and Non-conventional Power Resources
- 3.3 OPEC-Energy Crisis.
- 3.4 Conservation of Power Resources

Module - IV: Transportation & Trade

- 4.1 Transportation: Modes & Importance, Accessibility and connectivity
- 4.2 Comparison of Trade Policies: INDIA, USA & CHINA
- 4.3 Comparison of National and foreign trade: INDIA, USA & CHINA
- 4.4 Trade Organizations -EEC, EFTA, WTO & GATT



References:

1. Alexander J.W. (1976): Economic Geography, Prentice Hall of India. New Delhi.
2. Alexanderson G. (1988): Geography of manufacturing, Prentice Hall of India. New Delhi.
3. Berry, Conkling & Ray (1988): Economic Geography Prentice Hall of India, New Jersey.
4. Hurst Elliott (1986): Geography of Economic Behaviour, Unwin, London.
5. Johnson R.J. & Taylor D.J. (1989): A world in crisis, Basil-Blackwell, Oxford.
6. Losch (1954): Economics of Location, Yale University Press New York.
7. Redcliff, M. (1987): Development & the environmental crisis. Methuen. London.
8. Sinha B.N.(1971): Industrial geography of India
9. Watts H.D. (1987): Industrial Geography, Longman scientific and Technical, New York.
10. Haggett, Peter: Modern Synthesis in Geography.
11. Robinson H & Bamford C. G. (1978): Geography of Transport, Macdonald & Evans USA.
12. Misra R. P.: Regional Planning, concepts, New Delhi.
13. Jones & Darkenwald : Economic Geography



M.A./M.Sc. I Sem. - I

GEOGRAPHY OF POPULATION AND HUMAN RESOURCE DEVELOPMENT

(Teaching Hours – 60, Credit – 04)

Course Outcomes (COs):

1. Infer factors influencing population distribution and density;
2. Acquire skill to describe regional patterns of population composition;
3. Compute and explore fertility, mortality and human development levels for micro, meso and macro regions.
4. Analyse the population-resource regions and discover problems arising due to over and under population.
5. Understand and create awareness about provincial aspects of gender equity, social well-being and quality of life.

Module - I: Introduction to Population Geography

- 1.1 Nature, scope and significance of Population Geography
- 1.2 Spatial pattern of Population growth - World
- 1.3 Factors affecting Population distribution patterns - World Population distribution patterns – World.
- 1.4 Sources of population data: Census, UID, NPR

Module - II: Population Processes

- 2.1 Fertility-Measures and Methods of estimation, spatio-temporal variations - India
- 2.2 Mortality-Measures and Methods of estimation, spatio-temporal variations - India
- 2.3 Migration-measures and methods of estimations.

Module - III: Population Development and Policies

- 3.1 Population as resources: over population, optimum population and Under population, Population resource region
- 3.2 Human development: Meaning, Indicators, Approaches, Measurements, Human Development Index: World Scenario with comparison of India, State level HDI.
- 3.3 Social well-being and quality of life.
- 3.4 Population Policies of Germany and India.

Module - IV: Population Theories

- 4.1 Theories of population growth: Malthus
- 4.2 Theory of Optimum population
- 4.3 Demographic Transition Model, Application of Demographic Transition Model
- 4.4 Migration: Concept, meaning, Types of Migration. factors responsible for migration



References:

1. Barrett H.R. (1992): Population Geography, Oliver and Boyd Longman House, Harlow.
2. Bhende A., Kanitkar T. (2006): Principles of Population Studies, Himalaya Publishing House, Bombay.
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15. Meadow, D.H., Meadows D.L., Randers J., and Behrens W.W. III. (1973): The Limits to Growth. I Report of the Club of Rome. The New American Library, New York.
16. Newell C. (1990): Methods and Models in Demography. The Guilford Press; 1st edition.
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M.A./M.Sc. I Sem. – I

PRACTICAL IN GEOMORPHOLOGY & FIELD SURVEYING

(Teaching Hours – 60, Credit – 04)

Course Outcomes (COs):

1. To know the methods of representation of relief.
2. Understanding the topographical maps.
3. Identification and mapping of drainage patterns
4. To look into the drainage basin morphometry.
5. To understand the field surveying methods.

Module - I

- 1.1 Methods of Representation of Relief: i) Pictorial Method ii) Mathematical Method
- 1.2 Identification & Mapping of landforms from topographical Maps:- i) Ridge ii) Saddle iii) Col. iv) Pass v) Spur; vi) Plateau vii) Escarpment viii) Cliff ix) Waterfall x) River Terraces xi) U-shaped Valley xii) V shaped Valley.

Module: II

- 2.1 Identification & Mapping of drainage patterns: i) Dendritic Drainage Patterns, ii) Trellis Drainage Patterns, iii) Radial Drainage Patterns, iv) Parallel Drainage Patterns
- 2.2 Quantitative analysis of Channel Planform: Sinuosity Index of Straight, Sinuous and Meandering channels; Analysis of Cross Profiles & Longitudinal Profile of rivers.

Module - III

- 3.1 Drainage Basin Morphometry: Delineating Drainage Basin Perimeters, Measurement of Drainage basin area, Relief/Height (H), Perimeter Length (P).
- 3.2 Drainage Basin Morphometry: Strahler Stream Order system, Calculation of Bifurcation Ratio, Circularity ratio, Elongation ratio & Drainage density, Stream Frequency, Drainage texture.

Module – IV

- 4.1 Surveying: Definitions, uses of Surveying, Classification of surveying, Introduction of UAV (Unmanned Aerial Vehicle) technology in surveying
- 4.2 Field Survey – Introduction to Transit Theodolite, Total Station - Introduction to Total Station, Components Used in Total Station Surveying; to plot a small area using measurements taken from a Total Station.



References:

1. Davis, Peter, (1974): Science in Geography Data Description & Presentation, Vol.3, Oxford University Press, London.
2. Hanwell, J.D. & Newson, M.D. (1973): Macmillan Education Ltd., London.
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4. Monkhouse, F.JR & Wilkinson, H.R: Maps and Diagrams, Mathwn & Company, London.
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M.A./M.Sc. I Sem. – I

ANALYSIS OF SOCIO-ECONOMIC AND CLIMATIC DATA

(Teaching Hours – 60, Credit – 04)

Course Outcomes (COs):

1. To identify the importance of population studies regarding the fertility, mortality,
2. To understand the socio-economic structure of population
3. To study various statistical methods for analysis of Agricultural activities.
4. To determine the agriculture productivity and analyze results.
5. To represent meteorological elements diagrammatically and interpretation of results.
6. To know methods of measurement of meteorological elements
7. To analyse interrelationship between various meteorological elements
8. To analyse present and future trends of meteorological elements.

Module - I Population Data Analysis

- 1.1 Fertility measures: Crude Birth Rate, General Fertility Rate, Mortality measures: Crude Death Rate, Infant Mortality Rate
- 1.2 Literacy measures: Crude Literacy Rate. Gross Enrolment Ratio
- 1.3 Measures of population Growth: rates, ratios- arithmetic & exponential
- 1.4 Age & Sex Pyramid: Compound and Superimposed pyramid, Human Development Index.

Module - II Agricultural Data analysis

- 2.1 Measurement of agricultural productivity- Kendall's method, Sapre and Deshpande's method.
- 2.2. Crop Combination method of Weaver and Doi.
- 2.3. Crop Concentration-Bhatia's method.
- 2.4. Crop Diversification-Bhatia's method.

Module - III Economic Data analysis

- 3.1 Nearest Neighbor Analysis
- 3.2 Trade area delimitation: Breaking Point Theory, Law of Retail Gravitation
- 3.3 Flow line charts & maps of transport flows.
- 3.4 Triangular graph- tri-linear relationship among three variables and Location Quotient

Unit-4 Climatic Data Analysis

- 4.1 Representation of Weather Data, Station Model,
- 4.2 Analysis of upper air data-Tephigram (Temperature Height diagram).
- 4.3 Comfort diagrams- Climographs. Hythergraph. Climatograph, Dispersion graphs: Temperature and rainfall dispersion Diagram
- 4.4 Water budget, and its graphical analysis, Erogographs (Crop Calendar)



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1. Lawrence, G.R.P. (1973): Cartographic methods, Methuen & Co. London.
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15. United Nation Development Program (UNDP) (1990): Human Development Reports (1990-2012)



M.A./M.Sc. I Sem. – II

APPLIED GEOMORPHOLOGY

(Teaching Hours – 60, Credit – 04)

Course Outcomes (COs):

1. To understand the cycle of erosion with different views with special reference to hill slope development.
2. To see the application of geomorphology in the view of anthropogenic and environmental geomorphology.
3. To see the application of Geographical Information System in geomorphology.

Module – I Introduction to Applied Geomorphology

- 1.1 Meaning and Concept
- 1.2 Application of Geomorphology: Urban, Environment, Regional Planning & Engineering works
- 1.3 Application of Geomorphology: Hydrology and Mineral Exploration
- 1.4 Application of GIS in Geomorphology

Module – II Evolutionary Theories

- 2.1 Geographical Cycle of Davis
- 2.2 Penck's cycle of erosion.
- 2.3 Hill Slope development: W.M. Davis, Walther Penck, Allen Wood and L.C. King.

Module – III Earth Movement

- 3.1 Geosynclinal theory of Kobbler
- 3.2 Convection Current Theory
- 3.3 Theory of Isostasy

Module – IV Endogenetic Forces

- 4.1 Earthquakes- Concept, Causes and Effects
- 4.2 Volcanic Eruption: Concept, Causes and Effects
- 4.3 Folding: Concepts and Types
- 4.4 Faulting: Concepts and Types



References:

1. Allaby, Michael (2008): Oxford Dictionary of Earth Science, Oxford University Press, New York.
2. Bloom, A.L. (1991): Geomorphology, 2nd Ed Englewood Cliffs, M.J. Prentice Hall.
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20. Worcester, P. G. (1948): Textbook of Geomorphology, Princeton, D. Van, Norstrand



M.A./M.Sc. I Sem. – II

APPLIED CLIMATOLOGY AND CLIMATE CHANGE

(Teaching Hours – 60, Credit – 04)

Course Outcomes (COs):

1. To recognize the importance of climate on human life
2. To identify and categorize climate types and climatic regions of the world
3. To understand the regional and seasonal variations of weather systems in India
4. To get comprehensive knowledge about causes and impacts of atmospheric pollution, GHGs emission, ozone layer depletion, acid rain and el-nino
5. To know about the history, recent trends, impacts and dynamics of climate change on earth
6. To assess future risks of climate change and the adaptation and mitigation options

Module – I Impact of Climate and Global Climatic Regions

- 1.1 History and relevance of applied climatology and climate change studies
- 1.2 Impact of climate on human life, soils, agriculture, and health
- 1.3 Approaches to climatic classification and climatic regions
- 1.4 Koppen's, Thornthwaite's and Trewartha's classification of world climates

Module – II Weather Systems of India

- 2.1 Characteristics of general weather systems of India
- 2.2 Climatic zones of India.- Agro climatic Zones & Bio climatic Zones
- 2.3 Weather forecasting and application of meteorological satellites with special reference to India
- 2.4 Urban Climate and Global Environment Change: Adaptation and Mitigation

Module – III Atmospheric Pollution and Global Change

- 3.1 Causes & impacts of air quality and atmospheric pollution
- 3.2 Global warming & global climate change
- 3.3 Ozone layer depletion: causes and effect
- 3.4 Application of Synoptic Climatology in pollution studies and navigation

Module – IV Climate Change

- 4.1 General overview of the climate change: Theories of Climate Change
- 4.2 Recent trends of climate change and its impact on natural and human subsystems
- 4.3 Climate change case studies: land use planning
- 4.4 Application of GIS for climate change



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M.A./M.Sc. I Sem. – II

ADVANCED CARTOGRAPHY AND SURVEYING

(Teaching Hours – 60, Credit – 04)

Course Outcomes (COs):

1. To understand basic principles of cartography and surveying
2. To explain various cartographic methods and techniques for preparation of maps and diagrams.
3. To compare the difference between manual and digital cartography
4. To acquaint with the skills regarding digital cartography
5. To identify sources and types of errors occurs during surveying
6. To get familiar with the basic aspects of linear, vertical and angular measurements of surveying.

Module – I Fundamentals of Cartography

- 1.1 Definition, nature and scope of cartography, History of cartography, Basics of geodesy, Basic principles of cartography
- 1.2 Scale- definition, types & importance, Concept of datum- vertical and horizontal,
- 1.3 Co-ordinate systems- geographical and projected,
- 1.4 Map- definition, types and significance, Cartographic methods and techniques for representation of data.

Module – II Digital Cartography

- 2.1 Introduction to digital cartography, Manual cartography vs. Digital cartography, Cartographic data and its sources.
- 2.2 Cartographic database, Map design, Digital mapping- Thematic maps, Symbolization and visualization.
- 2.3 Modern techniques of map production, Digital cartography- hardware and software.
- 2.4 Advantages and disadvantages, Applications of digital cartography.

Module – III Fundamentals of Surveying

- 3.1 Definition, classification and principles of surveying.
- 3.2 Character of surveying work- field work and office work.
- 3.3 Sources and types of errors, Precision and accuracy.
- 3.4 Units of measurements.



Module – IV Surveying Measurements

- 4.1 Linear measurement-types of ranging, Methods-approximate, direct, optical and electronic, Errors and applications.
- 4.2 Angular measurement-types of measured angles, Compass, Meridian, Bearings and azimuths, Errors, Corrections and precautions,
- 4.3 Vertical measurement-types and methods of leveling, characteristics, methods and interpolation.

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M.A./M.Sc. I Sem. – II

SOCIAL AND CULTURAL GEOGRAPHY

(Teaching Hours – 60, Credit – 04)

Course outcomes (Cos):

1. To study and identify the philosophical base, problems associated with society & its culture.
2. To know about the culture, cultural regions, hearths and their diffusion, realms, and distribution of races.
3. To study and knowing of socio-cultural diversity of India, and processes of social changes.
4. To understand the social justice and well-being of society, to find out the level of well-being in India.

Module: I Introduction to Social Geography

- 1.1 Social and Cultural Geography: Definition, scope and significance
- 1.2 Philosophical bases of Social and Cultural Geography
- 1.3 Roots of Social Geography and Social Problem: Housing Space and Society
- 1.4 Geography of Poverty.

Module: II: Culture and Races

- 2.1 Concept of Culture: Cultural Areas and Cultural Regions.
- 2.2 Basis of Racial Classification and their Physical Characteristics
- 2.3 Concept of Race, Griffith Taylor and C. S. Coon's Races theories of mankind in the world.
- 2.4 Races in India.

Module: III: Socio-cultural Diversity

- 3.1 Concept of Dialects and ethnicity: Distribution of Religion, Caste, Tribe, Languages in India.
- 3.2 Concept of Social Areas & North-South Socio-Cultural Diversity of India.
- 3.3 Processes of Social changes: Modernization, Sanskritization and Globalization.

Module: IV: Social Justice and Well-being

- 4.1 Concept of Social Justice and Fair Society
- 4.2 Equality and Welfare
- 4.3 Social Development and Well-Being Indicators for Measurement
- 4.4 Levels of well-being in India & Social status of women in India.



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M.A./M.Sc. I Sem. – II

**COMPUTER APPLICATIONS AND QUANTITATIVE TECHNIQUES IN
GEOGRAPHY**

(Teaching Hours – 60, Credit – 04)

Course Outcomes (COs):

1. To learn the representation of geographic data using various computational methods
2. To develop writing, editing, and presentation skill for representation of geographical information
3. To compute statistical parameters and design maps and graphs with the help of computer software
4. To understand correlation and regression among spatio-temporal data
5. For The Measurement Levels and Spatial Data
6. To Measures probability and became expert in techniques for analysis of data in research

A. Computer Applications

Module - I

- 1.1 Geographic data: types and sources;
- 1.2 Computer hardware and software;
- 1.3 Online educational resources; E-learning.

Module - II

- 2.1 Writing / formatting of texts, graphs, tables, and references using MS word
- 2.2 Computation of statistical parameters using MS excel.
- 2.3 Presentation and analysis of geographic data (physical and socio-economic) using graphs, charts, with the help of computer.

B. Quantitative Techniques

Module – III

- 3.1 Introduction to quantitative technique and its use in Geography
- 3.2 Combinational analysis- Nelson's method, Weaver's method, Raffiullah's method
- 3.3 Nearest neighbour index

Module – IV

- 4.1 Ternary diagram
- 4.2 Gravity models
- 4.3 Lorence curve



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M.A./M.Sc. I Sem. – II

STATISTICAL TECHNIQUES IN GEOGRAPHY

(Teaching Hours – 60, Credit – 04)

Course Outcomes (COs):

1. To understand the importance and use of statistical techniques in geography
2. To form frequency distributions tables and graphically interpret the results.
3. To measure central tendency and dispersion of data.
4. To examine relationship between two or more variables with correlation and regression analysis.
5. To apply comprehensive knowledge of statistics for analysis of geographical data

Module: I Measures of central Tendency

- 1.1 Calculation of mean, median, mode, quartile
- 1.2 Measures of dispersion: Absolute measurements, Mean deviation, Quartile deviation, and Standard deviation

Module: II Relative measurements

- 2.1 Relative measurements-Coefficient of mean deviation, coefficient of quartile deviation, Coefficient of variations
- 2.2 Index variability and relative variability
- 2.3 Skewness: Karl Pearson's and Bowley's methods
- 2.4 Calculation of Ginni's co-efficient of concentration, Kurtosis

Module: III Correlation Analysis

- 3.1 Correlation Analysis: Rank order correlation and Product moment correlation,
- 3.2 Regression Analysis: linear regression
- 3.3 Time Series Analysis: Moving average
- 3.4 Least square method and drawing of line of best fit

Module: IV Probability & Test of significance

- 4.1 Probability - normal, Poisson and binomial
- Test of significance:
- 4.2 Chi-square test
 - 4.3 Student's t-test
 - 4.4 ANOVA-One way, two way (single entry and multiple entry)



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