

Progressive Education Society's
Modern College of Arts, Science and Commerce (Autonomous),
Shivajinagar, Pune 05

M.A./M.Sc. Geography NEP 2023 Pattern

Syllabus

To be implemented from Academic Year 2023-24

Semester	Paper	Subject code	Title of Paper	No. of credits
Semester I				
M.A./M.Sc. Sem I	Major Paper 1 (Theory)	23CpGeoP111	Fundamentals of Geomorphology	4
	Major Paper 2 (Theory)	23CpGeoP112	Fundamentals of Climatology	4
	Major Paper 3 (Practical)	23CpGeoP113	Lab Course on Physical and Human Geography	4
	Major Paper 4 (Theory)	23CpGeoP114	Oceanography	2
	Major Elective	23CpGeoP121	Fundamentals of Population and Settlement Geography	4
		23CpGeoP122	Urban Geography	4
	RM	23CpGeoP131	Research Methodology Basics & Research in Geography	4
Semester II				
M.A./M.Sc. Sem II	Major Paper 1 (Theory)	23CpGeoP211	Fundamentals of	4

			Economic Geography	
	Major Paper 2 (Theory)	23CpGeoP212	Agricultural Geography	4
	Major Paper 3 (Practical)	23CpGeoP213	Lab Course on Economic Geography	4
	Major Paper 4 (Theory)	23CpGeoP214	Geography of Thought	2
	Major Elective	23CpGeoP221	Lab Course on Statistical Methods: Concepts and Methods	4
		23CpGeoP222	Political Geography	4
	OJT	23CpGeoP241	On Job Training	4
Semester III				
M.A./M.Sc. Sem III	Major Paper 1 (Theory)	23CpGeoP311	Geography of Resources	4
	Major Paper 2 (Theory)	23CpGeoP312	Industrial Geography	4
	Major Paper 3 (Theory+Practical)	23CpGeoP313	Introduction to Remote Sensing (T+P)	4
	Major Paper 4 (Practical)	23CpGeoP314	Lab Course on Interpretation of Topographical maps	2
	Major Elective	23CpGeoP321 (Theory+Practical)	Introduction to GIS (T+P)	4
		23CpGeoP322	Geography of Health	4

	RP	23CpGeoP351	Research Project I	4
Semester IV				
M.A./M.Sc. Sem IV	Major Paper 1 (Theory)	23CpGeoP411	Environmental Geography	4
	Major Paper 2 (Theory)	23CpGeoP412	Geography of Regional Planning	4
	Major Paper 3 (Practical)	23CpGeoP413	Lab Course on Surveying, Advanced Surveying and Field Visit / Field Excursion	4
	Major Elective	23CpGeoP421	Geography of South Asia	4
		23CpGeoP422	Tourism Geography	4
	RP	23CpGeoP452	Research Project II	6

Progressive Education Society's
Modern College of Arts, Science and Commerce (Autonomous), Shivajinagar, Pune 05
First Year M.A./M.Sc. Geography
Course Code: 23CpGeoP111

Title of the Course: Fundamentals of Geomorphology

Credits: 04

Total Lectures: 60

Examination Scheme: CIA :50 Marks

End-Sem : 50 Marks

Objectives:

- To Study the basic concepts in Geomorphology.
- To learn the utility and applications of Geomorphology in different areas and environment.
- To understand the dynamic nature of the Earth's surface, various processes, and landforms.
- To make the students aware of the need of protection and conservation of different landforms.

	Semester – I	Lectures
Unit 1	Introduction to Geomorphology	6
	a) Definition, meaning and Fundamental concepts in geomorphology (Uniformitarianism, Catastrophism, Neo-catastrophism) b) Nature and scope of geomorphology c) Geological time scale and Geological Evolution of Earth	
Unit 2	The Dynamics of Earth: Denudation process	8
	a) Concepts of weathering, mass movement, transportation and erosion b) Mechanics of Erosion, Transportation and Deposition c) Davisian Cycle of river erosion and Concept of Peneplanation	
Unit 3	Fluvial and Glacial Processes: Erosional and Depositional Landforms	22
	a) Drainage Basin and Drainage Patterns b) Fluvial landforms Mechanism and Associated Landforms c) Karst landscape: development, processes and landforms d) Glacial Processes: - Mechanism and Associated Landforms e) Fluvio-glacial process and landforms	
Unit 4	Aeolian and Coastal Process :-Erosional and Depositional Landforms	20
	a) Aeolian Process: Mechanism and Associated Landforms b) Fluvio-aeolian process and landforms c) Coastal Process: Mechanism and Associated Landforms	
Unit 5	Applied Geomorphology	4
	a) Application of Geomorphological knowledge in Regional Planning, Road and Dam construction, Mining, Urbanization and Natural Hazards. b) Discussion on field work/ experimental learning and self-study. Field trips will be arranged to recognize landforms and to understand geomorphic data collection methods.	

Learning Outcomes:

- After the completion of course, the students will be able to define the field of Geomorphology and its essential principles.
- Understand the functioning of Earth systems in real time and analyze the mechanisms that control these processes
- Assess the roles of structure, stage and time in shaping the landforms
- Assess how different scales of time and space affect geomorphologic processes.

Reference Books:

1. Chorley, R. J., Schumm, S. A. and Sugden, D. E. (1984): Geomorphology, Methuen, London.
2. Fairbridge, R. W. (1968): Encyclopedia of Geomorphology, Reinholdts, New York.
3. Kale, V. S. and Gupta, A. (Rep.2011): Introduction to Geomorphology, Orient Longman, Calcutta.
4. Holmes: Physical Geology
5. Ollier, C. D. (1981) Tectonics and Landforms, Longman , London
6. Savindra Singh (Rep. 2011): Geomorphology, Prayag Pustak Bhawan, Allahabad
7. Spark B. W. (1972): Geomorphology, Longman, New York
8. Steers, A. (1958). The Unstable Earth, Methuen, London
9. Strahler A. H and Strahler, A. N. (1992) : Modern Physical Geography, John Wiley, New York
10. Thornbury, W. D. (Rep.2011): Principles of Geomorphology, John Wiley and Sons, New York.

Progressive Education Society's
Modern College of Arts, Science and Commerce (Autonomous), Shivajinagar, Pune 05
First Year M.A./M.Sc. Geography
Course Code: 23CpGeoP112

Title of the Course: Fundamentals of Climatology

Credits: 04

Total Lectures: 60

Examination Scheme: CIA :50 Marks

End-Sem : 50 Marks

Objectives:

- To Study the basic concepts in Climatology.
- To learn the applications of Climatology in different areas and environment.
- To gain better understanding of the atmospheric conditions that cause changes in weather patterns and temperature over time.

	Semester – I	Lectures
Unit 1	Introduction to Climatology	5
	A. Nature and Scope B. Weather and Climate C. Development of Climatology D. Tropical Climatology	
Unit 2	Earth's Atmosphere	9
	A. Evolution of Atmosphere B. Structure and Composition of Atmosphere C. Ionosphere and Ozone Issue D. Acid Rain	
Unit 3	Insolation and Heat Balance	9
	A. Solar Radiation: Electromagnetic Spectrum, Factors affecting Insolation. B. Distribution: Latitudinal & Seasonal C. Effects of Atmosphere: Scattering, Absorption & Reflection D. Terrestrial Radiation & Heat Budget	
Unit 4	Temperature	6
	A. Temperature Measurement and Controls B. Lapse Rate: Normal, Environmental & Adiabatic C. Temperature Inversion: Types of Temperature Inversion	
Unit 5	Atmospheric Pressure and Winds	9
	A. Pressure measurement and distribution B. Pressure Belts C. Wind observation, Measurement D. Factors affecting Wind E. Types of Winds: Planetary, Seasonal, Local Winds, etc F. Models of general circulation of the Atmosphere: Tri-cellular model G. Concepts of Jet Stream, Cyclones and Anticyclones	

Unit 6	Atmospheric Moisture	8
	A. Hydrological Cycle B. Condensation and Precipitation: Definition, Forms and Types C. Measurement of Humidity	
Unit 7	Airmasses and Fronts	3
	A. Basic Concepts: Source region of Airmasses B. Modifications of Airmasses: Mechanical, Thermodynamic C. Fronts: Frontogenesis, Characteristics and Types	
Unit 8	Climate Change	5
	A. The Climate System B. Global Warming, Rise in Sea Level, Detection of Climate Change C. Natural and Anthropogenic causes	
Unit 9	Classification of Climate and Fieldwork	6
	A. Thornthwaite's and Koppen's Classification B. Discussion on Fieldwork / Experiential learning / Self study	

Learning Outcomes:

1. Assessment of the dynamics of climate and related theories.
2. On completion of the course, student will be able to design the need of creating awareness about climate change.

Reference Books:

1. H.J. Critchfield (Rep.2010): General Climatology. Prentice Hall, New Delhi
2. Lal, D. S.(1998): 'Climatology', Chaitanya Publishing House, Allahabad
3. Lutgens, Frederic K. & Tarbuck, Edward J. (2010): 'The Atmosphere: An Introduction to Meteorology', Pearson Prentice Hall, New Jersey
4. Oliver, John E. &Hidore, John J. (2003): "Climatology: An Atmospheric Science", Pearson Education, Delhi
5. Rob Van Den Berg(2009) Evaluating Climate Change and Development
6. Savindra Singh (2005): Climatology , Prayag Pustak Bhawan, Allahabad
7. Sivaperuman, Chandrakasan et al. 2018. Biodiversity and Climate Change Adaptation in Tropical Islands. Academic Press, London.
8. Trewartha G. T., 1980. An Introduction to Climate, McGraw Hill Company, New York.

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First Year M.A./M.Sc. Geography

Course Code: 23CpGeoP113

Title of the Course: Lab Course on Physical and Human Geography

Credits: 04

Total Practicals: 30

Examination Scheme: CIA :50 Marks

End-Sem : 50 Marks

Objectives:

- To Study the basic techniques in Physical and Human Geography.
- To learn the practical applications of theories in Physical and Human Geography.

	Semester – I	Practicals
	Section A: Geomorphology	
Unit 1	Profile Analysis	2
	A. Cross-sectional Profile: Longitudinal, Superimposed, Projected and Composite B. Intervisibility of Terrains	
Unit 2	Basin Relief Analysis	5
	A. Absolute Relief Map B. Relative Relief Map C. Slope and Aspect Maps D. Hypsometric Curve and Integral	
	Section B: Climatology	
Unit 3	Climatic Elements	5
	A. Preparation of Climatic diagrams: i. Wind Rose Diagram: Simple and Compound ii. Climograph iii. Climatograph iv. Hythergraph B. Water Budget Diagram: Construction of Water Budget Diagram using C. Precipitation and Potential evapo-transpiration	
Unit 4	Classification of Climate	3
	A. Determination of climatic type by using Koppen's and Thornthwaite's scheme of classification	
	Section C: Population Geography	
Unit 5	Methods of representing and Mapping of Population Data	6
	A. Indices and Projections: i. Age-Sex Pyramid ii. Child-Women Ratio	

	iii. Dependency Ratio iv. Infant mortality rate v. Population growth rate and Population projection vi. HDI B. Mapping of Population Data: i. Choropleth Map ii. Dot Map	
	Section D: Settlement Geography	
Unit 7	Methods for calculation of urban data and dispersion	4
	A. Rank size rule B. Calculation of centrality C. Functional classification of town- H. J. Nelson's method D. Method used to calculate degree of dispersion by demangeon, Bernad, and Debouverie E. Nearest neighbor analysis	
Unit 8	Application of models using Data	2
	A. Gravity Model B. Locational Rent C. Spatial Interaction	
Unit 9	Methods of Field Study	3
	A. Preparation of Questionnaire /Interview Schedules B. Discussion on Fieldwork / Experiential learning / Self study/ Study Tour: 3-15 days across India.	

Learning Outcomes:

On completion of the course, student will be able to design the techniques of Physical and Human Geography for representation and interpretation of Geographical data and its phenomena.

Reference Books:

1. Chorley, R. J. and Hagget, P. (1972) Socio-economic Models in Geography, Mathuen and Co., London
2. King, C. A. M. (1966): Techniques in Geomorphology, Edward Arnold Ltd., London
3. Liendsor, J. M. (1997): Techniques in Human Geography, Routledge, London
4. Lloyd P. and Dicken, B. (1972): Location in Space: A Theoretical Approach to Economic Geography, Harper and Row, New York
5. Lutgens, F. K. and Tarbuck, E. J. (2010): The Atmosphere: An Introduction to Meteorology, Pearson Prentice Hall, New Jersey
6. Miller, A. A. (1953): The Skin of the Earth, Methuen and Co. Ltd., London
7. Monkhouse, F. J. and Wilkinson, H. R. (1971): Maps and Diagrams, Methuen and Co., London

8. Monkhouse, F. J. and Wilkinson, H. R. (1964): Maps and Diagrams: Their Compilation and Construction, Metheun and Co. Ltd., London
9. Singh, S. (1998): Geomorphology, Prayag Pustak Bhawan, Allahabad
10. Strahler, A. N. (1964): Quantitative Geomorphology of Drainage Basins and Channel Networks, In: Handbook of Applied Hydrology, Ven Te Chow, Ed., Section 4-II, McGraw-Hill

Progressive Education Society's
Modern College of Arts, Science and Commerce (Autonomous), Shivajinagar, Pune 05
First Year M.A./M.Sc. Geography
Course Code: 23CpGeoP114
Title of the Course: Oceanography

Credits: 02

Total Lectures: 30

Examination Scheme: CIA :25 Marks

End-Sem : 25 Marks

Objectives:

- To introduce the students to the basic principles and concepts in Oceanography.
- To acquaint the students with the applications of Oceanography in different areas and environment.
- To learn about the marine features in details and understand about landforms its origin and evolution.

	Semester – I	Lectures
Unit 1	Introduction to Oceanography	4
	a. Definition and Meaning of Oceanography b. Nature and scope of oceanography c. Importance of oceanography in modern times d. Ages and origin of world oceans	
Unit 2	Morphology of Ocean Bottom	8
	a. General Submarine relief of ocean b. Relief of Atlantic, Pacific and Indian oceans c. Paleomagnetism and sea-floor spreading theory	
Unit 3	Ocean Circulation: Properties & Movement of ocean water	14
	a). Properties of Sea Water i. Temperature: meaning and factor affecting ii. Salinity: meaning, origins of sea salt and factor affecting b). Waves characteristics and properties c). Tides i. Tide generating forces ii. Equilibrium and Dynamical Theory of Tides iii. Types of tides iv. Tidal effects in coastal areas d). Ocean currents: - i. Meaning and Types of ocean Currents ii. Distribution (Ocean current in Pacific, Atlantic and Indian Ocean) e). Tsunami (causes, and effects)	
Unit 4	Marine issues and challenges	4
	a. Destruction of coastal habitat b. Ocean acidification c. Sea level change: types, causes & implications d. Coral bleaching	

Learning outcome: -

1. Students will have the knowledge of basic chemical, geological, physical and biological features and processes of the oceans.
2. Students will be able to understand many facts of oceans such as properties of sea water, water circulation, structure of ocean basin, evolution of oceans, characteristics of marine environments & impact of man on the marine environment.

Reference Books:

1. Basu S.K. (2003) (ed): Handbook of Oceanography, Global Vision, Delhi
2. Davis Richard A. (1972): Oceanography, Addison Wesley Publishing Co.
3. Garrison Tom (1999): Oceanography, Brooks/ Cole Wadsworth, New York
4. Garrison Tom (2004): Essentials of Oceanography. Thompson, Australia
5. Grant Gross M. (1982): Oceanography, Prentice hall, Ince, New Jersey
6. Introduction to Oceanography. Prentice Hall, New Jersey. Sharma, R.C. and Vatel. M.,
7. King Cuchlain A. M (1962): Oceanography for Geographers (ED) Edward Arnold
8. Oceanography for Geographers. Strahler, A.A. and Strahler, A. N., 2002.
9. Physical Geography. Lutgens, F.K. and Tarbuck, E.J., 2007.
10. Pinnet, P.R. (2009): Invitation to Oceanography, Jones and Barlett Publishers, Boston
11. Sharma & Vatal (1962): Oceanography for Geographers. Chaitanya Publishing House, Allahabad
12. Thurman Harold V. (1985): Introductory Oceanography. Bell & Howell Co. London
13. Weisberg J. and Howard P. (1974): Introductory Oceanography. McGraw Hill, Kogakusha, Tokyo.

Progressive Education Society's
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First Year M.A./M.Sc. Geography
Course Code: 23CpGeoP121

Title of the Course: Fundamentals of Population and Settlement Geography
Credits: 04 **Total Lectures: 60**
Examination Scheme: CIA :50 Marks **End-Sem : 50 Marks**

Objectives:

- To Study the spatial and structural characteristics of human population and settlements in various environments.
- To learn the global and regional problems of settlements.
- To learn the association between demographic and socio-economic attributes of population.

Semester - II		Lectures
Unit 1	Population geography	15
	A. Definition, Nature and Scope B. Population: Growth, Structure and Composition C. Population as a resource D. Problems and Prospects of World Population	
Unit 2	Theories in Population Geography	10
	A. Malthusian theory B. Ricardo's theory C. Mobility transition theory	
Unit 3	Settlement Geography	13
	A. Definition, Nature and Scope B. Branches of settlement geography C. Concepts related to settlement: Nodality, Range, Threshold and Hierarchy D. Urbanization: Problems and Prospects	
Unit 4	Models in Settlement Geography	12
	A. Christaller's Central place theory B. Concentric zone theory C. Multiple nuclei theory	
Unit 5	Contemporary studies in Population and Settlement Geography	10
	A. Development and Recent Trends in Population and Settlement Geography in less developed countries and more developed countries B. Discussion on Fieldwork / Experiential learning / Self study	

Learning Outcomes:

1. Students will understand the basic concepts in population and settlement geography.
2. On completion of the course, student will be able to design the ways to diagnose issues related to population and settlements.

Reference Books:

1. Singh, L. R. (2012): Fundamentals of Human Geography, Sharda PustakBhavan, Allahabad
2. Bhende, A. and Kanitkar, T. (2008): Principles of Population Studies, Himalaya Publishing House, Mumbai
3. Chandana, R. C. and Sidhu, M. S. (1980): Introduction to Population Geography, Kalyani, New Delhi
5. Clarke, J. F. (1965): Population Geography, Pergamon Press, Oxford
4. Garnier, B. (1966): Geography of Population, Longman, London
5. Hussain, M. (1999): Human Geography, Rawat Publication, Jaipur
6. Mandal, R. B. (1979): Introduction to Rural Settlement, Concept Publishing Company, New Delhi
7. Sawant, S. B. (1994): Population Geography, Mehta Publishing House, Pune
8. Shivramkrishanan, K. C. et al (2005): Handbook of Urbanization in India, Oxford, Delhi
9. Singh, R. Y. (1994): Geography of Settlement, Rawat Publication, Jaipur

Progressive Education Society's
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First Year M.A./ M.Sc. Geography
Course Code: 23CpGeoP122
Title of the Course: Urban Geography

Credits: 04

Examination Scheme: CIA :50 Marks

Total Lectures: 60

End-Sem : 50 Marks

Objectives:

- To study the urban system of the World and India.
- To critically understand the complexities of urban cities and the experience of living in these cities.
- To provide a basic social, cultural, political and economic understanding of cities.
- To learn the changing urban form and impacts of urbanization.

	Semester – I	Lectures
Unit 1	Introduction	06
	A. Nature and scope B. Significance of urban geography C. Relation to other disciplines D. Origin and growth of the cities	
Unit 2	Urbanization : concepts and process	09
	A. Meaning of Urban settlement and urbanization. B. Criteria used to distinguish urban settlements C. Behavioural, Structural and Demographic concepts of Urbanization D. Brief review of spatial- temporal variations in urbanization in the world E. Urbanization curve	
Unit 3	Urban Morphology: Models of urban structure	09
	A. Park and Burgess Model B. Homer Hoyet Model. C. Harris and Ullman Model D. Characteristics and demarcation of CBD	
Unit 4	Urban Classification and Demography	10
	A. Various approaches to classification B. Urban function C. Functional classification of towns and cities by C.D. Harris and H. J. Nelson D. Urban explosion in developing countries. E. Density of population in cities. F. Age, sex and occupational structure.	

Unit 5	Rural-Urban fringe: Characteristics and methods of demarcation	08
	A. Meaning of rural-urban fringe B. Characteristics of rural-urban fringe C. Suburbanization D. Concepts of conurbation, megalopolis, satellite towns.	
Unit 6	City and its Region: Concept, characteristics and demarcation	06
	A. Concepts of city region and various synonymous terms used B. Criteria used to demarcate the city region C. Nature of urban influence	
Unit 7	Central Place Concepts :Central Place Theory and Urban Hierarchy	06
	A. Christaller's Central Place Theory. B. Rank-size relationship and rank-size rule C. Hierarchy of urban settlements	
Unit 8	Contemporary Urban issues: Nature of issues	06
	A. Price of land and vertical and horizontal growth of cities B. Urban sprawl C. Scarcity of housing and growth of slums D. Problems of civic amenities E. Urban transport problem and Environmental pollution	

Learning Outcome:

1. Students will understand the linkages between urban cities and the societal forces that shapes it.
2. Students will be able to assess the urban issues in order to engage with possible and effective planning and policy interventions.
3. On completion of this course, students will be able to design the solutions for different urbanization problems facing India.

Reference Books:

1. Beaujeu-Garnier, J. and Chabot, G. (1967). *Urban Geography*. Longman.
2. Brian, R. K. (1996). *Landscape of Settlement Pre history to the present*. Routledge, London.
3. Carter, H. (1972). *The Study of Urban Geography*. Edward Arnold, London.
4. Hall, T. (1998). *Urban Geography*. Routledge, London and New York.
5. Johnson, J. H. (1967). *Urban Geography*. Pergamon.
6. Kundu, A. (1992). *Urban Development and Urban Research in India*. Khanna Publication.
7. Mayer, H. M. (1959). *Readings in Urban Geography*. University of Chicago Press.
8. Northam, Ray M. (1975). *Urban Geography*. Wiley.

9. Singh, K. & Steinberg, F.(eds) (1998). *Urban India in Crisis*. New Age Interns.
10. Smailes, A. E. (1953). *The Geography of Towns*. Hutchinson.
11. Taylor, Griffith (1949). *Urban Geography*. Methuen& Co. Ltd, UK.

Progressive Education Society's
Modern College of Arts, Science and Commerce,
Shivajinagar, Pune - 5
PG Part 1
(2023 Course under NEP 2020)
First Year M.A./M.Sc. Geography
Course Code: 23CpGeoP131
Course Name : Research Methodology Basics & Research in Geography

Section I

Teaching Scheme: 2 Hours/Week

Credit : 02

Examination Scheme: CIA :25 Marks

End-Sem : 25 Marks

Prerequisite Courses:

- B.A., B.Sc. B.Com,B.Voc., BBA, BBA IB, BBA CA

Course Objectives:

- To make students aware about research and its importance
- To obtain knowledge regarding systematic gathering of data and get advanced knowledge in the selected topic
- To inculcate logical and organized thinking in students
- To investigate some existing situation or problem by creating new system or method
- To help students to design research problem

Course Outcomes:

On completion of the course, student will be able to–

1. Describe importance of research
2. Differentiate between unethical and ethical practices of publication ethics
3. Select research problem appropriately
4. Prepare good hypothesis
5. Design research problem systematically

6. Analyze and organize data correctly
7. Prepare good scientific research report

Course Contents

Unit 1	Research problem and design	No. of lectures
	Introduction to research :meaning and definition of research, objective of research, importance of research, characteristics of good research, purpose and role of research, classification of research Research problem : defining of research problem, Criteria for selecting the research problem, , importance of literature survey in defining research problem. Hypothesis :Defining Hypothesis, types of hypothesis, characteristics of good hypothesis, formulation of hypothesis Research Design :Definition and features of research design, Concept of research design, types of research design, preparation of research design, Sampling techniques, characteristics of good sampling designs	15
Unit 2	Data analysis, report writing and publication ethics	15
	Definition of Data, methods of data collection, analysis of data, types of data analysis, Questionnaire, Design of Questionnaire, Testing hypothesis : parametric and non-parametric tests : T-test, Z-test, Chi-square test, ANOVA Report writing : importance of interpretation of results, meaning, definition and significance of report /thesis writing, Principals of research report drafting, Types of reports, layout of	

	research report, important parts of reports, precautions of preparation of report/ thesis Publication ethics :definition, introduction and importance, best practices/ standard settings initiative and guidelines COPE, WAME, etc, conflict of interest, Publication misconduct :definition, concept problems that lead to unethical behavior, violation of publication ethics, predatory publishers and journals, software tools to identify predatory publications developed by SPPU	
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References :

- C. R. Kothari (2004) Research Methodology : Methods and Techniques 2nd Edition, New age International (p) Ltd Publications, New Delhi, India
- J.W. Creswell and J.D. Creswell (2017) Research Design: Qualitative, Quantitative, and Mixed Methods Approaches, 5th Edition, SAGE Publications, USA.
- C. G. Thomas (2021) Research Methodology and Scientific Writing, 2nd Edition, Springer Nature, New York.
- M. Kheider lectures from University of Biskra (2017) <https://univ-biskra.dz/sites/fli/images/houadjli%20Ahmed%20Chaouki.pdf>

Progressive Education Society's
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First Year M.A./M.Sc. Geography
Course Code: 23CpGeoP131

Title of the Course: Research Methodology: Geographical Data Analysis
Section-II

Credits: 02

Examination Scheme: CIA :25 Marks

Total practicals: 15

End-Sem : 25 Marks

Course Objectives:

- To learn the application of statistical techniques in various field of Geography.
- To introduce the students to the basic knowledge related to geographical field

Semester – I		Practical
Unit 1	Geographical Data & its Basic Analysis	03
	A. Geographical Data: i. Primary and Secondary data ii. Spatial and Temporal data iii. Discrete and Continuous data iv. Grouped and Ungrouped data B. Basic Analysis: i. Tally marks and frequency table ii. Frequency distribution (histogram & polygon) iii. Cumulative Frequency & Ogive curve	
Unit 2	Univariate Analysis	10
	A. Measures of Central Tendency: Mean, Median and Mode (grouped & ungrouped) B. Measures of Dispersion (Range, Mean Deviation, Quartile Deviation, Standard Deviation, Variance, Coefficient of Variation) C. skewness and kurtosis	
Unit3	Report writing: Techniques	02
	Research problem/Identification of problem, Aims and Objectives, Review of literature, Application of Research methods, Analysis, Conclusions and Suggestions, References and Bibliography	

research design.

Learning Outcomes:

1. This course attempts to introduce the students to the basic knowledge related to geographical field research design.
2. The course examines the questions related to the applications of statistical techniques for analysis and interpretation of Quantitative data in Geographical studies.

Reference Books:

1. Shrikant Karlekar & Mohan Kale (Dec.2013) : Statistical Analysis of Geographical Data, Diamond Publication, Pune
2. Clark W. A. V. and Hosking P. L. (1986) : Statistical methods of geographers
3. Bart James E. and Gerld M. Barber, 1996. Elementary Statistics for Geographers, The Guieford Press, London.
4. Frank, H. and Althoen, S. C. (1994): Statistics: Concepts and Applications, Cambridge University Press, Cambridge
5. Hammond, R. and McCullagh, P. (1991): Quantitative Techniques in Geography, Clarendon Press, Oxford
6. Mathews, J.A. 1987. Quantitative and Statistical Approaches to Geography: A Practical Manual, Pergamon, Oxford.
7. McGrew, Jr. J.C. and Monroe, C.B. (2000). An Introduction to Statistical Problem Solving in Geography (second edition), McGraw Hill, Boston.

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First Year M.A./M.Sc. Geography
Course Code: 23CpGeoP211

Title of the Course: Fundamentals of Economic Geography

Credits: 04

Total Lectures: 60

Examination Scheme: CIA :50 Marks

End-Sem : 50 Marks

Objectives:

- To Study the basic concepts in Economic Geography.
- To learn the applications of Economic Geography in different areas and environment.
- To assess the differences in economic development in different regions or countries of the world.

Semester - II		Lectures
Unit 1	Introduction: Economic Geography	06
	A. Definition B. Nature and Scope C. Approaches D. Concepts and principles	
Unit 2	Economic Landscape and Economic system	10
	E. Evolution of World Economy F. Factors of Production (Industrial location) G. Modes of Transport and Cost of Transport	
Unit 3	Trade theories	08
	D. Mercantilist theory of trade E. Classical theory of trade F. Modern theory of trade	
Unit 4	Models of Industrial Location	04
	A. Von Thuenen's model of agriculture location B. Alfred Weber's model of industrial location	
Unit 5	Industrial Regions: India	12
	D. Major industrial regions E. Minor industrial regions with special reference to Maharashtra	
Unit 6	Economic Development in India	12
	C. Pre-Independence condition of Indian economy D. Post-Independence condition of Indian economy E. Important Economic developments F. Contemporary issues in Maharashtra	
Unit 7	Applied Economics Geography	08

	A. Case studies of Industries in Maharashtra B. Discussion on Fieldwork / Experiential learning / Self study	
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Learning Outcomes:

3. Students will understand the basic concepts in Economic geography.
4. On completion of the course, student will be able to design the dynamic aspects of economic development

Reference Books:

1. Berry, B. J. (1976): Geography of Economic Systems, Prentice Hall, Englewood Cliff
2. Boyce, R. D. (1974): Bases of Economic Geography, Holt, Rinehart and Winston, New York
3. Hartshorne, T. A. and Alexander, J. W. (2010): Economic Geography, PHI Learning, New Delhi
4. Knox, P., Agnew, J. and McCarthy, L. (2008): The Geography of the World Economy, Hodder Arnold, London
5. Lloyd, P. and Dicken, B. (1972): Location in Space: A Theoretical Approach to Economic Geography, Harper and Row, New York
6. Siddhartha, K. (2000): Economic Geography: Theories, Process and Patterns, Kisalaya Publications, New Delhi
7. Smith, D. M. (1971): Industrial Location: An Economic Geographical Analysis, John Wiley and Sons, New York

Progressive Education Society's
Modern College of Arts, Science and Commerce (Autonomous), Shivajinagar, Pune 05
First Year M.A./M.Sc. Geography
Course Code: 23CpGeoP212

Title of the Course: Agricultural Geography

Credits: 04

Examination Scheme: CIA :50 Marks

Total Lectures: 60

End-Sem : 50 Marks

Course Objectives:

1. This course attempts to introduce the students to the nature and origin of agriculture and its regions.
2. The course examines the questions related to agricultural development and productivity in India.
3. It also critically evaluates the environmental consequences and emerging perspective and policies and interventions aimed at sustainable agriculture.

	Semester – II	Lectures
Unit 1	Introduction to Agricultural Geography	5
	A. Nature, Scope and Approaches B. Origin and dispersal of agriculture	
Unit 2	Significance of Agriculture	7
	A. Agriculture in Different Economies: Underdeveloped, Developing & Developed B. Importance of agricultural sector in Indian Economy	
Unit 3	Determinants of Agriculture	7
	A. Influence of Physical factors: Relief, Climate & Soil B. Influence of Economic factors: Landholding, Marketing & Transport C. Influence of Technological factors: Irrigation, Mechanization & Biochemical inputs	
Unit 4	Agriculture Types and Practices	11
	A. Agriculture Types: i. Subsistence Agriculture: Shifting & Intensive ii. Commercial Agriculture B. Agriculture Practices: Traditional and Modern	
Unit 5	Agricultural Regionalization	11
	A. Methods of Regionalization: i. Whittlesey's classification ii. Crop Combination techniques (Weaver & Thomas method) iii. Agricultural Land use model (Von Thuenen) B. Agricultural Regions of India: i. Agro-climatic Regions ii. Agro-ecological Regions	
Unit 6	Problems and Prospects of Indian Agriculture	6
	A. Characteristics of Indian Agriculture B. Problems & Prospects of Indian Agriculture	
Unit 7	Agricultural Revolutions in India	8
	A. Green Revolution:	

	i. Features of Green Revolution ii. Stages of Green Revolution iii. Advantages and Disadvantages of Green Revolution B. White Revolution C. Blue Revolution	
Unit 8	Land use	5
	A. Land use surveys B. Land classification in India	

Learning Outcomes:

1. The students will be able to understand and analyze the historical perspective of agriculture.
2. The students will be able to analyze the agriculture development and productivity and its impacts on various sectors.
3. The students will be able to get updated knowledge of contemporary issues and strategies.

Reference Books:

1. Aiyer, A.K.Y.N.(1949) – Agricultural and Allied Arts in Vedic India.
2. Grigg. D.G.(1964) – An Introduction to Agricultural Geography Hutchinson & Co.Ltd.,
3. Grigg. D.G. (1974) – The Agricultural Systems of the world An Evolutionary Approach.
4. Illbery, B.W. (1985) – Agricultural Geography, Social & Economic Analysis, Oxford University Press.
5. Morgan. W.B. & S.C. Monton (1971) – Agricultural Geography Methuen, London.
6. Randhawa, M.S. (1980) – An History of Agriculture in India Vols. I, II, III,IV ICAR, New Delhi.
7. Singh. J. and Dhillon S.S. (1994) – Agricultural Geography. Tata McGraw Hill, Publishing Co. Ltd.
8. Symons, Leslie (1970) – Agricultural Geography, G. Belt and Sons Ltd., London.
9. Tarrent, J.R. (1970) – Agricultural Geography, David and Charles, Newton Abbot.

Progressive Education Society's
Modern College of Arts, Science and Commerce (Autonomous), Shivajinagar, Pune 05
First year M.A./M.Sc. Geography
Course Code: 23CpGeoP213
Title of the Course: Lab Course on Economic Geography

Credits: 04

Examination Scheme: CIA :50 Marks

Total Practicals: 30

End-Sem : 50 Marks

Objectives:

- To identify economic patterns across space and time in order to provide insight into how and why economic systems and practices develop and apply those methods in contemporary studies.

	Semester – II	Practicals
Unit 1	Introduction to Economic Geography	02
	E. Recent trends in Economic Geography F. Types of Hypotheses in Economic Geography: Elaboration and Testing of hypotheses	
Unit 2	Techniques in Agricultural Geography : Crop- combination And agricultural	08
	F. Crop-combination methods i) Weaver's method ii) Thomas' method iii) Jasbir Singh's method G. Measurement of Agriculture efficiency i) Kendall's method ii) Bhatia's method H. Levels in productivity: i) Crop yield and concentration indices ranking coefficient (Jasbir Singh) with map . I. Enyedi's Productivity index of agriculture	
Unit 3	Techniques in Industrial Geography:Location Analysis	05
	A. Location Quotient B. Lorenz Curve C. Gini's coefficient D. Von Thunen's Model	
Unit 4	Techniques in Transport Geography: Graph theoretical measures and Models of spatial interaction	08
	A. Graph theoretical measures of transport network B. Network indices : i) Ratio measure ii) Alpha, beta, gamma, etc. iii) Associated number, cyclometric number iv) Detour Index	

	v) Gravity potential population surface vi) Breaking point theory - Trade area delimitation, Law of retail trade gravitation	
Unit 5	Representation of Economical Data	03
	A. Plotting of suitable economic data on semi-log graph paper B. Plotting of suitable economic data on double-log graph paper	
Unit 6	Field Visit / Field Excursion and Experiential learning	04
	A. Economical Data Analysis : use of suitable GIS software B. Experiential learning :Visit to Industrial unit- Agro based Industrial Unit C. Discussion and Report making.	

Learning Outcome:

1. Focus on building theories about spatial arrangement and distribution of economic activities.
2. Explain the importance of economic geography in analyzing the ways societies and economic works.
3. Discuss and critically evaluate these concepts and theoretical approaches.
4. Explain and apply key concepts and theoretical approaches in economic geography.

Reference Books:

1. Dreze, J. and Sen, A. (1996) – Economic Development and Social Opportunity. Oxford University Press,
2. Hanink, D. M. (1997). Principles and Applications of Economic Geography, Economy, Policy,
3. Environment, John Wiley and Sons, New York.
4. Hartshorne, T.A. and J.W. Alexander (1988) –Economic Geography, Prentice Hall.
5. Janaki. V.A. (1985) –Economic Geography, Concept Publishing Co.
6. Knox, P. and J. Agnew (1998) – The Geography of the World Economy. Arnold, London
7. Lloyd, P. and P. Dicken (1972) –Location in space: A theoretical approach to Economic Geography,
8. McCarty, H.H. and J.B. Lindberg (1966) – A Preface to Economic Geography, Englewood Cliffs, N.J.
9. Prentice.
10. Thomas, Conkling and Yeates (1974) – Geography of Economic Activity, Mc Graw Hill, New York.

Progressive Education Society's
Modern College of Arts, Science and Commerce (Autonomous), Shivajinagar, Pune 05
First Year M.A./M.Sc. Geography
Course Code: 23CpGeoP214
Title of the Course: Geography of Thought

Credits: 02

Total Lectures: 30

Examination Scheme: CIA :25 Marks

End-Sem : 25 Marks

Course Objectives:

- To Study the evolution of Geographical Thought.
- To learn the history behind emerging Geographical Thought.
- It aims to enable students to contextualize the conceptual traditions within geography along with the major philosophical influences.

	Semester – II	Lectures
Unit 1	Geographical Knowledge of the Ancient World	9
	a) Greek-Roman Period b) Contribution of Explorers	
Unit 2	Geography of Medieval Period and Contribution of Modern Geographers	12
	a) Contribution by Arab Geographers b) German School of Thought c) British School of Thought d) American School of Thought e) French School of Thought	
Unit 3	Dualism and Dichotomy	6
	a) Systematic Geography versus Regional Geography b) Physical Geography versus Human Geography c) Historical Geography versus Contemporary Geography	
Unit 4	Recent Trends in Geography	3
	a) Models in geography b) Experiential learning and application of content knowledge	

Course Outcomes:

1. A thorough knowledge of the growth, development, philosophical influences and relevance of geography from ancient to the present time.
2. An appreciation of the discipline's dynamic and inclusive nature.
3. On completion of the course, student will be able to understand how Geography evolved through past.

Reference Books:

1. Arild, H. J. (1999): Geography: History and Concepts, SAGE Publications, London
2. Chorley, R. J. (Ed): Directions in Geography, Matheun and Co., London

3. Dikshit, R. D. (1997): Geographical Thought: Contextual History of Ideas, Prentice Halls, New Delhi
4. Goudie, A. (Ed) (2004): Encyclopedia of Geomorphology, Routledge, London
5. Hussain, M. (1984): Evolution of Geographical Thought, Rawat Publications, Jaipur
6. Richard, P. (1998): Modern Geographical Thought, Blackwell, Singapore
7. Warf, B. (Ed) (2006): Encyclopedia of Human Geography, SAGE Publications, New Delhi

Progressive Education Society's
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First Year M.A./M.Sc. Geography
Course Code: 23CpGeoP221

**Title of the Course: Lab Course on Statistical Methods: Concepts and Method
(Bivariate and Multivariate Statistics)**

Credits: 04

Examination Scheme: CIA :50 Marks

Total Practicals: 30

End-Sem: 50 Marks

Objectives:

- To Study the statistical techniques as an essential part of geographical studies.
- To enhance the ability to statistically interpret data in various field of Geography.

	Semester – II	Practicals
Unit 1	Introduction to Bivariate and Multivariate Statistics	01
	A. Bivariate and Multivariate analysis B. Objectives of multivariate analysis i. Data reduction or simplification ii. Sorting and grouping iii. Prediction iv. Hypothesis testing	
Unit 2	Bivariate Analysis	09
	A. Covariance B. Concept of Bivariate correlation and regression i. Calculation of Pearson's product moment correlation coefficient ii. Calculation of spearman's rank order coefficient C. Calculation and plotting of Linear, Exponential and Power- Law regression equation D. Explained Variance, Residuals & Mapping of Residuals	
Unit 3	Methods of Determination of Probability	05
	A. Normal Probability distribution B. Binomial Probability distribution C. Poisson Probability distribution	
Unit 4	Inferential Statistics & Hypothesis Testing	05
	A. Inferential Statistics i. Sample and Population ii. Methods of sampling (random, systematic and stratified) B. Hypothesis Testing i. Formulation: Null and Alternative Hypothesis ii. Level of Significance (Rejection level) iii. Degree of Freedom Errors iv. Parametric and Non-Parametric Tests (One & Two-Tailed) C. Application of following tests:	

	i. Non- parametric test (Chi-Square Test: One-Way, Two-Way) ii. parametric test (Student's T-Test: One-Way, Two-Way, ANOVA: One-Way, Two-Way)	
Unit 5	Multivariate Analysis	8
	A. Matrix Algebra (Addition, subtraction and multiplication of matrices) B. Multivariate Analysis: Multiple Regression and Correlation C. Computation of multiple regression equations involving two and three independent variables (by solving simultaneous equations or by using variance – covariance matrix) i. Second order multiple regression equation, ii. Third order multiple regression equation, D. Calculation of Co-efficient of multiple determination (R^2) Co-efficient of multiple Co-relation (R) and Explained Variance (EV)	
Unit 6	Fieldwork and Data Collection	2
	Discussion on Fieldwork, Data Collection and Analysis, Report writing	

Course Outcomes:

1. The students will learn various statistical skills.
2. The students will know how the statistical theories and functions will be applied in geography.
3. On completion of the course, student will be able to design the applications of statistical techniques for analysis and interpretation of Quantitative data in Geographical studies.

Reference Books:

8. Bart James E. and Gerld M. Barber, 1996. Elementary Statistics for Geographers, The Guieford Press, London.
9. Briggs, W. 2016. Uncertainty: The soul of modeling, probability & statistics. Springer International Publishing
10. Davis, John C. (2002). Statistics and Data Analysis in Geology (third edition), John Wiley & Sons
11. Frank, H. and Althoen, S. C. (1994): Statistics: Concepts and Applications, Cambridge University Press, Cambridge
12. Hammond, R. and McCullagh, P. (1991): Quantitative Techniques in Geography, Clarendon Press, Oxford
13. Nussbaum, E. M. 2015. Categorical and Nonparametric Data Analysis: Choosing the Best Statistical Technique.
14. P. S. (2007): Introductory Statistics, John Wiley and Sons, New Delhi

15. Mathews, J.A. 1987. Quantitative and Statistical Approaches to Geography: A Practical Manual, Pergamon, Oxford.
16. McGrew, Jr. J.C. and Monroe, C.B. (2000). An Introduction to Statistical Problem Solving in Geography (second edition), McGraw Hill, Boston.
17. Nussbaum, E. M. 2015. Categorical and Nonparametric Data Analysis: Choosing the Best Statistical Technique.
18. Rohatgi, V. K. and Saleh, A. K. 2015. An Introduction to Probability and Statistics, John Wiley & Sons, New Jersey.
19. Shaw g and Wheller D. (1985) : Statistical techniques in geographical analysis.
20. Sumner G. J. (1978) : Mathematics of Physical Geographers, Edward Arnold.
21. Shrikant Karlekar & Mohan Kale (Dec.2013) : Statistical Analysis of Geographical Data, Diamond Publication, Pune
22. Clark W. A. V. and Hosking P. L. (1986) : Statistical methods of geographers
23. Collins (1984) : Introduction to multivariate analysis, Edward Arnold
24. Jonston, R. J. (1979) : Multivariate statistics in Geography, Longman, London
25. Fortheringham, A.S., Brunson, G., Charlton, M. (2000) : Quantitative Geography, Perspectives on Spatial Data Analysis, SAGE.

Progressive Education Society's
Modern College of Arts, Science and Commerce (Autonomous), Shivajinagar, Pune 05
First Year M.A./M.Sc. Geography
Course Code: 23CpGeoP222
Title of the Course: Political Geography

Credits: 04

Examination Scheme: CIA :50 Marks

Total Lectures: 60

End-Sem : 50 Marks

Course Objectives:

- To study the basic concepts of Political Geography.
- To provide students with an understanding of the territorial bases of the state and role of geographic factors in shaping political history.
- To study the global geostrategic issues.
- To reveal the unity of political activity and of geographical factors of social development.

	Semester – II	Lectures
Unit 1	Introduction to Political Geography	4
	A. Definition B. Nature and Scope C. Approaches	
Unit 2	Concepts in Political Geography	12
	A. Concept of Territory: Territoriality and Territorial Symbols B. Concept of State, Nation and Nation-State C. Nationalism, Sovereignty, Organic State, Geopolitics & Geopolitik D. Spatial factors of State: Location, Size and Shape	
Unit 3	Frontiers and Boundaries	13
	A. Concept & Types of Frontiers B. Concept of Boundary C. Stages of Boundary formation process: Discussion, Delimitation & Demarcation D. Types of Boundary E. Maritime Boundary: Thalweg Principle, Territorial Sea, EEZ & UNCLOS F. Border Conflict: Indo-Pak and Sino-Indian	
Unit 4	Global Strategic Views	4
	A. Heartland & Rimland Theory	
Unit 5	Political Geography of Resource Conflicts	7
	A. Water sharing disputes in India B. Disputes related to Minerals	
Unit 6	Geopolitics	6

	A. Geopolitics of Indian Ocean B. Geopolitics of Multilateral groupings: NATO, SCO, QUAD, etc	
Unit 7	Electoral Geography	6
	A. Political Parties in India: National & Regional B. Geography of Voting, Geographical Influences on Voting Pattern C. Geography of Representation and Gerrymandering	
Unit 8	Politics of Displacement	5
	A. Genocide: Displacement related to Communal or Ethnic Violence B. Refugee, Asylum seekers, Refoulement, UN Refugee Convention C. Issues of relief, compensation and rehabilitation	
Unit 9	Discussion on current political issues & preparation of report	3

Learning Outcomes:

1. Students will have the understanding of India's position in regional power blocs, bilateral relations with SAARC countries and the geopolitics of the Indian Ocean region.
2. An assessment of the process of evolution of constituencies and politico electoral regions of India.
3. On the completion of the course, student will be able to design the solutions to the global geostrategic issues.

Reference Books:

1. Adhikari, S. (1997): Political Geography, Rawat Publications, Jaipur
2. Bandhopadhyaya, J. 1991. The Making of India's Foreign Policy, Allied Pub, Delhi
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. Weiner M and J Osgoodfield (eds.), 1975. Electoral Politics in the Indian States, Centre for International Studies, MIT.

Progressive Education Society's
Modern College of Arts, Science and Commerce (Autonomous), Shivajinagar, Pune 05
Second Year M.A./M.Sc. Geography
(2023 course under NEP 2020)

Course Code: 23CpGeoP311

Title of the Course: Geography of Resources

Credits: 04

Examination: CIA: 50 Marks

Total lectures: 60

End-Sem: 50 Marks

Course Objectives:

1. To introduce students with the basic subject matters of geography of resources.
2. To provide knowledge about the resource's classification, their use and misuse.
3. To make aware the students about problems of resource utilization and conservation in the view of resource management.
4. To acquaint students with the relationship between resources and geopolitics.

Semester - III		Lectures
Unit 1	Introduction to Geography of Resources	10
	A. Scope of Geography of Resource B. Significance of resource studies in geography C. Resource: -Definitions and Components (Natural and Human) D. Classification of natural resources on the basis of: Origin, Exhaustibility, Ownership, Distribution, Status of Development	
Unit 2	Significance and Distribution of Resources	12
	A. Significance of resources (Forest, Water, Land and Energy) B. Factor affecting Resource Distribution C. Consequences of Uneven Resource Distribution	
Unit 3	Resource Depletion	12
	Causes, Impacts and solution of depletion of A. Forest resources B. Water resources C. Soil resources D. Mineral resources	
Unit 4	Geo-politics of Resources	10
	A. Definition of Geo-politics B. Relationship between the resources and Geo-politics disputes C. Resources and national strategies	
Unit 5	Natural Resource Management	08
	A. Significance of Natural Resources Management B. Approaches of natural resource management (Ecological, Economic, Behavioural, Integrated, Institutional, Community Based and Technological)	
Unit 6	Theories and Models in Geography of Resources	08
	A. Zimmermann's model of Resources B. The "Limit to growth" model of resources	

Course Outcomes:

The student will be able to:

1. Understand the subject matter and significance of Geography of Resources as a subfield of geography.
2. Learn the component, significance, and classification of resources.
3. Examine the causes, effects and suggest the solution of depletion of forest, water, soil and mineral resources.
4. Apply critical thinking skills and reasoning to evaluate geopolitical scenario of various resources and related conflicts.
5. Explore the concept, approaches and significance of resource management.
6. Understand the various models and theory related to resources.

Reference Books:

1. Cutter, S. N., Renwick, H. L., & Renwick, W., (1991). *Exploitation, Conservation, Preservation: A Geographical Perspective on Natural Resources Use*. John Wiley and Sons, New York.
2. Gadgil, M., & Guha, R., (2005). *The Use and Abuse of Nature: Incorporating This Fissured Land: An Ecological History of India and Ecology and Equity*. Oxford University Press. USA.
3. Gautam, A., (2018). *Resource Geography*. Sharda Prakashan Bhavan. Allahabad.
4. Gurjar, L., & Jat, M., (2008). *Geography of Water Resources*. Rawat Publications. Jaipur.
5. Jones, G., & Hollier, G., (1997). *Resources, Society and Environmental Management*. Paul Chapman, London.
6. Klee, G., (1991). *Conservation of Natural Resources*. Prentice Hall, Englewood.
7. Mitchell, B., (1997). *Resource and Environmental Management*. Longman Harlow, England.
8. Negi, B. S., (2000). *Geography of Resources*. Kedar Nath and Ram Nath, Meerut.
9. Owen, S., & Owens, P. L., (1991). *Environment Resources and Conservation*. Cambridge University Press. New York.
10. Parman, S. S., (2002). *Geography, Economics and Economic Geography*. ASD Pub., Pune.
11. Ramesh, A., (1984). *Resource Geography (Ed.)* R.P. Misra, Contribution to Indian Geography, Vol 5, Heritage Publishers, New Delhi.
12. Ray, S., (2008). *Natural Resources, Organization & Technology Linkages*. Rawat Publication. Jaipur.
13. Rees, J., (1990). *Natural Resources: Allocation, Economics and Policy*. Routledge. London.
14. Saxena, H. M., (2006). *Environmental Geography*. Rawat Publications, Jaipur.
15. Singh, S., (2004). *Environmental Geography*. Prayag Pustak Bhawan. Allahabad.
16. Skinner, B. J., (1969). *Earth Resources*. Prentice-Hall, Englewood Cliffs, N. J.
17. World Resources Institute (WRI). (1994). *World Resources 1994-95*. Oxford University Press. New York.
18. Zimmerman, E. W., (1951). *World Resources & Industries*. The University of Michigan.

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Second Year M.A./M.Sc. Geography
(2023 course under NEP 2020)
Course Code: 23CpGeoP312
Title of the Course: Industrial Geography

Credits: 04

Examination Scheme: CIA: 50Marks

Total lectures: 60

End-Sem: 50Marks

Course Objectives:

1. To introduce students with the subject matter of industrial geography and its significance as subfield of geography.
2. To provide knowledge of basic concepts, factors, and classifications of industries and importance of Industrial Development
3. To make students aware of the distributions of industrial regions, associated challenges and various industrial policy with special reference to India

	Semester III	No. of lectures
Unit 1	Introduction to industrial geography	12
	A. Industrial Geography: Nature, Scope and Significance B. Basic concepts and characteristics of Centralization, Decentralization, Agglomeration, Industrial linkages C. Factors of industrial location D. Classification of industries based on: size, raw material, product, ownerships	
Unit 2	Models in Industrial Geography	16
	A. Weber's Model B. Losch's Model C. Greenhut's Model D. Israd's Model	
Unit 3	Major manufacturing industries of the world	10
	Distribution and spatial pattern of manufacturing industries A. Iron and Steel industry B. Cotton Textile industry C. Automobile industry	
Unit 4	Major Industrial Regions	14
	A. Concept and methods of industrial regionalization B. Characteristics of industrial regions C. Major industrial regions of the world (USA &UK) D. Major Industrial regions of India- (Mumbai-Pune, Chotanagpur, and Bangalore-Chennai Industrial Region) E. IT Industries in India: Major IT hub, problem and prospects	
Unit 5	Industries and Economic Development	08
	A. Role of industries in economic development B. Positive and negative impact of industrialization C. Industrial Policy of India, 1991	

Course Outcome:

The student will be able to:

1. Learn the subject matter of industrial geography and its significance as subfield of geography.
2. Understand the basic concepts, classification, affecting factors of industries and its role in economic development.
3. Analyse the location of major manufacturing Industries with the support of various industrial location theories and models.
4. Understand the concepts of industrial regionalization its characteristics, distribution of major industrial regions with reference to world and India.
5. Identify the distribution of IT hub, its problems and prospects in India.
6. Critically evaluate the industrial policy of India and role of industries in economic development.

Reference Books :

1. Alexander J.W. (1979). *Economic Geography*. Printice Hall of India Pvt. Ltd., New Delhi.
2. Baghla, S. (2017). *Industrial Geography*. Book Enclave Publication.
3. Estall and Buchanan (1969). *Industrial Activity and Economic Geography*. Hutchinson. U.S.A.
4. Goh Cheng Leong (1997). *Human and economic geography*. Oxford University Press, New York.
5. Gunnar Alexandersson (1967). *Geography of Manufacturing*. Prentice Hall, New Jersey Truman.
6. Harishorn, John W. Alexander (2000). *Economic Geography*. Prentice Hall of India Ltd., New Delhi.
7. Miller, E. (1962). *Geography of Manufacturing*. Printice Hall, Englewood Cliff, New Jersey.
8. Pathak, C. R. (2003). *Spatial Structure and Processes of Development in India*. Regional Science Assoc., Kolkata.
9. Riley, R.C. (1973). *Industrial Geography*. Progress Publication, Moscow.
10. Sharma, T.C. (2013). *Economic Geography of India*. Rawat Publication, Jaipur.
11. Singh, Jagdish (2003). *India - A Comprehensive & Systematic Geography*. GyanodayaPrakashan, Gorakhpur.
12. Smith, David, M. (1971). *Industrial Location- An Economic Geographical Analysis*. John Wiley and Son, New York.
13. Thoman, R.S., Conkling E.C. and Yeates, M.H. (1968). *Geography of Economic Activity*. McGraw Hill Book Company. New Delhi.
14. Tirtha, Ranjit (2002). *Geography of India*. Rawat Publs., Jaipur & New Delhi.
15. Tiwari, R.C. (2007). *Geography of India*. Prayag Pustak Bhawan, Allahabad.
16. Watts, H.D. (1989). *Industrial Geography*. Longman Group Ltd., Hong Kong.

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Modern College of Arts, Science and Commerce (Autonomous), Shivajinagar, Pune 05
Second Year M.A. / M.Sc. Geography
(Course under NEP)
Course Code: 23CpGeoP313
Section- I (Theory)

Title of the Course: Introduction to Remote Sensing (T+P)

Credits: 02

Total lectures: 30

Examination Scheme: CIA: 25 Marks

End-Sem: 25 Marks

Course Objectives:

1. To introduce the students with basic remote sensing techniques and its wide application fields
2. To acquaint the students with remotes sensing principles, EMR, types and platforms, satellites images
3. To familiarize the students with the aerial photography and its interpretation techniques.

Semester III		No of lectures
Unit 1	Introduction to Remote Sensing	04
	i. Introduction and Definition ii. Types of remote sensing - Active and Passive iii. History and development of Remote Sensing in India iv. Applications of Remote Sensing data	
Unit 2	Electromagnetic Energy	08
	i. Stages in Remote sensing ii. Electromagnetic Radiation and Electromagnetic Spectrum iii. Interaction of EMR with atmosphere - scattering, Absorption and Atmospheric Windows iv. Interaction of EMR with Earth's surface features reflection, absorption, emission and transmission	
Unit 3	Remote Sensing Platforms and Sensors	12
	i. Types of platforms- Ground based, Air based, Space based ii. Orbit- Geo-stationary and sun-synchronous iii. Sensors-Types and characteristics iv. Concept of Resolution - Spatial, Spectral, Temporal, Radiometric v. Earth Resources and meteorological Satellites	
Unit 4	Aerial Photography	06
	i. Definition and Geometric Characteristics ii. Elements of aerial photography interpretation	

Learning Outcomes:

By the end of the course, student will be able to:

1. Write history of Indian remote sensing and application areas of RS.
2. Discuss the EMR, EMS and types of RS.
3. Illustrate RS platforms and sensors.
4. Classify the satellite images based on sensor and resolution.
5. Interpret the satellites data/images visually.
6. Compare the satellite images and aerial photographs
7. Interpretation of aerial photographs.

Reference Books:

- 1) American society for Photogrammetry and Remote Sensing, (1999), Remote Sensing for the Earth Sciences, Manual of Remote Sensing, 3rd ,vol. 3, Wiley, New York
- 2) Bethesda (2005) Photogrammetry and Remote Sensing, Mary Land, USA. 2005.
- 3) Campbell, J. B. (2002), Introduction to Remote Sensing. London: Taylor and Francis.
- 4) Jensen, J.R. (2000), Remote Sensing of the Environment: An Earth resource Perspective. Prentice Hall.
- 5) Joseph, G. (2003). Fundamentals of Remote Sensing, Hyderabad: University Press.
- 6) Lueder, D.R., (1959) Aerial photographic interpretation, McGraw Hill Book Co.,
- 7) Mather, P.M. (1999). Computer processing of remotely sensed images: an introduction, Wiley, Chichester.
- 8) OllierLillesand, T. M., and Ralph, K. W. (2008). Remote Sensing and Image Interpretation. Singapore: John Wiley and Sons.
- 9) Paul R.Wolf, (2001) Elements of Photogrammetry, McGraw-Hill Science, 2001.
- 10) Sabins, F. F. (1996). Remote Sensing: Principles and Interpretation, San Francisco: W. H. Freemanand Company.
- 11) Shrikant Karlekar (2014) Remote Sensing, Diamond Publication, Pune
- 12) Tempfi, K., Kerle, N., Huurneman, G., and Janssen, L. F. (Eds) (2009). Principles of Remote Sensing - An Introductory Text Book. Netherlands: The International Institute for Geoinformation Science.

Progressive Education Society's
Modern College of Arts, Science and Commerce (Autonomous), Shivajinagar, Pune 05
Second Year M.A. / M.Sc. Geography
(Course under NEP)
Course Code: 23CpGeoP313
Section- II (Practical)
Title of the Course: Introduction to Remote Sensing (T+P)
(Lab Course on Remote Sensing)

Credits: 02

Examination Scheme: CIA: 25 Marks

Total Practical: 15

End-Sem: 25 Marks

Course Objectives:

1. To familiarize students with the tools and techniques of interpretation of Aerial photographs, satellite image.
2. To introduced students with Digital Image Processing methods applying satellite data.
3. To create skill amongst students about the mapping and accuracy assessment of satellite data.

Semester III		No of Practical
Unit 1	Aerial Photography	4
	i. Measurements and Interpretation Scale and height (using parallax bar) ii. Visual Interpretation of single aerial photograph iii. Interpretation of stereo pair using Stereoscope	
Unit 2	Satellite Images	4
	i. Procurement of Satellite Data, Satellite Data Products and Formats ii. Visual interpretation of satellite images (Landsat, LISS, PAN, Sentinel-2)	
Unit 3	Digital Image Processing	4
	Use of open-source GIS software and classify any satellite image applying the methods of i. Supervised Classification ii. Unsupervised Classification	
Unit 4	Mapping and accuracy assessment	3
	i. Land use/land cover map using GIS software (up to secondary level classification) ii. Ground Truth- Land use / land cover layer ground verification iii. Accuracy assessment of Land use/land cover map	

Learning Outcomes:

By the end of the course, student will be able to:

1. List the elements of visual interpretation key of aerial photos and satellite images.
2. Use of stereoscope and open-source GIS software.
3. Classify the land use/land cover layers using DIP.
4. Compose land use/land cover maps using softwares.
5. Examine accuracy assessment of Land use/land cover map.
6. Invent object height using aerial photographs with stereoscope.

Reference Books:

- 1) American society for Photogrammetry and Remote Sensing, (1999), Remote Sensing for the Earth Sciences, Manual of Remote Sensing, 3rd, vol. 3, Wiley, New York
- 2) Bethesda (2005) Photogrammetry and Remote Sensing, Maryland, USA. 2005.
- 3) Campbell, J. B. (2002), Introduction to Remote Sensing. London: Taylor and Francis.
- 4) Jensen, J.R. (2000), Remote Sensing of the Environment: An Earth resource Perspective. Prentice Hall.
- 5) Joseph, G. (2003). Fundamentals of Remote Sensing, Hyderabad: University Press.
- 6) Lueder, D.R., (1959) Aerial photographic interpretation, McGraw Hill Book Co.,
- 7) Mather, P.M. (1999). Computer processing of remotely sensed images: an introduction, Wiley, Chichester.
- 8) Ollier Lillesand, T. M., & Ralph, K. W. (2008). Remote Sensing and Image Interpretation. Singapore: John Wiley and Sons.
- 9) Paul R. Wolf, (2001) Elements of Photogrammetry, McGraw-Hill Science, 2001.
- 10) Sabins, F. F. (1996). Remote Sensing: Principles and Interpretation, San Francisco: W. H. Freeman and Company.
- 11) Shrikant Karlekar (2014) Remote Sensing, Diamond Publication, Pune.

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Modern College of Arts, Science and Commerce (Autonomous), Shivajinagar, Pune 05
Second Year M.A./M.Sc. Geography
(2023 course under NEP 2020)
Course Code: 23CpGeoP314

Title of the Course: Lab course on Interpretation of Topographical Maps
Credits: 02 **Total Practicals: 15**
Examination Scheme: CIA: 25 Marks **End-Sem: 25 Marks**

Note:

1. Students must check the practical regularly and Journal should be certified by practical in-charge and Head of the Department before the examination.
2. Students without a certified journal should not be allowed for the practical examination.
3. Each of the practical batches should get a separate question paper.

Objectives:

1. To introduce the students with SOI and OS toposheets and to acquire the knowledge of toposheet reading/interpretation.
2. To Study the Landscape and to read Topographical Maps.
3. To familiarize the students with the conventional signs and symbols and their applications in Geographical phenomena.
4. To acquaint the students with SOI and OS maps and to gain the knowledge of Map Reading / interpretation.

	Semester – III	Practicals
Unit 1	Introduction	03
	A. Introduction to Survey of India (SOI) and O.S Topographical Maps B. Indexing systems C. Marginal Information D. Conventional signs and symbols (SOI and OS) E. Grid reference	
Unit 2	Interpretation of S.O.I and O.S. toposheets.	10
	A. Patterns of Relief i. Distribution of Spot heights, bench marks, Trigonometrical Points etc. ii. Types of Slopes (convex, concave, uniform etc.) iii. Major landforms from contour patterns B. Patterns of Drainage network i. Types-trellis, dendritic, radial, etc. ii. Streams (perennial & non-perennial) iii. Influence of relief on drainage C. Patterns of Vegetation i. Types of vegetation ii. Association of relief and drainage iii. Reserved Forest and Protected Forest D. Patterns of Settlements i. Types, amenities, facilities and communication, etc	

	ii. Distribution, relative size, relative distance (dispersed, nucleated etc) E. Transportation and Communication i. Modes of transportation ii. Means of Communication F. Patterns in Land Use. i. Agriculture, mining etc, areal distribution, impact of physical landscape. (Interpretation of SOI sheet – 3 sheets and OS sheet – 1 sheet)	
Unit 3	Experiential Learning	02
	Field visit/excursion to geographical significant region and preparation of report.	

Course Outcomes:

Students will be able to:

1. Understand the marginal information and indexing techniques of SOI and OS Toposheets.
2. Enhance the skills of map reading and also the ability to interpret them.
3. Acquire knowledge of various signs and symbols used in the toposheet
4. Acquaint with observational skills related to local, physiographical and socio-cultural phenomena visible on the toposheets
5. Understand the importance of maps for regional development and decision making.
6. Get opportunity to learn various geographical significant regions through field work and its correlation with the toposheets.

Reference Books:

1. Archer, J. E., & Dalton, T. H. (1968). *Fieldwork in Geography*. B.T. Batsford Limited London
2. Dury, G. H. (1972). *Map Interpretation*. Pritman and Sons, London.
3. Gupta, K. K., & Tyagi, V. C. (1992). *Working with Maps*. Survey of India.
4. Jones, P. A. (1968). *Fieldwork in Geography*. Longmans, Green and Company Limited.U.S.A.
5. Meux, A. H. (1960). *Reading Topographical Maps*. University of London Press Limited.U.K.
6. Petrie, N. (1992). *Analysis and Interpretation of Topographical Maps*. Orient Longman Limited. Calcutta.
7. Ramamurthy, K. (1982). *Map Interpretation*. Rex Printer, Madras.
8. Singh, G. (1996). *Map Work and Practical Geography*. Vikas Publication, New Delhi.
9. Tamaskar, B. G., & Deshmukh, V. M. (1974). *Geographical Interpretation of Indian Topographical Maps*. Orient Longman Limited Bombay.
10. Vaidyanadhan, R. (1968). *Index to a Set of Sixty Topographic Maps: Illustrating Specified Physiographic Features from India*. Council of Scientific and Industrial Research, Ministry of Education, Government of India.
11. Wheeler, K. S. (Ed.). (1970). *Geography in the field*. Blond Educational, London.

Progressive Education Society's
Modern College of Arts, Science and Commerce (Autonomous), Shivajinagar, Pune 05
Second Year M.A. / M.Sc. Geography
(Course under NEP)
Course Code: 23CpGeoP321
Section- I (Theory)
Title of the Course: Introduction to GIS (T+P)
(Geographic Information System)

Credits: 02

Examination Scheme: CIA: 25 Marks

Total lectures: 30

End-Sem: 25 Marks

Course Objectives:

1. To introduced fundamental concepts of Geographic Information System (GIS)
2. To familiarize the students with the GIS data types and models
3. To acquaint the students with spatial analysis skills

Semester III		No of lectures
Unit 1	Introduction to GIS	05
	i. Definition and Historical Development of GIS ii. Components of GIS- hardware, software, data, methods data and users iii. Functions/ Tasks of GIS input, manipulation, management, query & analysis, visualization iv. Applications of GIS	
Unit 2	Sources and types of GIS data	05
	i. Concept of Space and Time, Data and Database ii. Data types-Spatial and Non spatial: concepts and sources iii. Raster data and their characteristics iv. Vector data and their characteristics	
Unit 3	GIS Data Models	14
	A. Spatial Data Models: i. Vector Data - Concept of Arc, Node, Vertices and Topology, Computer file structure of geographical features in Vector-Point, Line, Polygon ii. Raster Data–Raster data types, Computer file structure of geographical features in Raster B. Non-Spatial Data Models: Concept and Types of Database Management System (DBMS)	
Unit 4	Structuring and Operations of spatial data	06
	i. Digitization, Editing and topology building ii. DEM and DTM iii. Overlay analysis iv. Map algebra	

Learning Outcomes:

By the completion of the course, students will be able to:

1. Describe objectives and components of GIS.
2. Understand the concept of spatial database and analysis.
3. Explain the nature and structure of spatial data models.
4. Compare the raster and vector GIS spatial data.
5. Assess the topology building and overlay analysis.
6. Generate the spatial overlay analysis and grid operations.

Reference Books:

1. Burroughs, P. A. and McDonnell, R. A. (2002): Principles of Geographical Information System, Oxford University Press.
2. Clarke, Keith C.(1999) Getting Started with Geographic Information Systems, Prentice Hall, New Jersey
3. DeMers Michel N.(2000): Geographic Information Systems, John Wiley and Sons.
4. George J. (2004): Fundamentals of Remote Sensing, Universities Press Pvt. Ltd., Hyderabad.
5. Jensen, J. R. (2003): Remote Sensing of Environment, An Earth Resource Perspective, Pearson Education Pvt. Ltd., New Delhi.
6. Kang-tsung Chang (2003): Geographic Information Systems, Tata McGraw Hill, New Delhi
7. Lillesand, T. M. and Kiefer R. W. (2002): Remote Sensing and Image Interpretation, John Wiley and Sons, New Delhi.
8. LoAlbert, C. P., and Young, K. W (2003): Concepts and Techniques of Geographical Information Systems, Prentice Hall of India Pvt. Ltd., New Delhi.
9. Michael F. Goodchild and Karen K. Kemp (1990): Introduction to GIS, National Center for Geographic Information and Analysis, University of California, Santa Barbara.
10. Paul A. Lonfley, Michel F. Goodchild, D J. Maguire and D W. Rhind, (2002): Introduction to Geographic Information Systems and Science, John Wiley and Sons Ltd.
11. Shrikat Karlekar (2014): Geographic Information Systems, dimand publication, Pune
12. StarJ, and J.Estes, (1994): Geographic Information Systems: An Introduction, Prentice Hall, New Jersey.

Progressive Education Society's

Modern College of Arts, Science and Commerce (Autonomous), Shivajinagar, Pune 05

Second Year M.A. / M.Sc. Geography

(Course under NEP)

Course Code: 23CpGeoP321

Section- II (Practical)

Title of the Course: Introduction to GIS (T+P)

(Lab Course on GIS)

Credits: 02

Examination Scheme: CIA: 25 Marks

Total Practical: 15

End-Sem: 25 Marks

Course Objectives:

1. To introduce major components of Geospatial technologies
2. To provide exposure to students with spatial analysis, GIS operations and mapping
3. To acquaint students with the use and applications of GIS software's and techniques

Instructions:

1. Use of any open source or license copy GIS software is mandatory
2. Hand-on exercise of GIS software should be conducting batch wise

Semester III		No of Practical
Unit 1	GIS Input	04
	i. Coordinate systems -Degree Minutes Second (DMS), Degree Decimal (DD), Conversion of DMS to DD and DD to DMS ii. Introduction, installation and overview of any one open-source GIS software iii. Geo-referencing and mosaicking of Toposheet / maps using GIS software	
Unit 2	Spatial Database Analysis	07
	A. Software based exercise i. Digitization of layers (point, line and polygon features) from geo-referenced SOI Toposheet /quadrant ii. Creation and export of Shapefile, Editing and topology of vector layers iii. Attribute data attachment B. Manual exercise raster layer file structure: Run Length Encoding, Block Code, Chain Coding, Quadtree	
Unit 3	GIS Output	04
	GIS software based i. Generating Map layout -Title, Grid, Scale, Direction, Index, sign and symbols ii. Design of maps (Point, Line and Polygon features maps) using shape files of digitized Toposheet/ quadrant iii. Design of elevation map, contours map, 3D View based on	

	ASTER/ SRTM DEM	
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3. Students should maintain a journal of all the exercise conducted

Learning Outcomes:

By the completion of the course, students will be able to

1. Understand the components of GIS.
2. Examine the raster and vector layer file structure.
3. Classify geographical features with point, line, polygon.
4. Prioritize GIS input, storage, manipulation, retrieval, analysis and maps geographical data.
5. Design map layout and prepare GIS based various spatial and thematic maps.

Reference Books:

1. Burroughs, P. A. and McDonnell, R.A. (2002): Principles of Geographical Information System, Oxford University Press.
2. Clarke, Keith C.(1999) Getting Started with Geographic Information Systems, Prentice Hall, New Jersey DeMers Michel N.(2000): Geographic Information Systems, John Wiley and Sons.
3. George J. (2004): Fundamentals of Remote Sensing, Universities Press Pvt. Ltd., Hyderabad.
4. Kang-tsung Chang (2003): Geographic Information Systems, Tata McGraw Hill, New Delhi
5. Shrikat Karlekar (2014): Geographic Information Systems, dimand publication, Pune
6. Chang, K. T. (2008). Introduction to Geographic Information Systems. Avenue of the Americas, McGraw-Hill,
7. Environmental Systems Research Institute, Inc. (1998). Understanding GIS: The ARC/INFO Method. Redlands: ESRI Press.
8. Goodchild, M. F. (2003). Geographic Information Science and System for Environmental Management. Annual Review of Environment and Resource 28: 493-519

Progressive Education Society's
Modern College of Arts, Science and Commerce (Autonomous), Shivajinagar, Pune 05
Second Year M.A./M.Sc Geography
(2023 course under NEP 2020)
Course Code: 23CpGeoP322
Title of the Course: Geography of Health

Credits: 04

Examination Scheme: CIA: 50Marks

Total Lectures: 60

End-Sem: 50Marks

Objectives:

1. To acquaint student with the subject matter of geography of health as a sub-field of geography.
2. To highlight the spatial distribution of Health issues over a region and also studies the global Healthcare infrastructure.
3. To understand the various health-related issues and how they are affected by different geographic locations.

Semester - III		Lectures
Unit 1	Introduction to Geography of Health	06
	E. Nature, Scope and significance F. Relationship between geographical factors & Health	
Unit 2	Human Ecology and Diseases	12
	H. Human Ecology: meaning and definition I. Types of human adaptations J. Classification of Diseases K. Health Transition: concept, Social and Spatial Epidemiological Perspectives	
Unit 3	Developmental Changes and Human Health	10
	G. Human growth and Developmental Changes: Geographical perspective H. Urbanization and Health I. Emerging Diseases	
Unit 4	Geographical Perspective of Health	15
	A. Geographical Perspective on Health Care Provisions: Developed and Developing Countries; applicability in India B. Poverty, Food Security and Health C. Health policies in India	
Unit 5	Health Care Delivery System in India	15
	F. Indian Health Care Delivery System: Public and Private Sectors G. Accessibility, Utilization and Health Service Planning H. Health Care Problems in India	
Unit 6	Experiential learning	02
	G. Visit to any public health care centre and the preparation of report	

	H. Group discussion on current health issues and its relation with geographic locations.	
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Course Outcomes:

Students will be able to:

1. Learn the definition, nature and scope of geography of health.
2. Develop its dynamic aspects and development.
3. Analyse the relationship between geographical factors and human health.
4. Explore and understand the Human ecology of diseases and decipher various health issues by connecting them to the geographic locations.
5. Examine the relationship between urbanization and emerging diseases.
6. Critically analyse the health care delivery system in India.

Reference Books:

1. Hazra, J. (Ed.) (1997). *Health Care Planning in Developing Countries*. University of Calcutta: Calcutta.
2. Leartnonth ATA (1978). *Patterns of Disease & Hunger*, V ParidChorles. London.
3. May, J. M. (1959). *Ecology of Human Diseases*. M.D. Publications: New York.
4. Meade, M., & Earickson, R. (2006). *Medical Geography*. Rawat Publications: Jaipur.
5. Misra R. P. (2007). *Geography of Health: A Treatise on Geography of Life and Death in India*. Concept Publishing Company: New Delhi.
6. Pati, B., & Harrison, M. (2009). *The Social History of Health and Medicine in Colonial India*. Routledge: London.
7. Woods, E. J. (1983). *Social Geography of Medicine & Health*. Croon Helm: London.

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Modern College of Arts, Science and Commerce (Autonomous), Shivajinagar, Pune 05
Second Year M.A./M.Sc. Geography
(2023 course under NEP 2020)

Course Code:23CpGeoP411

Title of the Course: Environmental Geography

Credits: 04

Examination Scheme: CIA: 50Marks

Total lectures: 60

End-Sem: 50Marks

Course objectives:

1. To create environmental awareness among the students.
2. To acquaint the students with fundamental concepts of environmental geography.
3. To acquaint the students to the past, present and future utility and potentials of resources at regional, national and global level.
4. To make aware the students about problems of utilization and conservation in view of sustainable development.

	Semester- IV	No of Lectures
Unit 1	Introduction to Environmental Geography	08
	A. Environment and ecosystem B. Nature, scope and Significance of Environmental Geography	
Unit 2	Ecosystem	16
	A. Structure and Functions of ecosystem B. Types of ecosystems i. Terrestrial ecosystem: Tundra, Desert, Grassland and Forest ii. Aquatic ecosystem: Fresh Water (Lentic and Lotic), Marine Ecosystem	
Unit 3	Environmental Problems	12
	A. Major global environmental issues: Global Warming and Climate Change, Marine pollution B. Major environmental issues in India: Loss of Biodiversity, Water pollution, land degradation	
Unit 4	Environmental conservation	12
	A. Significance of Environmental Conservation B. Methods and measures of conservation (Forest, Soil, Water, and Biodiversity) C. Environmental impact assessment: Definition & steps	
Unit 5	Environmental Laws and policies	10
	A. Major International Environmental Agreements: -Ramsar Convention on Wetlands, United Nations Convention on Climate Change, Kyoto Protocol and Montreal Protocol B. Major Environmental Laws in India	
Unit 6	Experiential learning and Field Work	02
	A. Field visits to identify regional environmental issues, B. Group discussion on local environmental issues and its solution	

Course Outcomes

Students will be able to:

5. Understand the basic concepts in Environmental geography and sustainability.
6. Gain knowledge about biodiversity and its importance.
7. Obtain and create ability to develop awareness and responsibility for the environment.
8. Get the experience of field observation and will develop the ability for scientific study of local environmental problems and their appropriate solutions.
9. Create awareness associated with ecosystem and ecology to maintain environmental balance.
10. Analyze the structure and function of ecosystem.
11. Learn global and regional environmental problems and policies.

Reference book:

1. Chandna R. C. (2002). *Environmental Geography*. Kalyani Publication, Ludhiana.
2. Cunningham W. P., & Cunningham M. A. (2004). *Principals of Environmental Science: Inquiry and Applications*. Tata McGraw-Hill, New Delhi.
3. Goudie A. S. (2001). *The Nature of the Environment*. Blackwell, Oxford.
4. Kormondy E. J. (1996). *Concepts of Ecology*. Prentice-Hall of India Learning Pvt.Ltd., New Delhi.
5. Miller G. T. (2004). *Environmental Science: Working with the Earth*. Thomson Brooks Cole.
6. Odum E. P., & Barrett G. W. (2005). *Fundamentals of Ecology*. Cengage Learning, India.
7. Saxena H. M. (2004). *Environmental Geography*, Rawat Publication, Jaipur.
8. Sharma, P. D. (2015). *Ecology and Environment*. Rastogi Publications, Meerut.
9. Singh R. B. (2009). *Biogeography and Biodiversity*. Rawat Publication, Jaipur.
10. Singh S. (1997). *Environmental Geography*. Prayag Pustak Bhawan. Allahabad.
11. Singh, R. B. (1998). *Ecological Techniques and Approaches to Vulnerable Environment: Hydrosphere-Geosphere interaction*. Oxford & IBH Pub, New Delhi.
12. Gholap T. N. (2000). पर्यावरणशास्त्र, निशिकांत प्रकाशन, पुणे.

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Second Year M.A./M.Sc. Geography

(2023 course under NEP 2020)

Course Code: 23CpGeoP412

Title of the Course: Geography of Regional Planning

Credits: 04

Examination Scheme: CIA: 50Marks

Total Lectures: 60

End-Sem: 50Marks

Course Objectives:

1. To introduce the students to basic concepts of regional planning.
2. To familiarize the students with the regional approach to study geography.
3. To make the students aware about the theories and processes involved in regional planning.
4. To acquaint the students with various facets of regional geography- foundations and dimensions, regional consciousness and identity and forms and evolution.
5. To let the students to understand regional planning in Indian context.

	Semester – IV	Lectures
Unit 1	Introduction	08
	C. Concept of Region and Planning region D. Types of Regions E. Nature and Scope of Geography of Regional Planning F. Role of Geography in Regional Planning	
Unit 2	Process of Regional Planning	10
	C. Concept and need of regional planning D. Approaches and Hierarchy (state, district and block level) E. Planning process: systems planning versus master planning F. Planning professionals	
Unit 3	Regional Planning in India	12
	A. Salient features of Indian Five Year Plans B. NITI Aayog C. Regional growth and development D. Development programs in India (Command Area, Drought Prone, Tribal And Hill Area Projects)	
Unit 4	Regional Disparities	10
	C. Spatial pattern of regional disparity in India (Mountainous, Plain, Tribal and Drought prone region) D. Spatial pattern of regional disparity in Maharashtra	
Unit 5	Orientation of Regional Planning	10
	A. Natural factors B. Strategic locational factors C. Socio-cultural factors	
Unit 6	Regional Development and Planning Strategies	10
	A. Case Studies of Regional Development and Planning Strategies from Developed and Developing Countries	

Course Outcomes:

The students will be able to:

1. Understand the definitions, concepts, nature and scope, classification of region and regional planning.
2. Examine the processes of regional planning.
3. Analyze and illustrate the regional planning in India.
4. Understand the different theoretical background, structure and hierarchy of regional planning in India.
5. Understand and analyze the principal issues confronting the different regions of India and Maharashtra.
6. Scrutinize the orientation of regional planning in India.
7. Distinguish between planning strategies in developing and underdeveloped countries through case-studies.

Reference Books:

1. Bhat, L. S. (1973). Regional Planning in India. Statistical Publishing Society. Kolkata.
2. Chand, M. and Puri, V. K. (2003). Regional Planning in India, Allied Publishers Pvt. Ltd. New Delhi.
3. Chandana, R. C. (2000). Regional Planning- A Comprehensive Text. Kalyani Publisher. Ludhiana.
4. Dube, K. N. (1990). Planning and Development in India, Asia Publishing House. New Delhi.
5. Friedmann, J., & Alonso, W. (1967). Regional Development and Planning: A Reader. MIT Press. New York.
6. Glasson, J., & Marshall, T. (2007). Regional Planning. Routledge. New York.
7. Govt. of India (1986). Regional Plan 2001: National Capital Region, NCRPB, Ministry of Urban Development, New Delhi.
8. India Year Book (2014). Publication Division, New Delhi.
9. Mishra, H. N. (2005). Regional Planning, Rawat Publication. Jaipur.
10. Mishra, R. P. (1992). Regional Planning, Concepts, Techniques, Policies and Case Studies, Concept Publication. New Delhi.
11. Mishra, R. P. (2002). Regional Planning in India. Concept Publication. New Delhi.

Progressive Education Society's
Modern College of Arts, Science and Commerce (Autonomous), Shivajinagar, Pune 05
Second Year M.A./M.Sc. Geography
(2023 course under NEP 2020)
Course Code: 23CpGeoP413
Title of the Course: Lab Course on Surveying, Advance Surveying and Field Visit/Field Excursion

Credits: 04

Total Practical: 30

Examination Scheme: CIA: 50 Marks

End-Sem: 50 Marks

Note:

1. Use of graph, calculator, computer, are allowed at the time of examination.
2. Students must check the practical regularly and Journal should be certified by practical in-charge and Head of the Department before the examination.
3. Students without a certified journal should not be allowed for the practical examination.
4. Each of the practical batches should get a separate question paper.

Objectives:

1. To understand the field surveying methods.
2. To study and understand the methodology of advanced surveying.
3. To acquaint the students with the principles of surveying, its importance and utility in the regional planning.
4. To get familiar with the basic aspects of linear, vertical and angular measurements of surveying.
5. To identify sources and types of errors occurs during surveying.

	Semester – IV	Practicals
Unit 1	Surveying	02
	A. Surveying: Definition, types and methods B. Benchmarks, Spot heights, Reduced levels, Interpolation and Contouring	
Unit 2	Dumpy Level Survey	06
	A. Functions and structure B. Methods and plotting (Two examples each) : i. Rise and Fall Method ii. Collimation Method	
Unit 3	Transit and Digital Theodolite Survey	08
	A. Components and common terms C. Methods and plotting (Two examples each) : i. Tachometric Method ii. Intersection Methods	
Unit 4	Global Positioning System (GPS) Survey	04
	A. Features, Segments importance and Factors governing GPS accuracy B. Different types of errors in GPS Positioning. C. Plotting Latitude (X), Longitude (Y) and Altitude (Z) and Preparation of cross sections based on GPS surveyed data D. Slope measurement and Location mapping using GPS	

Unit 5	Total station survey	08
	A. Principle and Functions B. Field work: Point data collection (Easting, Northing and Height), Angle and Distance Measurement Survey, Area Measurement Survey, Height Measurement Survey, C. Field Measurement by Total Station and its plotting D. Survey data post processing: Download the Point Data, Import the File into GIS, Creation of Shapefile and Generation of Digital Elevation Model (Field survey of river/beach, Preparation of map)	
Unit 6	Drone Survey/UAV Survey	02
	A. Introduction to Drone / Unmanned Aerial Vehicle (UAV) B. Importance of Drone Survey C. Visit to any Drone/UAV surveying Institute	

Course Outcomes:

Students will be able to:

1. Develop the practical knowledge and application of surveying methods.
2. Acquire the knowledge of different techniques of advanced surveying.
3. Acquaint with the various plotting methods.
4. Collect appropriate information through GPS surveyed Categorise the terrain gradient.
5. Obtain skill about measurements of field, farm, land-use/land-cover and preparation of proper maps with the help of traditional and advanced instruments.
6. Understand topographic undulations and mapping skills.
7. Design appropriate village/town developmental plan with the help of course knowledge.

Reference Books:

- 1) Davis, R. E., & Foote F. S. (1940). *Surveying-theory and practice*. McGraw-Hill Book Co., New York.
- 2) Deshpande, G. B. (1991). *Surveying*. Everest publishing house, Pune.
- 3) Kanetkar, T.P. & Kukarni S.V. 1986. *Surveying & leveling*, Pune Vidyarthi Griha Prakshan, Pune
- 4) Kanetkar, T. P., & Kulkarni S. V. (2010). *Surveying and Levelling (Part I and II)*, Pune Vidyarthi Gruha Prakashan, Pune.
- 5) Khan, M. Z. A. (1998). *Textbook of Practical Geography*. Concept publishing company, New Delhi.
- 6) Robinson, A. H., & Sleep, R. D. (1969). *Elements of Practical Geography*. New York, John Wiley.
- 7) Singh Gopal (2009). *Map Work and Practical Geography*. Vikas Publishing House Pvt. Ltd., New Delhi.
- 8) Singh, R. L., & Dutt P. K. (1979). *Elements of Practical Geography*. Kalyani Publications, New Delhi.
- 9) V. Natarajan, P., Adler Ron K. *Advanced Surveying*, B.1 Publ. Bombay.

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Modern College of Arts, Science and Commerce (Autonomous), Shivajinagar, Pune 05

Second Year M.A./M.Sc. Geography

(2023 course under NEP 2020)

Course Code: 23CpGeoP421

Title of the Course: Geography of South Asia

Credits: 04

Examination Scheme: CIA: 50Marks

Total Lectures: 60

End-Sem: 50Marks

Course Objectives:

1. To introduce the students to South Asia as a region and a concept.
2. To acquaint the student with the geostrategic significance of South Asian region in global context.
3. To make the student aware about the environmental, geo-strategic and contemporary issues faced by the South Asian region.

	Semester – IV	Lectures
Unit 1	Introduction	9
	G. South Asia as a region: Historical and political background H. Geographical perspective of South Asia: i. Geo-strategic significance ii. Indian Ocean Region iii. Evolving role of Indo-Pacific	
Unit 2	Physical and social aspects	13
	G. Physical aspects: Physiography, Drainage system, Climate, Soil & Natural Vegetation H. Social aspects: Language, Religion and Ethnicity	
Unit 3	Population and Development	8
	C. Growth and distribution D. HDI of different countries within South Asia	
Unit 4	Border related disputes	10
	D. Territorial E. Maritime F. Trans-Boundary River Water	
Unit 5	Contemporary issues	11
	C. Major Environmental Issues i. Challenges to Biodiversity ii. Disaster Preparedness iii. Climate Change D. Major Political Issues i. Insurgency in South Asia ii. Migration issues and Diaspora	
Unit 6	Evolving Economic and Geo-political scenario	9

	A. Geo-economics of South Asia B. SAARC: Role, Challenges and Potentialities in Regional Integration, and Prospects C. Expanding Geography and BIMSTEC	
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Course Outcomes:

The student will be able to:

8. Understand the dimensions of South Asia as a region.
2. Critically analyze the significant role of South Asia in International Politics.
3. Examine the physical aspects of South Asia.
4. Analyze how race, religion, caste, language and ethnicity has shaped the social system of South Asia.
5. Examine the various determinants and associated factors of population of South Asia.
6. Understand the trends of urbanization in South Asia.
7. Examine the territorial, maritime border disputes within south Asia and its impact on global politics.
8. Understand the environmental, geo-strategic and contemporary issues facing by the South Asian region.
9. Critically analyze the role of SAARC in global economy and geo-strategic scenario.

Reference Books:

1. Bradnock, R. W. (2015). *The Routledge Atlas of South Asian Affairs*. Routledge.
2. Chattopadhyaya, H., & Sarkar, S. K. (Eds.). (2003). *Ethnic Composition and Crisis in South Asia: India* (Vol. 1). Global Vision Publishing House.
3. Farmer, B. H. (1983). *An Introduction to South Asia*. Routledge.
4. Gonsalves, E., & Jetly, N. (1999). *The dynamics of South Asia: regional cooperation and SAARC*.
5. Jain, B. M. (2010). *India in the New South Asia: Strategic, Military and Economic Concerns in the Age of Nuclear Diplomacy* (Vol. 45). IB Tauris.
6. Johnson, B. L. C. (1981). *South Asia*. Heinemann Educational Books Ltd.
7. Mathur, S. K. (2007). *Economic Growth and Convergence in Selected South Asian and East Asian Countries: A Data Envelopment Analysis*. ICFAI Books.
8. Mollinga, P. (2000). *Water for food and rural development. Approaches and initiatives in South Asia*. Sage.
9. Shafi, M. (2000). *Agricultural Geography of South Asia: India, Pakistan, Bangladesh, Sri Lanka, Nepal, Bhutan, and Maldives*. Macmillan.
10. Sundaram, C., Sugata Bose, & Ayesha Jalal. (2005). *Modern South Asia: History, Culture, Political Economy*. Contemporary South Asia, 14(2), 234.

Progressive Education Society's
Modern College of Arts, Science and Commerce (Autonomous), Shivajinagar, Pune 05
Second Year M.A./M.Sc. Geography
(2023 course under NEP 2020)
Course Code: 23CpGeoP422
Title of the Course: Tourism Geography

Credits: 04

Examination Scheme: CIA: 50Marks

Total Lectures: 60

End-Sem: 50Marks

Objectives:

1. To acquaint the student's basic concepts of Geography & Tourism
2. To aware the students with the utility and application of Tourism
3. To help the students & society to understand the interrelationship between tourism and employment generation opportunities.
4. To understand the impact of tourism on Physical and Human Environment.

	Semester – IV	Lectures
Unit 1	Introduction to Tourism Geography	08
	A. Tourist, Tourism and its significance B. Nature and Scope of Tourism Geography C. Role of Geography in Tourism.	
Unit 2	Concepts and Classification of Tourism	10
	A. Concepts: Agro- Tourism, Heritage Tourism, Adventure Tourism, Religious Tourism, Health Tourism, ,Eco-tourism B. Classification Based on: Nationality, Travel Time, Travel Distance, Number of Tourists, Purpose	
Unit 3	Affecting factors and impacts of tourism	10
	A. Factors affecting tourism: physical, Economic, Socio-Cultural B. Impact of Tourism: environmental, economic, socio-cultural impact	
Unit 4	Tourism Activity and Employability	12
	A. Tourism as an economic activity B. Concept of Tourism Product C. Promotion of Tourism D. Tourism Mapping, Tour Plan, Tour operation E. Tourism and allied activities:Hotel, Transportation and Onlinebooking, F. Employability: -Travel Agency, Agents, TouristGuide.	
Unit-5	Tourism planning and development	12
	A. Concept of Tourism Planning B. Butler's model of tourism development C. Planning and policies of tourism development: World Tourism Organization (WTO), India Tourism Development Corporation (ITDC), Maharashtra Tourism Development Corporation (MTDC)	

Unit-6	Experiential Learning	08
	Case Studies of Major Tourist Centers in India A. Hill Station- Manali and Mahabaleshwar B. Historical- Tajmahal and Raigadh Fort C. National Parks- Kaziranga, Melghat D. Preparation of Tourist Plan on any of above touristdestination E. Group discussion onPotential for local tourismdevelopment	

Course Outcomes:

Students will be able to:

1. Attain knowledge about the subject matter of Tourism Geography, the basic concepts and geographical parameters of tourism
2. Learn about the different factors and impacts of tourism on people and places.
3. Study the tourism motivating factors for pilgrimages, leisure, recreation, elements
4. Understand the natural and manmade resources associated with tourism activity
5. Get appropriate skill for their employment opportunities in the field of tourism industry
6. Discover various tourist agencies and tourist destinations.
7. Acquire knowledge on the recent trends and patterns of tourism development in India and other countries.
8. Experience andattain information regarding tourism potential.

Reference Books:

1. Bhagwat, A. V., & Joshi, M. (n.d.). *Geography of Tourism*. Murlidhar Publication Pune.
2. Bhatia, A. K. (n.d.). *Tourism Development, Principles and Practices*. Sterling Publisher Ltd.
3. Das, M. (1983). *India: A tourist Paradise*.Facet Books International
4. Dixit, N. K. (n.d.). *Tourism Geography*. Vista International Publication Delhi.
5. Gitanjali, C., Chaudhary, G. P. R. (2010). *Tourism Geography*. Centurian Press.
6. Gupta, V. K. (n.d.). *Tourism of India*.
7. Hudman, L. E. (n.d.). *Geography of Travel and Tourism*.
8. Kaul, R. N. (1985). *Dynamics of Tourism*. Sterline Publisher Ltd.
9. Kumar, M. (1992). *Tourism today: an Indian perspective*. Kanishka Publishing House.
10. Mathiseson, A., & Wall, C. (n.d.). *Tourism: Economic Physical and Social Impact*. Logman, U.K.
11. Nagktode, P. M., & Pardhi, D. (n.d.). *Geography Tourism*. Vidya PrakashanNagpur.
12. Pearce, D. G. (1987). *Tourism today. A geographical analysis*. Longman scientific & technical.
13. Robinson, H. (1996). *A Geography of Tourism*.
14. Seth, P. N. (1985). *Successful Tourism Management*. Sterling Publisher Ltd.

15. Sharma, A. (2008). *Tourism Development*. RBSA Publishers, Jaipur.
16. Shinde, S. B. (n.d.). *Geography of Tourism*. Phadke Prakashana Kolhapur.
17. Singh, S. N. (1985). *Geography of Tourism and Recreation*.
18. Smith, S. L. J. (n.d.). *Tourism Analysis*.
19. Suryawanshi, R. (2012). *Assessment of Potentials for Eco-tourism*. Lambart Publication.
20. Thakur, M. T. (2008). *Ecotourism and Sustainable Tourism*. Omega Publications, New Delhi.
21. Gharpure, V. (n.d.). *Geography of Tourism*. Pimplapure Publication Nagpur.