Anekant Education Society's

Tuljaram Chaturchand College of Arts, Science and Commerce, Baramati

(Empowered Autonomous NAAC A++)

Two Year Degree Program in Geography

(Faculty of Science & Technology)

CBCS Syllabus

M.A. /M.Sc. (Geography) Part-I Semester -I

For Department of Geography

Tuljaram Chaturchand College of Arts, Science and Commerce, Baramati

Choice Based Credit System Syllabus (2026 Pattern)

(As Per NEP 2020)

To be implemented from Academic Year 2026-2027

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AES's T. C. College (Empowered Autonomous), Baramati. CBCS Syllabus 2026 Pattern as per NEP 2020

Title of the Programme: M.A. /M.Sc. (Geography)

<u>Preamble</u>

AES's TuljaramChaturchand College has decided to change the syllabus of various faculties from June, 2026 by taking into consideration the guidelines and provisions given in the National Education Policy (NEP), 2020. The NEP envisions making education more holistic and effective and to lay emphasis on the integration of general (academic) education, vocational education and experiential learning. The NEP introduces holistic and multidisciplinary education that would help to develop intellectual, scientific, social, physical, emotional, ethical and moral capacities of the students. The NEP 2020 envisages flexible curricular structures and learning based outcomes for the development of the students. The credit structure and the courses framework provided in the NEP are nationally accepted and internationally comparable.

The rapid changes in science and technology and new approaches in different areas of Geography and related subjects, Board of Studies in Geography of TuljaramChaturchand College, Baramati - Pune has prepared the syllabus of M. A. /M.Sc.-I Geography Semester - I under the Choice Based Credit System (CBCS) by following the guidelines of NEP 2020, NCrF, NHEQF, Prof. R.D. Kulkarni's Report, GR of Gov. of Maharashtra dated 20th April and 16th May 2023 and Circular of SPPU, Pune dated 31st May 2023.

A Master degree in geography will provide students, the knowledge and skills to begin a variety of rewarding careers. Geographers work as urban planners, GIS technicians and analysts, disaster preparedness planners, teachers, environmental scientists, remote sensing analysts, transportation planners, demographers, hydrologists and in a variety of other areas. Students who complete Master degree in Geography, courses will examine the spatial organization of physical features and human activities at a variety of spatial scales from local to global. Students will be able to locate features on the surface of the earth, explain why they are located where they are, and describe how places are similar and/or different. Students will also examine human interactions with the environment and describe how physical and cultural landscapes change through time. Students completing physical geography courses will be able to describe the processes that drive earth's climate, create landforms, and govern the distribution of plants and animals.

Programme Specific Outcomes (PSOs)

1. Ability of Problem Analysis: Student will be able to analyse the problems of physical as well as cultural environments of both rural and urban areas. Moreover, they will try to find out the possible measures to solve those problems.

2. Conduct Social Survey Project: They will be eligible for conducting social survey project, which is necessity for the assessment of development status of a particular group or section of the society.

3. Individual and teamwork: Works effectively as an individual and as a member or leader in diverse teams and in multidisciplinary settings.

4. Application of modern instruments: Students will be able to apply various modern instruments for data collection and field survey.

5. Application of GIS and modern Geographical Map Making Techniques: Students will learn how to prepare map based on GIS by using the modern geographical map-making techniques.

6. Critical Thinking: Students will able to understand and solve the critical problems of physical and cultural environment.

7. Development of Observation Power: As a student of Geography, they will be capable to develop their observation power through field experience and in future, they will be able to identify the socio-environmental problems of a locality.

8. Development of Communication Skill and Interaction Power: After the completion of the course, they will be efficient in their communication skill as well as power of social interaction.

9. Effective Citizenship: Demonstrate empathetic social concern and equity centred national development and the ability to act with an informed awareness of issues and participate in civic life through volunteering.

10. Enhancement of the ability of Management: Demonstrate knowledge and understanding of the management principles and apply these to their own work, as a member and leader in a team, to manage projects. They will perform effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

11. Ethics: Recognize different value systems including your own, understand the moral dimensions of your decisions and accept responsibility for them.

12. Understand Environmental Ethics and Sustainability: Understand the impact of the acquired knowledge in societal and environmental contexts and demonstrate the knowledge of need for sustainable development.

13. Self-directed and Life-long Learning: Acquire the ability to engage in independent and life-long learning in the broadest context social, environmental and technological changes.

14. Presentation Skill: Students are being able to understand and write effective reports and design credentials, make effective demonstrations, give and receive clear instruction

Anekant Education Society's
Tuljaram Chaturchand College of Arts, Science and Commerce, Baramati
(Empowered Autonomous NAAC A++)
Board of Studies (BOS) in Geography
2026-27

Sr. No.	Name of Member	Designation
1	**Dr. Arun S. Magar** Head & Associate Professor, Department of Geography, T. C. College, Baramati	Chairman
2	**Dr. Asaram S. Jadhav** Associate Professor, Department of Geography, T. C. College, Baramati	Internal Member
3	**Mr. Vinayak D. Chavan** Assistant Professor, Department of Geography, T. C. College, Baramati	Internal Member
4	**Ms. Sayali Pawar** Assistant Professor, Department of Geography, T. C. College, Baramati	Internal Member
5	**Ms. Priyanka Pawar** Assistant Professor, Department of Geography, T. C. College, Baramati	Internal Member
6	**Dr. Savita Kulkarni** Head & Associate Professor, Department of Geography, Annasaheb Magar College, Hadapsar, Pune	Vice-Chancellor Nominee, Subject Expert, SPPU Pune
7	**Dr. Tukaram P. Shinde** Head & Associate Professor, Department of Geography, Mudhoji College, Phaltan	Subject Expert from Outside the Parent University
8	**Dr. Prashant Patil** Associate Professor, Department of Geography, Shivaji University, Kolhapur	Subject Expert from Outside the Parent University
9	**Dr. Shrikant Gabale** Managing Director, Graphias Solutions Pvt. Ltd., Pune	Representative from Corporate Sector
10	**Ms. Akshata Raje** GIS Expert	Member of the College Alumni
11	**Ms. Pranita Kale** TYBA	UG Student
12	**Ms. Rucha Tilekar** M.A./M.Sc. II	PG Student

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AES's T. C. College (Empowered Autonomous), Baramati. CBCS Syllabus 2026 Pattern as per NEP 2020

Anekant Education Society's

TuljaramChaturchand College of Arts, Science and Commerce, Baramati

(Empowered Autonomous NAAC A++)

Credit Distribution Structure for (M. A. /M.Sc. Geography) Part-I SEM I (2026 Pattern)

Year	Level	Sem.	Major		Research Methodology (RM)	OJT/ FP	RP	Cum. Cr.
			Mandatory	**Electives**				
I	6.0	Sem-I	GEO-501-MRM: Principles of Geomorphology and Climatology (**Credit 04**) GEO-502-MRM: Principles of Economic Geography and Population Geography (**Credit 04**) GEO-503-MRM: Practical in Physical Geography (**Credit 02**) GEO-504-MRM: Practical in Human Geography (**Credit 02**) GEO-505-MRM: Practical in Descriptive Statistics (**Credit 02**)	GEO-506-MJE (A): Physical Geography of India OR GEO-506-MJE (B) Regional Planning (**Credit 04**)	GEO-507-RM: Research Methodology in Geography (**Credit 04**)	--	--	22
Cum. Cr.			14	4	4		--	22

AES's T. C. College (Empowered Autonomous), Baramati. CBCS Syllabus 2026 Pattern as per NEP 2020

Anekant Education Society's

TuljaramChaturchand College of Arts, Science and Commerce, Baramati

(Empowered Autonomous NAAC A++)

Credit Distribution Structure for (M. A. /M.Sc. Geography) Part-I SEM II (2026 Pattern)

Year	Level	Sem.	Major		Research Methodology (RM)	OJT/FP	RP	Cum. Cr.
			Mandatory	Electives				
II	6.0	Sem-II	GEO-551-MRM: Fluvial Geomorphology (Credit 04) GEO-552-MRM: Coastal Geomorphology (Credit 04) GEO-553-MRM: Practical in Fluvial Geomorphology (Credit 02) GEO-554-MRM: Practical in Coastal Geomorphology (Credit 02) GEO-555-MRM: Practical in Inferential Statistics (Credit 02)	GEO-556-MJE (A): Geographical Thought OR GEO-556-MJE (B) Geography of Disaster Management (Credit 04)		GEO-557-OJT: On Job Training (Credit 04)	--	22
Cum. Cr.			14	4		4	--	22

AES's T. C. College (Empowered Autonomous), Baramati. CBCS Syllabus 2026 Pattern as per NEP 2020

Anekant Education Society's

Tuljaram Chaturchand College of Arts, Science and Commerce, Baramati
(Empowered Autonomous NAAC A ++)
Course Structure for (M. A. /M.Sc. Geography) Part-I (2026 Pattern)

Sem	Course Type	Course Code	Course Title	Theory/ Practical	No. of Credits
I	Major Mandatory	GEO-501-MRM	Principles of Geomorphology and Climatology	Theory	04
		GEO-502-MRM	Principles of Economic and Population Geography	Theory	04
		GEO-503-MRM	Practical in Physical Geography	Practical	02
		GEO-504-MRM	Practical in Human Geography	Practical	02
		GEO-505-MRM	Practical in Descriptive Statistics	Practical	02
	Major Elective	GEO-506-MJE (A)	Physical Geography of India	Theory	04
		GEO-506-MJE (B)	Regional Planning		
	Research Methodology	GEO-507-RM	Research Methodology in Geography	Theory	04
Total Credit of Semester I					**22**
II	Major Mandatory	GEO-551-MRM	Fluvial Geomorphology	Theory	04
		GEO-552-MRM	Coastal Geomorphology	Theory	04
		GEO-553-MRM	Practical in Fluvial Geomorphology	Practical	02
		GEO-554-MRM	Practical in Coastal Geomorphology	Practical	02
		GEO-555-MRM	Practical in Inferential Statistics	Practical	02
	Major Elective	GEO-556-MJE (A)	Geographical Thought	Theory	04
		GEO-556-MJE (B)	Geography of Disaster Management		
	On Job Training	GEO-557-OJT	On Job Training	Practical	04
Total Credit of Semester II					**22**
Cumulative Credits for PG Diploma- I and II= 22+22					**44**

CBCS Syllabus as per NEP 2020 for M.A. /M.Sc. I
(2026 Pattern)

Name of the Programme   : M.A. /M.Sc. Geography

Programme Code   : PAGEO

Class   : M.A. /M.Sc. I

Semester   : I

Course Type   : Major Mandatory (Theory)

Course Code   : GEO-501-MRM

Course Title   : Principles of Geomorphology and Climatology

No. of Credits   : 04

No. of Teaching Hours   : 60

Course Objectives:

1. To describe the concept of a drainage basin and stream network.
2. To understand the basic laws and models of the fluvial processes.
3. To discuss characteristics of drainage basin hydrology.
4. To apply quantitative methods to measure and assess fluvial processes and landforms.
5. To understand composition and structure of atmosphere.
6. To recognize factors affecting solar radiation and temperature.
7. To study global wind circulation and wind pattern.

Course Outcomes:

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

CO1. Accurately describe the concept of a drainage basin and stream network, including their components and interconnectedness.

CO2. Demonstrate a comprehensive understanding of the basic laws and models of fluvial processes, enabling them to explain and apply them to real-world scenarios.

CO3. Discuss the characteristics of drainage basin hydrology, including aspects such as precipitation, runoff, and stream flow patterns.

CO4. Apply quantitative methods to measure and assess fluvial processes and landforms, allowing them to collect and analyze data related to river systems effectively.

CO5. Understand by which component atmosphere are composed and different layers of atmosphere.

CO6. Understand which factor affects the solar radiation distribution on earth surface.

CO7. Understand the global wind circulation and wind pattern.

Topics and Learning Points

Unit 1: Introduction to Geomorphology and Climatology	Teaching	Hours
1.1 Definition of Geomorphology & Climatology		**12**
1.2 Branches of Geomorphology & Climatology		
1.3 Geological scale		
1.4 Structure and Composition of atmosphere		

Unit 2: The Dynamic Earth   **12**

    2.1 Internal structure of the Earth & seismic waves

    2.2 Theory of Plate Tectonics and landforms

    2.3 Weathering: types and related landform

    2.4 Mass movement: types and related landforms

Unit 3: Fluvial and Coastal Processes   **12**

    3.1 Definition and basic concepts

    3.2 Process of erosion, transportation and deposition

    3.3 Fluvial landforms

    3.4 Coastal landforms

Unit 4: Insolation and Temperature   **12**

    4.1 Solar and terrestrial radiation

    4.2 Temperature measurements and controls

    4.3 Heat Budget

    4.4 Lapse rate and temperature inversion

    4.5 Mechanism of heat transfer

Unit 5: Atmospheric Pressure and Moisture   **12**

        5.1 Factors affecting horizontal distribution of pressure

        5.2 General circulation of the atmosphere

        5.3 Atmospheric moisture and measurements

        5.4 Forms of condensation

References:

1. Bloom, A. L. (2012). Geomorphology: A Systematic Analysis of Late Cenozoic Landforms. Prentice-Hall of India, New Delhi.

2. Chorley, R. J., Schumm, S. A., & Sugden, D. E. (1984). Geomorphology. Methuen, London.

3. Gregory, K. J., & Goudie, A. S. (2014). The SAGE Handbook of Geomorphology. SAGE Publications, London.

4. Huggett, R. J. (2008). Fundamentals of Geomorphology. Routledge, London & New York.

5. Kale, V. S., & Gupta, A. (2010). Introduction to Geomorphology. Universities Press, Hyderabad.

6. Migon, P. (2010). Geomorphological Landscapes of the World. Springer, London & New York.

7. Singh, S. (2011). Geomorphology. Prayag Pustak Bhawan, Allahabad.

8. Siddhartha, K. (2001). The Earth's Dynamic Surface. Kisalaya Publications, Delhi.

9. Strahler, A. H., & Strahler, A. N. (1992). Modern Physical Geography. John Wiley & Sons, New York.

10. Critchfield, H. J. (2010 reprint). General Climatology. Prentice Hall, New Delhi.

11. Lal, D. S. (1998). Climatology. Chaitanya Publishing House, Allahabad.

12. Lutgens, F. K., & Tarbuck, E. J. (2010). The Atmosphere: An Introduction to Meteorology. Pearson Prentice Hall, New Jersey.

13. Oliver, J. E., & Hidore, J. J. (2003). Climatology: An Atmospheric Science. Pearson Education, Delhi.

14. Singh, Savindra. (2005). Climatology. Prayag Pustak Bhawan, Allahabad.

Mapping of Program Outcomes with Course Outcomes

Weightage: 1 = Low relation, 2 = Moderate relation, 3 = Strong relation

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	3	2	2	1	1	1	1	1
CO2	3	3	2	2	1	1	1	1
CO3	3	2	2	2	1	1	1	1
CO4	2	3	3	3	2	1	2	1
CO5	3	2	1	1	1	1	1	2
CO6	3	2	2	1	1	1	1	2
CO7	3	2	2	1	1	1	1	1

Justification of CO–PO Mapping

PO1 – Advanced Disciplinary Knowledge & Originality: CO1, CO2, CO3, CO4, CO5, CO6, and CO7 develop comprehensive disciplinary understanding of fluvial and atmospheric processes, strengthening students' conceptual foundation necessary for advanced academic study and research applications.

PO2 – Research, Analysis, and Complexity: CO1, CO2, CO3, CO4, CO5, CO6, and CO7 involve analytical and research-based understanding of hydrological and atmospheric systems, enabling students to analyze complex geographical processes and interpret scientific information effectively.

PO3 – Problem Solving in New Contexts: CO1, CO2, CO3, CO4, CO6, and CO7 require application of theoretical knowledge to practical environmental and geographical situations, helping students solve problems related to watershed processes, river behavior, and atmospheric circulation.

PO4 – Technical Mastery and Scientific Reasoning: CO1, CO2, CO3, CO4, CO5, CO6, and CO7 involve scientific reasoning and technical understanding of physical processes, particularly through measurement and quantitative assessment of fluvial landforms and atmospheric dynamics.

PO5 – Integrated Communication: CO1, CO2, CO3, CO4, CO5, CO6, and CO7 require students to explain geographical processes through diagrams, maps, and analytical descriptions, improving their ability to communicate scientific findings effectively.

PO6 – Ethical, Social, and Professional Judgment: CO3, CO4, CO5, CO6, and CO7 promote awareness of environmental responsibility by understanding hydrological and atmospheric processes and their impact on natural and human environments.

PO7 – Autonomous and Lifelong Learning: CO1, CO2, CO3, CO4, CO5, CO6, and CO7 encourages independent and continuous learning through conceptual and analytical understanding of physical geography topics, supporting future academic and professional development.

PO8 – Employability, Innovation, and Entrepreneurship: CO4 involves quantitative measurement and assessment skills applicable in GIS, watershed management, and environmental analysis, contributing to professional employability and technical competence.

CBCS Syllabus as per NEP 2020 for M.A./M.Sc. I
(2026 Pattern)

Name of the Programme   : M.A. /M.Sc. Geography

Programme Code   : PAGEO

Class   : M.A. /M.Sc. I

Semester   : I

Course Type   : Major Mandatory (Theory)

Course Code   : GEO-502-MRM

Course Title   : Principles of Economic and Population Geography

No. of Credits   : 04

No. of Teaching Hours   : 60

Course Objectives:

1. This paper intends to acquaint the students with various dimensions of Economic Population Geography, and its challenges.
2. To understand theories related to economic geography.
3. To acquaint the knowledge of types labours.
4. To understand economic sector available in India.
5. To acquaint the students with the utility and application of Population Geography in different regions and environment.
6. To aware knowledge about distribution of population in different region.
7. To give information about growth and population density of different region of the world.

Course Outcomes:

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

CO1. Aware about basic principles and concepts in economic and population geography.

CO2. Demonstrate an understanding of the asset, cost, benefit, analysis, tax, policy, impacts and other economic aspects.

CO3. Understand the demand of population and availability of raw material.

CO4. Aware about the labour types, cost, importance and role also in industrial zone.

CO5. Realize the world-wide distribution of population.

CO6. Aware population growth of different countries, they can also predict future population
setting of the country.

CO7. Apply knowledge of population geography in development planning.

Topics and Learning Points

Unit 1: Introduction to Economic and Population Geography   12

1.1 Concepts and Definition of economic and population geography

1.2 Nature and scope

1.3 Sources of Population data

1.4 Application of Economic and Population Geography

Unit 2: Economic Activities   12

2.1 Definition and classification of economic activities

2.2 Factors of location of economic activities: physical, social, economic and technical

2.3 Economic Locations Models: Weber's and Von-Thunen's model

Unit 3: Resources   12

3.1 Definition and classification of resources

3.2 Significance of natural and human resources in economic development

3.3 Importance of non-conventional energy resources for sustainable development

Unit 4: Population Distribution   12

4.1 Population distribution of World and India

4.2 Factors affecting distribution of population

4.3 Density: definition and types

4.4 Factors affecting density of population

4.5 Population density in India

Unit 5: Population Growth and Trend   12

5.1 Concept of population growth

5.2 Component of population growth (Fertility, Mortality, Migration and Nuptiality)

5.3 Malthus Theory

5.4 Demographic Transition theory

5.5 Population growth and trend in India3

References:

1. Bhende, A., & Kanitkar, T. (2011). Principles of Population Studies. Himalaya Publishing House, Bombay.

2. Beaujeu, G. J. (1966). Geography of Population. Longman Group Ltd.

3. Chandna, R. C. (2010 reprint). Geography of Population: Concepts, Determinants and Patterns. Kalyani Publishers, New Delhi.

4. Clark, J. I. (1973). Population Geography. Pergamon Press Ltd., Oxford.

5. Clark, J. I. (1984). Geography and Population: Approaches and Applications. Pergamon Press Ltd., Oxford.

6. Musmade, A., Sonawane, A., & More, J. (2015). Population and Settlement Geography (Marathi). Diamond Publications, Pune.

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8. Chorley, R. J., & Haggett, P. (1970). Socio-Economic Models in Geography. Concept Publishing Company Pvt. Ltd., New Delhi.

9. Garnier, B. J., & Delobez, A. (1979). Geography of Marketing. Longman.

10. Hartshorne, T. A., & Alexander, J. W. (2010). Economic Geography. PHI Learning, New Delhi.

11. Chatterjee, Kanan. (2015). Basics of Economic Geography.

12. Knox, P., Agnew, J., & McCarthy, L. (2008). The Geography of the World Economy. Hodder Arnold, London.

13. Lloyd, P., & Dicken, B. (1972). Location in Space: A Theoretical Approach to Economic Geography. Harper and Row, New York.

14. Mitra, A. (2002). Resource Studies. Sreedhar Publishers, Kolkata.

15. Patil, S. G., Suryawanshi, R. S., Pacharne, S., & Choudhar, A. H. (2014). Economic Geography. Atharav Prakashan, Pune.

Mapping of Program Outcomes with Course Outcomes

Weightage: 1 = Low relation, 2 = Moderate relation, 3 = Strong relation

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	3	2	2	1	1	1	1	2
CO2	3	3	2	2	1	1	1	2
CO3	2	2	2	1	1	1	1	1
CO4	3	2	3	2	1	1	1	3
CO5	3	2	2	1	2	1	1	2
CO6	3	2	2	1	2	1	1	1
CO7	3	2	2	1	2	1	1	2

Justification of CO–PO Mapping

PO1 – Advanced Disciplinary Knowledge & Originality: CO1, CO2, CO3, CO4, CO5, CO6, and CO7 provide students with comprehensive knowledge of economic and population geography, including economic theories, labour types, economic sectors, and global population patterns. This knowledge strengthens disciplinary understanding required for advanced study and research.

PO2 – Research, Analysis, and Complexity: CO1, CO2, CO3, CO4, CO5, CO6, and CO7 involve analysis of economic activities and population distribution, enabling students to interpret demographic and economic data and understand complex regional variations.

PO3 – Problem Solving in New Contexts: CO1, CO2, CO3, CO4, CO5, CO6, and CO7 help students apply theoretical knowledge to real-world economic and demographic challenges, improving their ability to analyze and solve geographical and socio-economic issues.

PO4 – Technical Mastery and Scientific Reasoning: CO2 and CO4 involve theoretical understanding and sectoral analysis that require scientific reasoning to explain economic structures and spatial variations.

PO5 – Integrated Communication: CO1, CO3, CO4, CO5, CO6, and CO7 involve interpretation and presentation of economic and population patterns through maps, data, and analytical explanations, improving communication skills.

PO6 – Ethical, Social, and Professional Judgment: CO1, CO3, CO4, CO5, CO6, and CO7 develop awareness about socio-economic inequalities and promote responsible decision-making in population and economic planning.

PO7 – Autonomous and Lifelong Learning: CO1, CO2, CO3, CO4, CO5, CO6, and CO7 encourage independent learning and continuous study of demographic and economic processes, supporting academic and professional growth.

PO8 – Employability, Innovation, and Entrepreneurship: CO3, CO4, CO5, CO6, and CO7 develop understanding of labour types, economic sectors, and regional population distribution and growth patterns, which help students understand employment structures, regional economic opportunities, and workforce distribution.

CBCS Syllabus as per NEP 2020 for M.A./M.Sc. I
(2026 Pattern)

Name of the Programme   : M.A. /M.Sc. Geography

Programme Code   : PAGEO

Class   : M.A. /M.Sc. I

Semester   : I

Course Type   : Major Mandatory (Practical)

Course Code   : GEO-503-MRM

Course Title   : Practical in Physical Geography

No. of Credits   : 02

No. of Teaching Hours   : 60

Course Objectives:

1. To develop a comprehensive understanding of the Earth's physical features, including landforms, climate,   vegetation, and natural resources.
2. Gain insights into the processes that govern weather and climate patterns.
3. To make the students aware of the need and importance of drainage network.
4. To aware knowledge about the various relief features.
5. To aware knowledge about various methods are used in to develop drainage network.
6. To aware knowledge about atmospheric circulation, precipitation, and temperature variations.
7. To develop proficiency in reading and interpreting various types of relief analysis.

Course Outcomes:

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

CO1: Develop a comprehensive understanding of the Earth's physical features, including landforms, climate, vegetation, and natural resources.

CO2: Gain knowledge of the processes governing weather and climate patterns.

CO3: Understand the importance and need of drainage networks.

CO4: Acquire knowledge of various relief features.

CO5: Understand the methods used in the development of drainage networks.

CO6: Gain knowledge of atmospheric circulation, precipitation, and temperature variations.

CO7: Develop proficiency in reading and interpreting different types of relief analysis.

Topics and Learning Points

Unit 1: Drainage Network   Analysis   **Teaching   Hours**

    1.1 Stream ordering and Bifurcation ratio   **10**

        i. Strahler's method

        ii. Horton's method

Unit 2: Drainage Basin Relief Analysis   **20**

    2.1 Absolute relief map

    2.2 Relative relief map

    2.3 Hypsometric analysis

    2.4 Block diagram (multiple section)

Unit 3: Climatic Element and its Representation   **30**

    3.1 Simple wind rose diagram

    3.2Compound wind rose diagram

    3.3 Climatograph

    3.4 Water Budget/ Balance

References:

1. Asis Sarkar (2015): Practical Geography, A Systematic Approach, Orient Black Swan
2. King, C. A.M (1966): Techniques in Geomorphology, Edward Arnold, London
3. Monkhouse, F. J. and Wilkinson, H. R., (1976). Maps and Diagrams, Methuen & Co.
4. Savindra Singh (2002): Geomorphology, Prayag Pustak Bhawan, Allahabad
5. Miller, Austin (1953): The skin of the Earth, Methuen & Co. Ltd. London

Mapping of Program Outcomes with Course Outcomes

Weightage: 1 = Low relation, 2 = Moderate relation, 3 = Strong relation

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	3	2	2	2	2	1	1	1
CO2	3	2	2	2	1	1	1	1
CO3	3	2	2	1	1	2	1	1
CO4	3	2	2	1	1	1	1	1
CO5	2	2	2	3	1	1	1	1
CO6	3	2	2	2	1	2	1	1
CO7	2	2	2	3	2	1	1	2

Justification of CO–PO Mapping

PO1 – Advanced Disciplinary Knowledge & Originality: CO1, CO2, CO3, CO4, CO5, CO6, and CO7 develop strong knowledge of Earth's physical features, climatic processes, drainage systems, and relief characteristics. This helps students build a solid foundation in physical geography and supports advanced academic understanding and future research orientation.

PO2 – Research, Analysis, and Complexity: CO1, CO2, CO3, CO4, CO5, CO6, and CO7 involve analytical understanding of landforms, drainage networks, and atmospheric processes. Students learn to examine physical processes critically and interpret complex geographical data and patterns.

PO3 – Problem Solving in New Contexts: CO1, CO2, CO3, CO4, CO5, CO6, and CO7 enable students to apply theoretical geographical knowledge to practical environmental and geomorphological situations such as drainage planning, climate effects, and landform interpretation.

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PO4 – Technical Mastery and Scientific Reasoning: CO1, CO2, CO5, CO6, and CO7 strengthen technical and analytical skills through relief analysis, drainage development methods, and interpretation of atmospheric processes, improving scientific reasoning and practical geographical analysis.

PO5 – Integrated Communication: CO1 and CO7 require interpretation and presentation of relief features and physical processes using maps, diagrams, and analytical descriptions, improving students' ability to communicate scientific geographical information effectively.

PO6 – Ethical, Social, and Professional Judgment: CO3 and CO6 create awareness about the importance of drainage systems and climatic processes in environmental management, encouraging responsible environmental decision-making and sustainable planning perspectives.

PO7 – Autonomous and Lifelong Learning: CO1, CO2, CO3, CO4, CO5, CO6, and CO7 encourage independent and continuous learning about Earth processes and environmental systems, preparing students for higher studies and professional development.

PO8 – Employability, Innovation, and Entrepreneurship: CO5 and CO7 develop practical skills in drainage planning and relief analysis, which are useful in GIS applications, surveying, environmental assessment, and regional planning, thereby supporting employability and technical career opportunities.

CBCS Syllabus as per NEP 2020 for M.A. /M.Sc. I
(2026 Pattern)

Name of the Programme	: M.A. /M.Sc. Geography
Programme Code	: PAGEO
Class	: M.A. /M.Sc. I
Semester	: I
Course Type	: Major Mandatory (Practical)
Course Code	: GEO-504-MRM
Course Title	: Practical in Human Geography
No. of Credits	: 02
No. of Teaching Hours	: 60

Course Objectives:

1. To enable the students to use various techniques of calculating rates.
2. To acquaint the students with crop combination methods.
3. To familiar the students' different theories related to huma geography.
4. To make awareness about dependency ratio and growth of population.
5. To intimate gender scenario of different countries.
6. To make knowledge about future population and age structure of different countries.
7. To make knowledge about nucleation and dispersion of settlement.

Course Outcomes:

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

CO1: Understand techniques of calculating population growth rates.

CO2: Calculate and apply growth rates to different states of India.

CO3: Understand crop combinations and their relation to society.

CO4: Apply human geography theories to society.

CO5: Understand population dynamics and population policies.

CO6: Understand population structure and characteristics of countries.

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CO7: Understand population growth patterns and predict future trends.

Topics and Learning Points

Unit 1: Techniques in Agricultural Geography   **Teaching Hours**

     1.1 Weaver's method of crop combination   **20**

     1.2 Jasbir Singh method of crop concentration

     1.3 Crop Diversification: Bhatia method

Unit 2: Population growth rates and Projection

     2.1 Decadal growth rate   **20**

     2.2 Age-sex pyramid

     2.3 Dependency ratio

Unit 3: Demographic Indices / Measures   **20**

     3.1 Fertility

     3.2 Mortality

     3.3 Migration

References:

1. Lo, C. P., & Yeung, A. K. W. (2002). Concepts and Techniques of Geographic Information System. Prentice Hall, India.

2. Kansky, N. T. (1965). Structure of Transport Network.

3. Liendsor, J. M. (1997). Techniques in Human Geography. Routledge.

4. Lloyd, P., & Dicken, B. (1972). Location in Space: A Theoretical Approach to Economic Geography. Harper and Row, New York.

5. Hussein, Majid. Agricultural Geography. Rawat Publication.

6. Monkhouse, F. J., & Wilkinson, H. R. (1976). Maps and Diagrams. Methuen and Co.

7. Burrough, P. A., & McDonnell, R. A. (2000). Principles of Geographical Information System. Oxford University Press.

Mapping of Program Outcomes with Course Outcomes

Weightage:1 = Low relation, 2 = Moderate relation, 3 = Strong relation

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	3	3	2	3	2	2	2	2
CO2	3	2	2	3	2	1	2	2
CO3	3	2	2	1	2	1	2	1
CO4	3	3	2	2	2	3	2	1
CO5	3	2	2	1	2	3	2	1
CO6	3	3	2	2	2	3	2	1
CO7	3	2	3	2	2	2	2	2

Justification of CO–PO Mapping

PO1 – Advanced Disciplinary Knowledge & Originality: CO1, CO2, CO3, CO4, CO5, CO6, and CO7 develop comprehensive understanding of human geography concepts including demographic structure, crop combination techniques, settlement patterns, and population characteristics, strengthening disciplinary knowledge.

PO2 – Research, Analysis, and Complexity: CO1, CO2, CO4, CO5, and CO6 involve analytical and quantitative understanding of demographic data, population growth rates, dependency ratios, and regional population structures, enabling students to analyze complex socio-economic patterns.

PO3 – Problem Solving in New Contexts: CO1, CO2, CO4, CO6, and CO7 help students apply demographic and geographical knowledge to real-world issues such as settlement distribution, population pressure, and development planning.

PO4 – Technical Mastery and Scientific Reasoning: CO1 and CO2 develop technical and analytical skills in rate calculations and crop combination methods, strengthening scientific reasoning and practical geographical analysis.

PO5 – Integrated Communication: CO3, CO4, CO5, CO6, and CO7 require interpretation and explanation of demographic and settlement patterns using maps, data, and analytical descriptions, improving communication skills.

PO6 – Ethical, Social, and Professional Judgment: CO4, CO5, and CO6 create awareness about social concerns such as dependency ratio, gender balance, and future population challenges, encouraging socially responsible understanding and planning.

PO7 – Autonomous and Lifelong Learning: CO1, CO2, CO3, CO4, CO5, CO6, and CO7 promote continuous learning of human and population geography concepts, supporting independent academic and professional development.

PO8 – Employability, Innovation, and Entrepreneurship: CO1, CO2, and CO7 provide practical skills related to demographic analysis, agricultural regional methods, and settlement planning, supporting employability in planning, GIS, and demographic analysis fields.

CBCS Syllabus as per NEP 2020 for M.A. /M.Sc. I
(2026 Pattern)

Name of the Programme   : M.A. /M.Sc. Geography

Programme Code   : PAGEO

Class   : M.A. /M.Sc. I

Semester   : I

Course Type   : Major Mandatory (Practical)

Course Code   : GEO-505-MRM

Course Title   : Practical in Descriptive Statistics

No. of Credits   : 02

No. of Teaching Hours   : 60

Course Objectives:

1. To understand central tendency and dispersion.
2. To develop skills of data collection and interpretation.
3. To analyze and calculate inferential statistics.
4. To understand correlation of various geographic phenomena.
5. To enable students to plan small group field visits and work in groups in the field.
6. To enhance students' learning experience through field visits and digital techniques.
7. To provide an introduction to fundamental statistical methods used in Geography.

Course Outcomes:

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

CO1: Understand central tendency and dispersion for geographical data analysis.

CO2: Develop skills in data collection and interpretation for geographical studies.

CO3: Analyze and calculate inferential statistics for geographical research.

CO4: Understand correlation among various geographic phenomena and their relationships.

CO5: Plan and conduct small group field visits and work effectively in field groups.

CO6: Enhance learning through field visits and the use of digital techniques in geographical studies.

CO7: Understand and apply fundamental statistical methods used in Geography.

Topics and Learning Points

Unit 1: Introduction to Statistical Geography   **Teaching Hours**

    1.1 Importance and applications of statistics in Geography   **12**

    1.2 Geographical data and its Types

    1.3 Types of statistics

Unit 2: Measures of Central Tendency   **24**

    2.1 Arithmetic Mean and its types

    2.2 Median

    2.3 Mode

    (Calculations of above parameters for ungrouped and grouped data)

Unit 3: Measures of Dispersion   **24**

    3.1 Standard Deviation and variance

    3.2 Skewness

    3.3 Kurtosis

References:

1. Jadhav, A. S. (2022). Statistical Techniques for Geography. Pritam Publication, Jalgaon.

2. Singh, Lehraj. (1973). Map Work and Practical Geography. Central Book Depot, Allahabad.

3. Ahirrao, D. Y., & Karanjkhele, E. K. (2002). Pratyakshik Bhugol. Sudarshan Publication, Nashik.

4. Saha, P., & Basu, P. (2007). Advanced Practical Geography. Books and Allied (P) Ltd., Kolkata.

5. Heywood, I., Cornelius, S., & Carver, S. (2011). An Introduction to Geographical Information Systems (4th ed.). Prentice Hall.

6. Sarkar, Asis. (2015). Practical Geography: A Systematic Approach. Orient BlackSwan.

Mapping of Program Outcomes with Course Outcomes

Weightage: 1 = Low relation, 2 = Moderate relation, 3 = Strong relation

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	3	3	2	3	2	1	2	2
CO2	3	3	2	2	2	2	2	2
CO3	3	3	2	3	2	1	2	2
CO4	3	3	3	3	2	2	2	2
CO5	2	2	2	1	2	2	3	2
CO6	2	2	2	2	2	2	2	3
CO7	3	3	2	3	2	1	2	2

Justification of CO–PO Mapping

PO1 – Advanced Disciplinary Knowledge & Originality: CO1, CO2, CO3, CO4, CO5, CO6, and CO7 provide strong foundational and applied knowledge of statistical methods in geography, supporting disciplinary understanding and analytical thinking required for advanced study.

PO2 – Research, Analysis, and Complexity: CO1, CO2, CO3, CO4, and CO7 involve statistical analysis, interpretation, and data handling, enabling students to analyze complex geographical and field data effectively.

PO3 – Problem Solving in New Contexts: CO1, CO2, CO3, CO4, CO5, and CO6 help students apply statistical and field-based knowledge to solve real geographical and environmental problems.

PO4 – Technical Mastery and Scientific Reasoning: CO1, CO3, CO4, and CO7 strengthen technical and analytical reasoning through application of statistical tools, correlation analysis, and inferential methods in geographic studies.

PO5 – Integrated Communication: CO2, CO4, CO5, and CO6 involves interpretation and presentation of field and statistical data through reports and discussions, improving communication skills.

PO6 – Ethical, Social, and Professional Judgment: CO2, CO4, CO5, and CO6 promotes responsible data collection, field conduct, and professional teamwork during fieldwork and research activities.

PO7 – Autonomous and Lifelong Learning: CO1, CO2, CO3, CO4, CO5, CO6, and CO7 encourages independent learning and continued development of analytical and field skills in geography.

PO8 – Employability, Innovation, and Entrepreneurship: CO2, CO5, and CO6 develops practical skills in data collection, fieldwork organization, and digital techniques, which enhance employability in survey, GIS, and research-related professions.

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(2026 Pattern)

Name of the Programme	: M.A. /M.Sc. Geography
Programme Code	: PAGEO
Class	: M.A. /M.Sc. I
Semester	: I
Course Type	: Major Elective (Theory)
Course Code	: GEO-506-MJE (A)
Course Title	: Physical Geography of India
No. of Credits	: 04
No. of Teaching Hours	: 60

Course Objectives:

1. To understand the location and physiography of India.
2. To study the major physiographic divisions and their importance.
3. To understand the drainage system of India.
4. To study the climate and monsoon mechanism of India.
5. To understand the impact of climate change on Indian climate.
6. To study soils of India and their conservation.
7. To understand natural resources of India and their utilization.

Course Outcomes:

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

CO1. Accurately describe the location, extent, and physiographic divisions of India, including their major features and geographical significance.

CO2. Demonstrate a comprehensive understanding of the Himalayan and Peninsular river systems, enabling comparison of their origin, characteristics, and usefulness.

CO3. Discuss the mechanism of Indian monsoon, including the role of seasons, El-Nino, and La-Nina in climatic variability.

CO4. Apply knowledge to analyze the impact of climate change on monsoon behavior, agriculture, and water resources of India.

CO5. Understand the processes of soil formation and the major soil types of India, including their physical and chemical characteristics.

CO6. Explain the causes of soil erosion and evaluate appropriate methods of soil conservation in different regions of India.

CO7. Understand the classification and distribution of water, mineral, and energy resources, including their utilization and management.

Topics and Learning Points

Unit 1: Physiographic of India   **Teaching Hours**

    1.1 Location and extent - absolute and relative location   **12**

    1.2 Neighboring countries

    1.3 Major physiographic divisions

    1.4 Characteristics and significance of physiographic divisions

Unit 2: Drainage System   **12**

    2.1 Meaning, definition, and concept of drainage system

    2.2 Himalayan river system

    2.3 Peninsular river system

Unit 3: Climate   **12**

    3.1 Major seasons and associated weather conditions

    3.2 Origin and mechanism of monsoon

    3.3 El Niño and La Niña

    3.4 Impact of climate change on the Indian monsoon

Unit 4: Soils   **12**

    4.1 Meaning and factors influencing soil formation

    4.2 Major soil types

    4.3 Physical and chemical characteristics of soils

    4.4 Soil erosion and conservation measures

Unit 5: Natural Resources   12

    5.1 Concept and classification of natural resources

    5.2 Water resources

    5.3 Mineral resources

    5.4 Energy resources

References:

1. Khullar, D.R. (2016): India: A Comprehensive Geography, Kalyani Publishers, New Delhi.

2. Singh, Gopal (2012): Geography of India, Atma Ram & Sons, Delhi.

3. Sharma, T.C. and Coutinho, O. (2011): Economic and Commercial Geography of India, Vikas Publishing House, New Delhi.

4. Hussain, Majid (2019): Geography of India, McGraw Hill Education, New Delhi.

5. Singh, Savindra (2018): Physical Geography of India, PrayagPustakBhawan, Allahabad.

6. Kale, V.S. (2014): Landscapes and Landforms of India, Springer, London/New York.

7. Valdiya, K.S. (2015): The Making of India: Geodynamic Evolution, Springer, New Delhi.

8. Rao, K.L. (2006): India's Water Wealth, Orient Longman, New Delhi.

9. Singh, Jagdish (2013): India: A Regional Geography, GyanodayaPrakashan, Gorakhpur.

10. NCERT (2022): India: Physical Environment, NCERT, New Delhi.

11. Government of India (2021): Soil and Land Use Survey of India Report, Ministry of Agriculture, New Delhi.

12. Ministry of Water Resources (2020): Water Resources of India, Government of India, New Delhi.

13. Energy Statistics India (2023): Ministry of Statistics and Programme Implementation, Government of India, New Delhi.

14. Wadia, D.N. (2010): Geology of India, Tata McGraw Hill, New Delhi.

Mapping of Program Outcomes with Course Outcomes

Weightage: 3 = Strong relation   2 = Moderate relation   1 = Low relation

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	3	2	2	1	1	1	1	1
CO2	3	3	2	1	1	1	1	1
CO3	3	3	3	2	1	1	1	1
CO4	3	2	2	1	1	2	1	1
CO5	3	3	2	2	2	1	1	1
CO6	3	3	3	2	2	2	1	2
CO7	3	2	2	2	2	2	1	1

Justification of CO–PO Mapping

PO1 – Advanced Disciplinary Knowledge & Originality: All COs (CO1–CO7) strongly contribute by developing comprehensive understanding of physical geography, including physiography, climate, drainage, soils, and natural resources, thereby strengthening disciplinary knowledge.

PO2 – Research, Analysis, and Complexity: CO2, CO3, CO5, and CO6 enhance analytical abilities through examination of physiographic regions, drainage patterns, climate variations, and soil characteristics.

PO3 – Problem Solving in New Contexts: CO3, CO6, and CO7 help students apply geographical knowledge to practical issues related to water resources, soil conservation, and resource utilization.

PO4 – Technical Mastery and Scientific Reasoning: CO3, CO5, CO6, and CO7 promote scientific reasoning in analyzing environmental systems and resource management using geographical approaches.

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PO5 – Integrated Communication: CO4, CO6, and CO7 improve communication skills by enabling explanation and presentation of climatic processes, soil conservation, and resource utilization patterns.

PO6 – Ethical, Social, and Professional Judgment: CO5 and CO7 develop awareness about climate change impacts and sustainable use of natural resources, encouraging responsible environmental decision-making.

PO7 – Autonomous and Lifelong Learning: CO1–CO4 and CO6 encourage independent learning through conceptual and analytical study of physical geographical processes.

PO8 – Employability, Innovation, and Entrepreneurship: CO6 mainly contributes to employability by developing applied knowledge of soil management and conservation useful in agriculture, environmental planning, and resource management sectors.

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(2026 Pattern)

Name of the Programme   : M.A. /M.Sc. Geography

Programme Code   : PAGEO

Class   : M.A. /M.Sc. I

Semester   : I

Course Type   : Major Elective (Theory)

Course Code   : GEO-506-MJE (B)

Course Title   : Regional Planning

No. of Credits   : 04

No. of Teaching Hours   : 60

Course Objectives:

1. To introduce students to the concepts and principles of regional planning.
2. To understand types and levels of planning and planning regions.
3. To explain regional development indicators and measurement methods.
4. To develop understanding of regional disparities and development issues.
5. To familiarize students with regional surveys and planning techniques.
6. To study regional policies and planning practices in India.
7. To develop analytical skills for regionalization and planning strategies.

Course Outcomes:

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

CO1: Explain the concepts and principles of regional planning.

CO2: Identify types and levels of planning and planning regions.

CO3: Analyze indicators and methods used to measure regional development.

CO4: Evaluate regional disparities and regional development issues.

CO5: Conduct and interpret regional planning surveys.

CO6: Understand regional policies and planning practices in India.

CO7: Apply regional planning approaches to address development problems.

Topics and Learning Points

Unit 1: Introduction to Regional Planning   **Teaching Hours**

    1.1 Concept and need of regional planning   **12**

    1.2 Role of geography in regional planning

    1.3 Hierarchy of planning

    1.4 Types and levels of planning

Unit 2: Region and Regional Development   **12**

    2.1 Concept and types of region

    2.2 Concept of planning region

    2.3 Indicators of regional development

    2.4 Measurement of regional development

Unit 3: Surveys in Regional Planning   **12**

    3.1 Regional survey

    3.2 Techno-economic survey

    3.3 Diagnostic survey

    3.4 Importance of surveys in planning

Unit 4: Regional Policies and Planning in India   **12**

    4.1 Regional disparities in India

    4.2 Regional policies in Five-Year Plans

    4.3 Experience of regional planning in India

    4.4 Multilevel planning: State, District, and Block level

Unit 5: Regionalization and Planning Approaches

    5.1 Concept of regionalization

    5.2 Planning of metropolitan regions

    5.3 Planning of tribal, command areas, and river basins

    5.4 National Capital Region planning

Reference Books:

1. Hartshorne, R. (1959). Perspective on the Nature of Geography. Rand McNally & Company.

2. Dickinson, R. E. (1964). City and Region: A Geographical Interpretation. Routledge & Kegan Paul.

3. Johnson, R. J., Gregory, D., & Smith, D. M. (2016). The Dictionary of Human Geography. Wiley-Blackwell.

4. Haggett, P. (2001). Geography: A Global Synthesis. Pearson Education.

5. Husain, M. (2014). Geography of India. McGraw Hill Education.

6. Khullar, D. R. (2020). India: A Comprehensive Geography. Kalyani Publishers.

7. Singh, R. L. (1971). India: A Regional Geography. National Geographical Society of India.

8. Husain, M. (2012). Human Geography. Rawat Publications.

9. Chandna, R. C. (2016). Geography of Population: Concepts, Determinants and Patterns. Kalyani Publishers.

10. Isard, W. (1960). Methods of Regional Analysis. MIT Press.

11. Misra, R. P., & Sundaram, K. V. (1972). Regional Planning: Concepts, Techniques and Policies. Concept Publishing Company.

12. Todaro, M. P., & Smith, S. C. (2015). Economic Development. Pearson Education.

Mapping of Program Outcomes with Course Outcomes

Weightage: 1 = Low relation, 2 = Moderate relation, 3 = Strong relation

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	3	2	2	1	1	1	1	1
CO2	3	3	2	1	1	1	1	1
CO3	3	3	3	2	1	1	1	1
CO4	3	2	2	1	1	2	1	1
CO5	3	3	2	2	2	1	1	1
CO6	3	3	3	2	2	2	1	2
CO7	3	2	2	2	2	2	1	1

Justification of CO–PO Mapping

PO1 – Advanced Disciplinary Knowledge & Originality: All Course Outcomes (CO1–CO7) contribute strongly by building advanced disciplinary understanding of regional planning, including concepts, regional development processes, surveys, policies, and planning strategies. Students gain comprehensive knowledge required for academic research, planning practices, and professional applications.

PO2 – Research, Analysis, and Complexity: CO2, CO3, CO5, and CO6 particularly enhance analytical and research capacity by enabling students to understand planning regions, analyze regional development indicators, conduct surveys, and evaluate planning policies. Students learn to handle complex regional data and planning situations.

PO3 – Problem Solving in New Contexts: CO3, CO6, and CO7 support application of planning knowledge to real-world regional problems such as uneven development, urban expansion, rural backwardness, and resource management. Students learn to propose suitable planning solutions in changing regional contexts.

PO4 – Technical Mastery and Scientific Reasoning: CO3, CO5, CO6, and CO7 involve scientific reasoning through measurement of development, survey methods, data interpretation, and planning approaches. Students develop technical understanding useful in planning studies and regional analysis.

PO5 – Integrated Communication:,CO5, CO6, and CO7 improve communication abilities as students learn to present survey findings, explain planning strategies, and discuss development issues clearly in academic and professional contexts.

PO6 – Ethical, Social, and Professional Judgment: CO4, CO6, and CO7 promote awareness of regional disparities and social responsibilities in planning. Students understand the importance of balanced regional development, inclusive growth, and ethical planning practices.

PO7 – Autonomous and Lifelong Learning: CO1–CO4 and CO6 encourage independent learning by developing conceptual clarity and analytical thinking in regional planning studies, motivating students to continue learning and updating planning knowledge.

PO8 – Employability, Innovation, and Entrepreneurship: CO6 and CO7 mainly contribute to employability by providing applied knowledge of regional policies, surveys, and planning approaches useful in government agencies, research organizations, teaching, and private planning sectors.

CBCS Syllabus as per NEP 2020 for M.A. /M.Sc. I
(2026 Pattern)

Name of the Programme   : M.A. /M.Sc. Geography

Programme Code   : PAGEO

Class   : M.A. /M.Sc. I

Semester   : I

Course Type   : Research Methodology

Course Code   : GEO-507-RM

Course Title   : Research Methodology in Geography

No. of Credits   : 04

No. of Teaching Hours   : 60

Course Objectives:

1. To provide an introduction to research methods and the research process.

2. To learn the principles of research design, data collection, data analysis.

3. To provide students with the skills necessary to design and conduct research studies.

4. To understand the methods of data collection and data analysis.

5. To aware the students with the research ethics and plagiarism.

6. To introduce with the new trends and approaches in research methodology.

7. To develop the research aptitude among students.

Course Outcomes:

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

CO1. Understand the research process and different types of research designs

CO2. Identify research problems and formulate research questions

CO3. Choose appropriate research methods and data collection techniques

CO4. Analyze and interpret research data

CO5. Write research reports and communicate research findings effectively

CO6. Understand the new trends and approaches in research methodology.

CO7. Analyse and apply the research aptitude in their research work.

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Topics and Learning Points

Unit 1: Introduction to Research Methodology   **Teaching Hours**

    1.1 Meaning and objectives of research   **12**

    1.2 Characteristics of Research

    1.3 Types of Research

    1.4 Various steps in Research Process

    1.5 Research Methods versus Methodology

Unit 2: Research Problem and Research Design   **12**

    2.1 Definition and identification of the Research Problem

    2.2 Technique involved in defining a problem

    2.3 Definition and purpose of Research Design

    2.4 Characteristics of Good Research Design

Unit 3: Sampling Design   **12**

    3.1 Sampling Design – Definition of Population, Sample and Sampling Design

    3.2 Advantages and disadvantages of Sampling

    3.3 Characteristics of a good sample

    3.4 Types or method of sampling

Unit 4: Methods of data collection and data analysis   **12**

    4.1 Primary data: Questionnaire, Interview and Observation /Field Work

    4.2 Sources of Secondary data

    4.3 Measure for Central Tendency and Dispersion

    4.4 Parametric and non-parametric tests

Unit 5: Report Writing and Research Ethics   **12**

    5.1 Types of Reports

    5.2 Structure and Format of Research Reports

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5.3 Research Ethics

5.4 Plagiarism Detection Tools and Their Use

5.5 Research Opportunities and Funding Support Agencies

Reference Books:

1. Gaum, Carl G., Graves, Harod F., and Hoffman, Lyne, S.S., (1950): Report

2. Writing, 3rd ed., New York: Prentice-Hall.

3. Kothari, C.R. (2004): Research Methodology: Methods and Techniques, New Age

4. International (P) Ltd.,New Delhi – 110002.

5. Kothari, C.R., (1984): Quantitative Techniques, 2nd ed., New Delhi: VikasPublishing House Pvt. Ltd.

6. Mishra Shanti Bhushan and Shashi A. (2011): Handbook of Research Methodology,Educreation Publishing, New Delhi – 110075

7. Pandey, P. and Pandey, M.M. (2015): Research Methodology: Tools andTechniques,, Romania, European Union.

8. Tandon, B.C., (1979): Research Methodology in Social Sciences. Allahabad,Chaitanya Publishing House.

9. Ullman, Neil R. (1978): Elementary Statistics, New York: John Wiley &Sons,Inc.

10. Yamane, T., Statistics (1973): An Introductory Analysis, 3rd ed., New York: Harper and Row.

Mapping of Program Outcomes with Course Outcomes

Weightage: 1 = Low relation, 2 = Moderate relation, 3 = Strong relation

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	3	3	2	2	2	2	2	2
CO2	3	3	2	3	2	2	2	2
CO3	3	3	3	3	2	2	2	2
CO4	3	3	2	3	2	2	2	2
CO5	2	2	1	1	2	3	2	1
CO6	3	3	2	2	2	2	2	2
CO7	3	3	2	2	2	2	3	2

Justification of CO–PO Mapping

PO1 – Advanced Disciplinary Knowledge & Originality: CO1, CO2, CO3, CO4, CO6, and CO7 build comprehensive understanding of research methodology, research design, and modern research approaches, strengthening students' disciplinary and academic foundation.

PO2 – Research, Analysis, and Complexity: CO1, CO2, CO3, CO4, CO6, and CO7 involve data collection, analysis, and interpretation skills, enabling students to manage complex research problems effectively.

PO3 – Problem Solving in New Contexts: CO2, CO3, CO4, and CO7 enable students to apply research knowledge to real-world problems by designing and conducting independent research studies.

PO4 – Technical Mastery and Scientific Reasoning: CO2, CO3, and CO4 develop technical and analytical abilities in research design and data analysis, strengthening scientific reasoning skills.

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PO5 – Integrated Communication: CO1, CO2, CO3, CO4, and CO6 require students to present research findings and methodologies clearly, enhancing communication of scientific and research outputs.

PO6 – Ethical, Social, and Professional Judgment: CO5 specifically builds awareness regarding research ethics, plagiarism issues, and professional responsibility in academic research.

PO7 – Autonomous and Lifelong Learning: CO1, CO2, CO3, CO4, CO6, and CO7 promote independent research skills and continuous academic development required for higher education and professional growth.

PO8 – Employability, Innovation, and Entrepreneurship: CO2, CO3, CO6, and CO7 develop research competence and analytical skills useful in academic, consultancy, and professional sectors, improving employability and innovation capacity.